



UNIVERSITEIT
STELLENBOSCH
UNIVERSITY

2010

FAKULTEIT NATUURWETENSAPPE
FACULTY OF SCIENCE

JAAERVERSLAG • ANNUAL REPORT





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FACULTY OF **SCIENCE** ANNUAL REPORT

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Many of the achievements and events highlighted in this report would most probably not have been possible if not for the often behind-the-scenes work of our technical assistants, administrative officers and other support staff. In this annual report we therefore take the opportunity to place the spotlight on a few of the initiatives and divisions in our Faculty and within the greater university sector that have helped to support and strengthen our research and teaching endeavours during 2010.



To our Faculty, the 37 doctorates awarded for research in Science at this year's two graduation ceremonies are investments in fostering and sustaining a scientific approach and a culture of research in South Africa and on the rest of the continent.

Thanks to the development of similar expertise – whether among our undergraduate and postgraduate students or our staff corps – we are helping to establish Stellenbosch University (SU) as an excellent knowledge partner in the sciences. By schooling and mentoring our students, we wish to support intensified and continuous innovation, ingenuity and renewal in local industries and businesses to the benefit of our country.

The so-called teabag water filter is one of the 'smaller pieces' of ingenuity to have emerged from the University's ranks this year. By doing the rounds on the websites of BBC and CNN and appearing in *Scientific American*, this 'teabag' brought the objectives of the HOPE Project and SU research to the attention of the media, philanthropists and nongovernmental organisations across the globe.

This filter – the brainchild of our Dean and microbiologist Prof Eugene Cloete – is being developed thanks to a team of SU microbiologists and polymer scientists so that it can be rolled out on a large scale by a commercial company who holds the licencing rights. It can provide clean, germ-free water to vulnerable communities.

Prof Cloete was one of three members of staff who are involved in some of our Faculty's HOPE initiatives who were rewarded for research and leadership in 2010. He received a Science for Society Gold Medal from the Academy of Science for South Africa (ASSAf). Polymer scientist Prof Ed Jacobs, who liaises with the SU Water Institute, as does Prof Cloete, received the Water Research Commission Technical Excellence Award for the development of innovative membrane water purification technology that is commercially viable. Prof Steven Chown, director of the Centre of Excellence for Invasion Biology, travelled to Norway to receive the Martha T Muse Prize for science and policy in the Antarctic region.

The level of expertise of our staff is also reflected in other honours that they received. Laser physicist Dr Christine Steenkamp was honoured by the Third World Organisation for Women in Science (TWAS). The excellent research done by Prof Marcel Wild of the Department of Mathematical Sciences (Mathematics, Applied Mathematics, Computer Science) was recognised by the South African Mathematical Society. Another mathematician, Prof Stephan Wagner, was rewarded with the Meiring Naudé Medal of the Royal Society of South Africa. Prof Eddie van Dijk, a research fellow in the Department of Botany and Zoology, received the Senior Captain Scott Medal of the *Suid-Afrikaanse Akademie vir Wetenskap en Kuns*.

About 94% of our staff are involved actively in research. This excellent percentage is reflected in the 91 members of staff who were rated by the National Research Foundation (NRF), and our seven world-class scientists with an A ranking. Our researchers produce a large number of publications in leading academic journals. In addition, our research enjoys considerable financial support from, among others, the Department of Science and Technology, the NRF and the industry, and contract financing remains a valuable source of sustainable income.

Success breeds success. This year our students again excelled at international and national conferences and received important bursaries. For instance, a doctoral student and lecturer in applied mathematics, Ms Sonia Woudberg, received one of the first L'Oréal-UNESCO Regional Fellowships for Women in Science in Africa south of the Sahara, while chemistry student Mr Simon Herbert was supported through a Commonwealth scholarship.

However, we cannot rest on our laurels. Our strategic plan consequently drives continuous renewal and active initiatives.

As a result, our attempt to increase our undergraduate student throughput to above 77% is supported by an extensive tutor system, raised admission requirements, an improved extended degree programme which can also accommodate more students, and the increasing use of real-time interpreting services. Incentive mechanisms that motivate postgraduate students to complete their studies within specific timeframes have also been instituted.

Improved throughput rates and a larger number of graduates call for a focus on our expertise base. This involves, among other things, the need for our network of research chairs, professors extraordinary and postdoctoral fellows to be extended, and the need for our retirees to be retained as research fellows extraordinary who continue to contribute to research outputs and who act as valuable mentors to younger Faculty members.

Research centres are efficient instruments for producing increasing numbers of research outputs and attracting research students of a high quality. Thanks to the Faculty's exceptional research ethos, highly relevant multidisciplinary research and postgraduate programmes have been established over the years. Similarly, the SU Water Institute, established this year is a valuable addition to our extensive research focus areas.

Ons Fakulteit beskou die 37 doktorsgrade wat by vanjaar se twee gradeplegtigheidsgeleenthede vir navorsing in die Natuurwetenskappe toegeken is as beleggings in die kweek en bestending van 'n wetenskaplike benadering en 'n navorsingskultuur in Suid-Afrika en die res van Afrika.

Danksy die ontwikkeling van soortgelyke kundigheid – hetsy onder ons voor- en nagraadse studente of ons personeelkorps – help ons om die Universiteit Stellenbosch (US) as 'n kennisvenoot van uitnemendheid in die natuurwetenskappe te vestig. Deur ons studente te skool en te mentor, wil ons verskerpte en voortdurende innovasie, vindingrykheid en vernuuwing binne plaaslike industrieë en bedrywe ondersteun tot voordeel van ons land.

Die sogenaamde teesakkie-waterfilter is een van die 'kleiner stukkies' vindingrykheid wat vanjaar vanuit universiteitsgeledere die lig gesien het. Deur onder meer op die webbladsye van BBC en CNN en in *Scientific American* 'n draai te maak, het hierdie 'teesakkie' die doelstellings van die HOOP Projek en US-navorsing wêreldwyd onder die aandag van die media, filantropie en nieregeringsorganisasies gebring.

Dië filter – die breinkind van ons Dekaan en mikrobioloog, prof Eugene Cloete – word danksy 'n span US-mikrobioloë en polimeerwetenskaplikes ontwikkel sodat dit grootskaals uitgerol kan word deur 'n lisensiehouende kommersiële maatskappy om skoon, kiemvrye water aan kwesbare gemeenskappe te lewer.

Prof Cloete is een van drie personelede wat ook betrokke is by van ons Fakulteit se HOOP-inisiatiewe om vanjaar vir navorsing en leierskap beloon te word. Hy het 'n *Science for Society* Goue Medalje van die Wetenskap-akademie van Suid-Afrika (ASSAF) ontvang. Polimeerwetenskaplike, prof Ed Jacobs, wat soos prof Cloete skakel met die US Waterinstituut, het die Waternavorsingskommissie se Tegniese Prestasie-toekenning ontvang vir die ontwikkeling van innoverende membraanwatersuiweringstechnologie wat kommersiële lewensvatbaar is. Op sy beurt het prof Steven Chown, direkteur van die Sentrum van Uitnemendheid vir Indringerbiologie, na Noorweë gereis om die Martha T Muse-prys vir wetenskap en beleidvorming in die Antarktiese streek te ontvang.

Die besondere kundigheidsvlak van ons personeel word ook weerspieël in ander eerbewyse wat hulle ontvang het. Laserfisikus, dr Christine Steenkamp, is deur die Derde-wêreldorganisasie vir Vroue in die Wetenskap vereer. Prof Marcel Wild van die Departement Wiskundige Wetenskappe (Wiskunde, Toegepaste Wiskunde, Rekenaar-wetenskap) se uitmuntende navorsing is deur die Suid-Afrikaanse Wiskunde-vereniging bekroon. Nog 'n wiskundige, prof Stephan Wagner, is met die Meiring Naudé-medalje van die *Royal Society of South Africa* beloon. Prof Eddie van Dijk, navorsingsgenoot in die Departement Plant- en Dierkunde, het die Senior Kaptein Scott-medalje van die Suid-Afrikaanse Akademie vir Wetenskap en Kuns ontvang.

Ongeveer 94% van ons personeel doen aktief navorsing. Hierdie uitsonderlike persentasie word weerspieël in die 91 personelede wat deur die Nasionale Navorsingstigting (NNS) geëvalueer is, en die sewe wêreldklaswetenskaplikes met A-evaluasie in ons geledere. Ons navorsers lewer 'n groot hoeveelheid publikasies in toonaangewende vaktydskrifte. Daarby geniet ons navorsing wye finansiële ondersteuning van onder meer die Departement van Wetenskap en Tegnologie, die NNS en die industrie. Kontrakfinansiering bly 'n waardevolle bron van volhoubare inkomste.

Een sukses lei tot 'n ander. Ons studente het vanjaar weer op internasionale en nasionale kongresse uitgestaan en het toonaangewende beurse ontvang. So het doktorale student en lektor in toegepaste wiskunde, me Sonia Woudberg, een van die eerste L'Oréal en UNESCO Streeksbeurse vir Vroue in Wetenskap in Afrika suid van die Sahara ontvang, terwyl chemiestudent mnr Simon Herbert met 'n Commonwealth-beurs ondersteun is.

Ons kan egter nie op ons louere rus nie. Daarom dryf ons strategiese plan voortdurende vernuuwing en daadwerklike inisiatiewe.

So word ons poging om ons voorgraadse studentedeurvloei bo 77% te stoot ondersteun deur 'n uitgebreide tutorstelsel, verhoogde toelatingvereistes, 'n verbeterde verlengde graadprogram wat ook meer studente kan akkommodeer en die toenemende gebruik van intydse tolkdienste. Aansporingsmeganismes, wat nagraadse studente motiveer om binne spesifieke tydsraamwerke hul studies te voltooi, is ingestel.

Verbeterde deursoeking en 'n groter graduandital vereis 'n fokus op ons kundigheidsbasis. Dit omvat onder meer dat ons netwerk van leerstoel-, buitengewone professore en nadoktorale genote moet uitbrei, en dat ons afgetredenes behou moet word as buitengewone navorsingsgenote wat nog tot navorsingsuitsette bydra en waardevolle mentors vir die jonger garde is.

Navorsingsentrums is doeltreffende instrumente om meer navorsingsuitsette te lewer en om navorsingstudente van hoogstaande gehalte te lok. Danksy die Fakulteit se uitsonderlike navorsingsetos is daar oor die jare heen hoogs relevante, multidisiplinêre navorsings- en nagraadse programme gevestig. Die US Waterinstituut, wat vanjaar gestig is, is eweneens 'n waardevolle byvoeging tot ons uitgebreide navorsingsfokusareas.

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Talle van die prestasies en gebeurtenisse wat in hierdie verslag uitgelig word, sou waarskynlik nie moontlik gewees het as dit nie was vir die dikwels agter-die-skerm werk van ons tegnisi, administratiewe beamptes en ander ondersteuningspersoneel nie. Graag laat ons dus in hierdie verslag die soeklig val op die talle inisiatiewe en afdelings binne ons Fakulteit en die groter universiteitstrukture wat ons navorsing en onderrig gedurende 2010 ondersteun en help uitbou het.

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Prof Eugene Cloete

Dekaan: Fakulteit Natuurwetenskappe
Dean: Faculty of Science



The Stellenbosch University (SU) Faculty of Science strives to contribute to society as a whole through teaching, among other means. In line with the SU Vision 2015, this Faculty is committed to positioning Stellenbosch University within South Africa, Africa and the world arena as a research-focused academic institution of excellence and as a knowledge partner of great respect that builds on the scientific, technological and intellectual capacity of Africa and plays an active role in the development of South African society.

We are striving towards excellence in undergraduate and postgraduate teaching, research, community interaction and human resource management.

The Faculty of Science has eight Departments. In addition to this the Faculty of Science has world-renowned centres where research groups with excellent research facilities are established in the various fields of study. We have an exceptionally strong research ethos, and have been extremely successful over the years in creating highly relevant multidisciplinary research and postgraduate programmes.

During the past year, through a collaborative effort by its staff and students, the Faculty of Science has managed to do exceptionally well in various aspects of in our strategic plan towards 2015. These include our number of research publications, NRF rated scientists and postgraduate students from Africa.

There are of course specific areas of concern that we are hoping to address through various targeted initiatives and objectives, as is set out below:

Objective: To increase our undergraduate success rate and the implementation of the SU language policy

The Faculty of Science is committed to the education of young scientists in support of the South African Government's initiative to increase the knowledge base of our community in the fields of science and technology. To this end, the Faculty of Science has identified the increased success rate of our undergraduate students as one of its major objectives.

To this end, we offer training at the undergraduate level in the more fundamental mathematical, physical and biological sciences to include study programmes in Biodiversity and Ecology, Molecular Biology and Biotechnology, two focus areas in Human Life Sciences, Sport Sciences, Earth Sciences, Applied Geoinformatics, various focus areas in Chemistry and Physics and various streams in Mathematical Sciences, including Mathematics, Biomathematics, Applied Mathematics and Computer Science. Our cadre of teaching staff also provides training in specific disciplines to students registered in the Faculties of Health Sciences, Engineering, Agrisciences and Economic and Management Sciences.

Statistics from the past few years show that less than 30% of our undergraduate students complete their degree within three years, while 35% of the students do not complete their degree in the Faculty, but elsewhere.

In order to address this, the admission requirements to follow programmes in the Faculty of Science were increased to 55% in 2010 (taking a 60:40 aggregate of the National Senior Certificate and Access Tests as the norm). This decision did not have a negative impact on the student numbers in the first year intake, as was expected in our enrolment strategy. It has however resulted in an improved pass rate at the first year level. It has also ensured that more students with a higher average (between 50-55%) could be admitted via the alternative admission year programmes, with the intake rising from 40 in 2009 to 120 in 2010. It is expected that this pool of students will not only increase the number of diversity students within the Faculty's mainstream programme in 2011 and beyond, but will also ensure a higher success rate for our educationally disadvantaged students.

Within our student enrolment plan, we do not foresee any planned growth in the number of undergraduate students between 2011 and 2016. Part of the problem with our success rate is attributed to student numbers exceeding the physical and human resource capacity in the Faculty, which also has a negative impact on research outputs and postgraduate student training. In order to limit the number of students, we are planning to adjust the admission requirements to a 60% average (NCS:ACT average) in 2012, which will also beneficially support an improved graduation rate.

Our intensive tutor support initiative, which was initiated in 2009 with great success, was continued in 2010. This intervention has paid off, with the majority of first year courses boasting an improved pass rate. Other initiatives in support of an increased pass rate are currently being investigated. Our current undergraduate curriculum is under serious review in order to take account of factors such as the optimal use of facilities and staff time. We are hoping to implement the necessary changes by 2012.



Die Universiteit Stellenbosch (US) se Fakulteit Natuurwetenskappe streef daarna om 'n bydrae tot die samelewing in sy geheel te lewer deur middel van, onder andere, onderrig. In ooreenstemming met die US Visie 2015 is dié fakulteit daartoe verbind om die US ewe goed binne Suid-Afrika, Afrika en die wêreldarena te posisioneer as 'n uitnemende, navorsingsgerigte akademiese instelling en 'n hoogs gerekende kennisvenoot wat voortbou op die wetenskaplike, tegnologiese en intellektuele vermoë van Afrika, en 'n aktiewe rol speel in die ontwikkeling van die Suid-Afrikaanse samelewing.

Ons streef na uitnemendheid wat voor- en nagraadse onderrig, navorsing, gemeenskaps-interaksie en menslikehulpbronbestuur betref.

Die Fakulteit Natuurwetenskappe het agt departemente. Verder beskik die Fakulteit oor wêreldbekende sentra waar navorsingsgroepe met uitstekende navorsingsfasiliteite in die onderskeie vakgebiede gevestig word. Ons het 'n buitengewoon sterk navorsingsetos en het deur die jare groot sukses behaal met die daarstelling van hoogs relevante, multidissiplinêre navorsings- en nagraadse programme.

In die afgelope jaar het die Fakulteit Natuurwetenskappe daarin geslaag om, deur 'n samewerkingsinisiatief van sy personeel en studente, besonder goed te vaar met verskeie aspekte wat in sy strategiese plan na 2015 uitgelig word. Dit behels onder andere ons getal publikasies, NNS-geëvalueerde wetenskaplikes en nagraadse studente uit Afrika.

Daar is natuurlik spesifieke gebiede wat kommer wek en wat ons beplan om deur middel van 'n aantal gefokusde inisiatiewe en doelwitte aan te spreek. Dit is soos volg:

Doelwit: Om ons voorgraadse sukseskoers te verhoog en die US se taalbeleid te implementeer

Die Fakulteit Natuurwetenskappe is verbind tot die onderrig van jong navorsers ter ondersteuning van die Suid-Afrikaanse regering se inisiatief om ons gemeenskap se kennisbasis op die gebied van die wetenskap en tegnologie uit te brei. 'n Hoër slaagsyfer onder voorgraadse studente is een van die doelwitte waarmee die Fakulteit Natuurwetenskappe poog om hierdie inisiatief te ondersteun.

Om hierdie doel te kan bereik bied ons onderrig op voorgraadse vlak in die meer grondliggende wiskundige, fisiese en biologiese wetenskappe, met inbegrip van studieprogramme in Biodiversiteit en Ekologie, Molekulêre Biologie en Biotegnologie, twee fokusareas in Menslike Lewenswetenskappe, Sportwetenskap, Aardwetenskap, Toegepaste Geoinformatika, verskeie fokusareas in Chemie en Fisika en verskeie strome in Wiskundige Wetenskappe, wat Wiskunde, Biowiskunde, Toegepaste Wiskunde en Rekenaarwetenskap insluit. Ons onderrigpersoneel verskaf ook onderwys in spesifieke dissiplines aan studente wat by die Fakulteit Gesondheidswetenskappe, Ingenieurswese, Agriwetenskappe en Ekonomiese en Bestuurswetenskappe ingeskryf is.

Statistiek van die afgelope paar jaar toon dat minder as 30% van ons voorgraadse studente hulle graad binne drie jaar voltooi, terwyl 35% van die studente hulle graad nie aan die Fakulteit nie, maar elders voltooi.

Om hierdie saak aan te spreek is die toelatingsvereistes om programme in die Fakulteit Natuurwetenskappe te kan volg in 2010 verhoog tot 'n gemiddeld van 55% (in die gekombineerde uitslae van die Nasionale Senior Sertifikaat-vakke en die US se Toelatingstoetse, met 'n verhouding van 60:40 as die norm). Hierdie besluit het nie 'n negatiewe impak op studentegetalle in die eerstejaarinnamegroep gehad nie, soos daar met die inskrywingstrategie voorsien is. Dit het wel tot 'n beter slaagsyfer op eerstejaarsvlak gelei. Dit het ook tot gevolg gehad dat meer studente met 'n hoër gemiddeld (tussen 50% en 55%) toegelaat kon word via alternatiewe toelatingsjaarprogramme, wat die inname van 40 in 2009 tot 120 in 2010 laat styg het. Daar word verwag dat hierdie studentepoel nie net die getal diversiteitstudente in die Fakulteit se hoofstroomprogramme vanaf 2011 sal laat styg nie, maar ook 'n hoër suksesyfer vir ons onderwysbenadeelde studente sal beteken.

Volgens ons studente-inskrywingsplan voorsien ons nie enige groei in die voorgraadse studentetal tussen 2011 en 2016 nie. 'n Deel van die probleem wat die sukseskoers betref kan toegeskryf word aan die feit dat die studentegetalle die fisiese en menslikehulpbronskapiteit binne die Fakulteit oorskry, wat ook 'n negatiewe impak op navorsingsuitsette en die onderrig van nagraadse studente het. Om studentegetalle te beperk beplan ons om die toelatingsvereiste in 2012 tot 'n gemiddeld van 60% (NSS:TT-gemiddeld) te verhoog, wat ook die voordeel van 'n verbeterde graderingskoers sal inhou.

Ons intensiewe tutorsteuninisiatief wat met groot sukses in 2009 ingestel is, is in 2010 voortgesit. Hierdie ingryping het tot groot sukses gelei deurdat die meerderheid eerstejaarskursusse 'n verbeterde slaagkoers getoon het. Ons ondersoek tans bykomende





Language is seen as an important enabler of student success. However, in order to implement the official language plan of the Faculty of Science, in line with that of Stellenbosch University, we require the necessary financial support for additional staff and also for translation services. As an experiment, a real-time interpreter service was successfully introduced in 2010 for certain Biochemistry modules. This alternative has many benefits, such as its cost effectiveness compared to the option of having to repeat the same lecture. It has proven to be a viable alternative in selected courses. We are hoping to extend this service onwards to 2016, and will continue to implement the official faculty language plan.

Objective: To reduce the time that postgraduate students take to complete their degrees

We provide quality training to primarily full-time on-campus students in our effort to make a significant contribution to building a strong research community within the South African industry and academia. As a centre of excellence for postgraduate training in the physical, biological and mathematical sciences, we have over the years managed to produce a significant number of master's and doctoral candidates.

We are satisfied with the throughput rate of our honours students. With sufficient support of the honours students we aim to provide well prepared students to follow our MSc and PhD programmes.

Through various initiatives, the Faculty of Science is hoping to reduce the timeframe in which our MSc and PhD students complete their studies. We have, for instance, introduced an incentive programme through which PhD students who complete their degree within three years receive R20 000. Already we are noticing that our PhD students are completing their degrees in a shorter time, and we expect this trend to continue. On average, the success rate of our PhD students has improved from an average of more than five years in 2008 to 3,89 years in 2010. Currently 72% of our PhD students complete their degree within five years, while the average for MSc degrees is three years.

A formal agreement process between all postgraduate students and their supervisors have also been set up, in which the expectations of the various parties are stipulated. An annual research workshop is held for all new postgraduate students in the faculty and we are also working closely with the SU Postgraduate Students Office to ensure that our students benefit from their postgraduate support programmes.

Objective: To increase our postgraduate student numbers and diversity

Postgraduate students make up 30.93 % of the student component of the Faculty of Science. We are doing well in attracting students to our postgraduate programmes, and in particular we have success in recruiting students from African countries and abroad.

In a positive trend, our total postgraduate student numbers have increased from 670 in 2009 to 715 in 2010 due to the commitment of our staff and active recruitment drives.

Our postgraduate diversity students have increased from 32,4.9% to 35,8% since 2009, while 49,4% of our students are female. The number of postdoctoral fellows working within our research groups has increased from 60 to 80 over the last few years. Although we already have 35% diversity students at the postgraduate level, we need to grow these numbers to get to the desired 40:60 ratio by 2015. We would therefore like to introduce additional bursaries to diversity students at the honours level, and would like to start investing in the recruitment of relevant MSc and PhD students from other universities.

This is made possible largely to the R21 million per year investment in student scholarships afforded from our third stream income. Further support of approximately R13 million for equipment and R1,14 million in postdoctoral fellowship helps to make Stellenbosch University a more attractive option to consider for postgraduate studies.

In support of our postgraduate programme, we want to increase student numbers at the honours level to provide a bigger pool of students for MSc and PhD studies. We would like to increase our efforts in this regard by continuing to invest in infrastructure to accommodate more postgraduate students. Already, for instance, the R25 million upgrade of the Polymer Science Building in 2010 has ensured that the facilities to accommodate postgraduate students in polymer science have increased from 38 to a possible 65 students. Similar initiatives are planned in the other disciplines such as Biochemistry, Botany and Zoology, Physiological Sciences and the Mathematical Sciences.

Strategically, we therefore endeavour to continue an offering of competitive scholarships

inisiatiewe wat tot 'n styging in die slaagsyfer sal lei. Ons bestaande voorgraadse kurrikulum word opnuut in oënskou geneem om voorsiening te maak vir faktore soos die optimale gebruik van fasiliteite en personeeltyd. Ons hoop om die nodige veranderinge teen 2012 aan te bring.

Taal word as 'n belangrike instaatsteller vir studentesukses beskou. Om egter die amptelike taalplan van die Fakulteit Natuurwetenskappe te kan implementeer en in lyn te bring met dié van die US benodig ons finansiële bystand vir bykomende personeel en vertaaldienste. 'n Intydse tolkdienst is in 2010 op 'n eksperimentele grondslag vir sekere Biochemie modules ingestel. Hierdie opsie bied baie voordele en is veral meer kostedoeltreffend as die opsie om dieselfde lesing te herhaal. Dit is as 'n haalbare alternatief vir bepaalde kursusse uitgewys. Ons hoop om hierdie diens algaande tot 2016 uit te brei en sal voortgaan om die amptelike fakulteittaalplan te implementeer.

Doelwit: Om die tyd wat nagraadse studente neem om hul graad te voltooi te verminder

Ons verskaf gehalteonderrig aan hoofsaaklik voltydse kampusgebaseerde studente in ons strewe om 'n betekenisvolle bydrae te lewer tot die bou van 'n sterk navorsingsgemeenskap binne die Suid-Afrikaanse industrie en akademie. Synde 'n sentrum van uitnemendheid vir nagraadse opleiding in die fisiese-, biologiese en wiskundige wetenskappe, het ons deur die jare daarin geslaag om 'n aansienlike aantal meesters- en doktoreskandidate te lewer.

Ons is tevrede met die omsetkoers van ons honneursstudente. Met behoorlike steun vir die honneursstudente is dit ons doel om goed voorbereide studente te lewer om ons MSc- en PhD- programme te deurloop.

Deur verskeie inisiatiewe hoop die Fakulteit Natuurwetenskappe om die tydraamwerk te verkort waarbinne ons MSc- en PhD-studente hulle studies voltooi. Ons het byvoorbeeld 'n aansporingsprogram bekend gestel waarvolgens PhD-studente wat hulle graad binne drie jaar voltooi, 'n bedrag van R20 000 ontvang. Ons merk reeds dat ons PhD-studente hulle grade in 'n korter tyd afhandel en ons verwag dat die tendens sal voortduur. Oor die algemeen het die sukseskoers van ons PhD-studente verbeter van 'n gemiddeld van meer as vyf jaar in 2008 tot 3,89 jaar in 2010. Tans voltooi 72% van ons PhD-studente hulle graad binne vyf jaar, terwyl die gemiddeld vir MSc-grade drie jaar is.

'n Formele ooreenkomsprose tussen alle nagraadse studente en hul studieleiers is ook daargestel, waarin die verwagtinge van die onderskeie partye uiteengesit word. 'n Jaarlikse navorsingslypskool word gehou vir alle nuwe nagraadse studente in die Fakulteit en ons werk ook nou saam met die US se kantoor vir nagraadse studente om te verseker dat ons studente voordeel trek uit hulle nagraadse steunprogramme.

Doelwit: Om ons nagraadsestudentetal en -diversiteit te verhoog

Nagraadse studente maak 30,93% van die studentekomponent van die Fakulteit Natuurwetenskappe uit. Ons slaag goed daarin om studente na ons nagraadse programme te lok en behaal veral sukses met die werwing van studente uit Afrikalande en van oorsese.

In 'n positiewe tendens het ons totale nagraadse studentetal gestyg van 670 in 2009 tot 715 in 2010 danksy die verbintenis van ons personeel en aktiewe werwingsveldtogte. Ons nagraadse diversiteitstudente het seder t 2009 toegeneem van 32,4,9% tot 35,8%, terwyl 49,4% van ons studente vroulik is. Die getal nadoktorale genote wat in ons navorsingsgroep werk, het van 60 tot 80 oor die afgelope paar jaar gestyg. Alhoewel ons reeds 35% diversiteitstudente op nagraadse vlak het, moet ons hierdie getalle laat groei om die verlangde 40:60-verhouding teen 2015 te kry. Ons wil daarom graag bykomende beurse vir diversiteitstudente op honneursvlak instel en wil reeds begin met investering in die werwing van toepaslike MSc- en PhD-studente van ander universiteite.

Dit word grootliks moontlik gemaak weens die R21 miljoen per jaar se belegging in studiebeurse wat uit ons derdestroominkomste verkry word. Verdere steun van ongeveer R13 miljoen vir toerusting en R1,14 miljoen se nadoktorale beurse help om die US 'n aantrekliker opsie te maak wat vir nagraadse studie oorweeg kan word.

Ter ondersteuning van ons nagraadse program wil ons studentegetalle op honneursvlak verhoog om 'n groter poel studente vir MSc- en PhD-studies daar te stel.

Ons wil graag ons pogings in hierdie verband verbeter deur voort te gaan om in infrastruktuur te belê om meer nagraadse studente te kan akkommodeer. Die R25 miljoen se opgradering van die Polimeerwetenskapgebou in 2010 het daar toe bygedra dat die fasiliteite wat nagraadse studente in polimeerwetenskap akkommodeer van 38 tot



and financial support to our research programmes from third stream income, and to increase our support to young staff members to provide them with the necessary funding and scholarships to ensure they become research active as soon as possible.

Objective: To improve our research output

Our research ability is regarded as one of the main strengths of the Faculty of Science. This is reflected by the large number of scientists rated by the National Research Foundation (NRF), the fact that 94% of our staff members are involved in research, and our exceptionally high research outputs in science journals.

With the awarding of an A-rating to Prof Terry Robinson of the Department of Botany and Zoology, we have seven world class academics as part of our research staff. The number of our NRF rated scientists has increased from 84 in 2009 to 91 in 2010. In turn, the number of subsidy bearing publishing units has increased from 176,93 in 2009 to 206,54 in 2010.

The Faculty of Science has been extremely successful in creating highly relevant multi-disciplinary research and postgraduate programmes by using the model of Research Centres as effective instruments to increase the production of quality research outputs and students.

The Faculty of Science continues to be successful in attracting substantial third stream income. The steep upward trend in the generation of competitive as well as research contract funding makes it possible to sustain our research enterprise and to fund our mainstream activities that generate first and second stream income. In total, the Faculty of Science invests R33,7 million directly into research associated with postgraduate student training, over and above the R21,8 million which is invested in scholarships. A further R25,7 million rand of third stream income is invested in the salaries of our researchers and research associate staff.

Our Faculty have definitely benefited from recent initiatives implemented by the South African Department of Science and Technology (DST), such as the Centres of Excellence (CoE) and the South African Research Chairs Initiative (SARChI). With our endowed chair programme, an initiative which hopes to attract funding to sponsor at least one new endowed chair per department over the next two years, we are hoping to strengthen our research ability even further. The intention is not to appoint anyone against these chairs, but to appoint existing staff in the chair and to use the money strategically within the faculty.

During 2010 water research was identified as a new focus area for the Faculty. The Stellenbosch University Water Institute was constituted as an effort to unite the many water research groups within the greater university environment, and to drive the development of technology, innovation and further research to address the various water challenges faced in South Africa and beyond. We will continue to identify similar new focus areas of strategic importance in which we already have the proven capacity and expertise.

We strive towards expanding our industry partnerships, and towards increasing our support to our young researchers. We also want to continue our financial incentive scheme for retired staff to publish their research and to mentor young staff members.



'n moontlike 65 studente uitgebrei is. Soortgelyke inisiatiewe word beplan vir ander dissiplines soos Biochemie, Plant- en Dierkunde, Fisiologiese Wetenskappe en die Wiskundige Wetenskappe.

Strategies probeer ons dus om voort te gaan met die aanbied van mededingende beurse en finansiële steun aan ons navorsingsprogramme via derdestroominkomste, en om ons steun aan jonger personelede te verhoog ten einde hulle van die nodige fondse en beurse te voorsien om te verseker dat hulle so gou doenlik aktief raak op navorsingsgebied.

Doelwit: Om ons navorsingsuitset te verbeter

Ons navorsingsvermoë word geag een van die grootste bates van die Fakulteit Natuurwetenskappe te wees. Dit word weerspieël deur die groot aantal navorsers wat die Nasionale Navorsingstigting (NNS) evalueer, die feit dat 94% van ons personelede by navorsing betrokke is, asook ons buitengewoon hoë navorsingsuitsette in wetenskaplike vaktyskrifte.

Met die toekenning van 'n A-gradering aan prof Terry Robinson van die Departement Plant- en Dierkunde, is daar sewe wêreldklasakademici op ons navorsingspersoneel. Die getal NNS-geëvalueerde wetenskaplikes het van 84 in 2009 tot 91 in 2010 gestyg. Op sy beurt het die getal subsidiedraende publikasie-eenhede van 176,93 in 2009 tot 206,54 in 2010 gestyg.

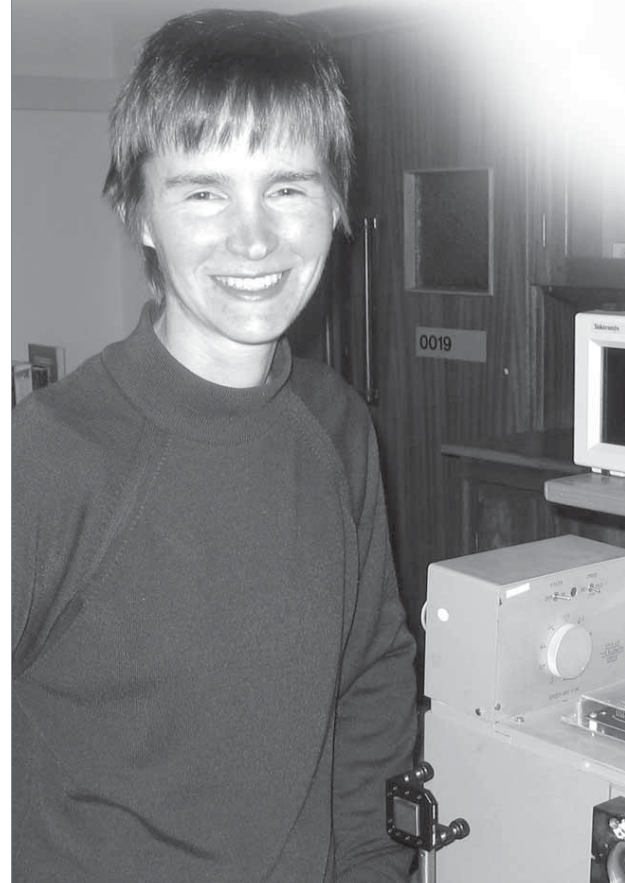
Die Fakulteit Natuurwetenskappe was uiters suksesvol met die saamstel van hoogs relevante multidisiplinêre navorsings- en nagraadse programme deur die Navorsingsentramodel as effektiewe instrument te gebruik ten einde die lewering van gehaltenavorsingsuitsette en -studente te verhoog.

Die Fakulteit Natuurwetenskappe slaag steeds daarin om aansienlike derdestroominkomstebronne te lok. Die skerp opwaartse tendens in die generering van mededingende en navorsingskontrakbefondsing maak dit moontlik om ons navorsingsinisiatief vol te hou en ons hoofstroomaktiwiteite wat eerste- en tweedestroominkomste genereer te befonds. Die Fakulteit Natuurwetenskappe spandeer altesaam R33,7 miljoen aan navorsing wat direk verband hou met nagraadse studente; dit is bo en behalwe die R21,8 miljoen wat aan studiebeurse bestee word. 'n Verdere R25,7 miljoen van sy derdestroominkomste word bestee aan die salarisse van navorsers en navorsingsverwante personeel.

Ons fakulteit het gewis gebaat by onlangse inisiatiewe wat die Suid-Afrikaanse Departement van Wetenskap en Tegnologie (DST) geïmplementeer het, byvoorbeeld die sentra van uitnemendheid (CoE) en die Suid-Afrikaanse Navorsingsleerstoel-inisiatief (SARChI). Met ons gesubsidieerde leerstoel-program – 'n inisiatief waardeur daar gehoop word om skenkerbefondsing te lok om minstens een nuwe gesubsidieerde leerstoel per departement oor die volgende twee jaar te befonds – hoop ons om ons navorsingsvermoë selfs verder te versterk. Die bedoeling is nie om enigiemand nuuts in hierdie leerstoele aan te stel nie, maar om bestaande personeel in die leerstoele aan te stel en die geld strategies binne die Fakulteit aan te wend.

Waternavorsing is in 2010 as 'n nuwe fokusarea vir die Fakulteit aangedui. Die US se Waterinstituut is gestig in 'n poging om die groot aantal waternavorsingsgroepe binne die groter universiteitsomgewing saam te voeg en om die ontwikkeling van tegnologie, innovasie en verdere navorsing te dryf ten einde die uitdagings wat water vir Suid-Afrika en ander gebiede inhou aan te spreek. Ons sal voortgaan om soortgelyke nuwe fokusareas van strategiese belang waarin ons reeds bewese kapasiteit en kundigheid het, te identifiseer.

Ons streef daarna om ons bedryfsvennootskappe uit te bou en steun aan ons jong navorsers te verbeter. Ons wil ook ons finansiële aansporingskema vir afgetrede personeel voortsit waarvolgens hulle navorsing gepubliseer word en hulle as mentors vir jonger personelede optree.



Extensive financial support from industry and other organisations empowers our researchers to fulfil a leading role in both fundamental and applied sciences. In addition, it enables the Faculty to provide substantial support for national and international postgraduate students.

OUR MAIN RESEARCH FOCUS AREAS ARE:

1. Sustainable Biodiversity and Environment

- Sustainable Biodiversity resources
- Invasion and response biology
- Systematics and evolution
- Earth systems science
- Microbial ecology

2. Biotechnology

- Plant biotechnology and natural polymers
- Biological biotechnology
- Molecular and cellular exercise physiology
- Molecular biosciences

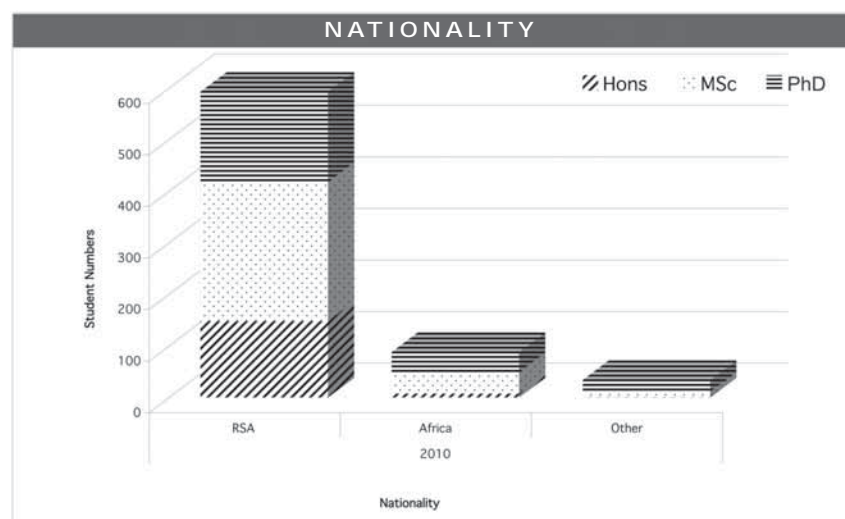
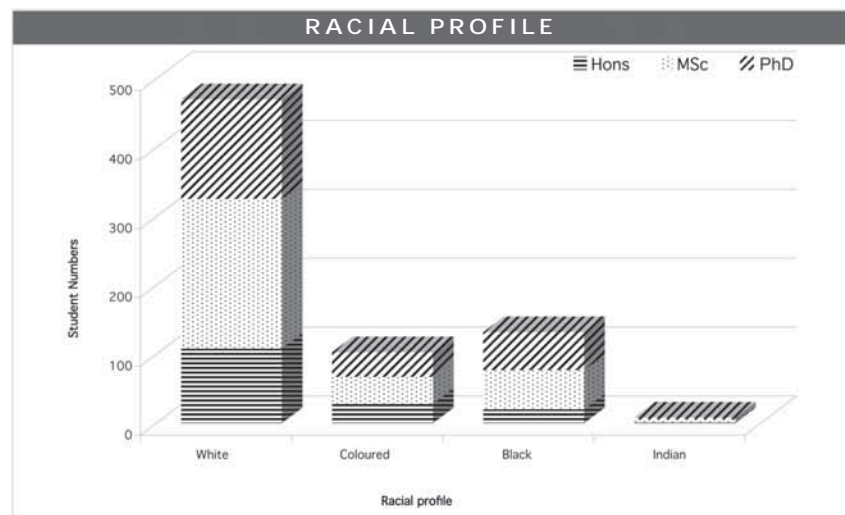
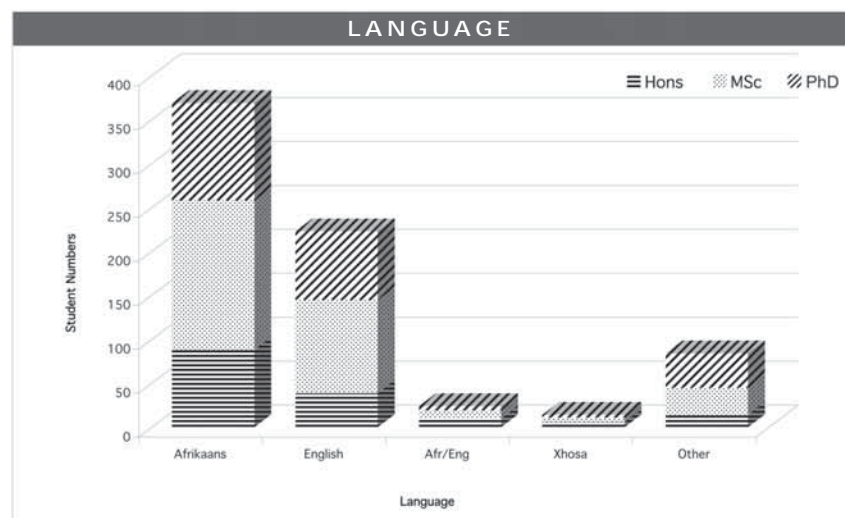
3. Technology for the Industry

- Novel materials and technology
- Separation and analysis
- Environmental and exploration geology
- Laser sources and applications
- Automated language processing

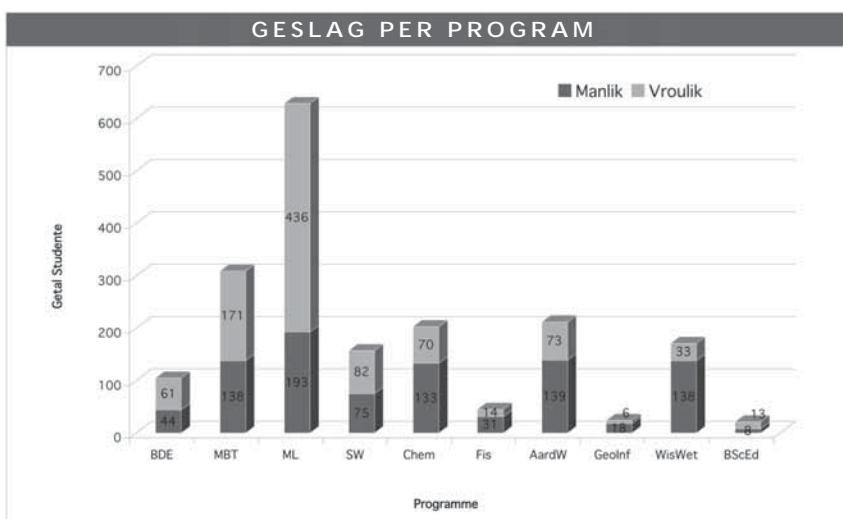
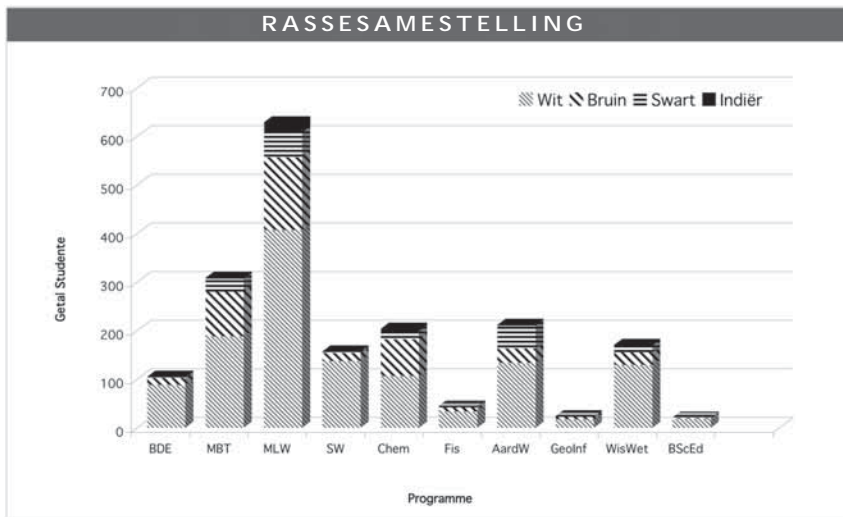
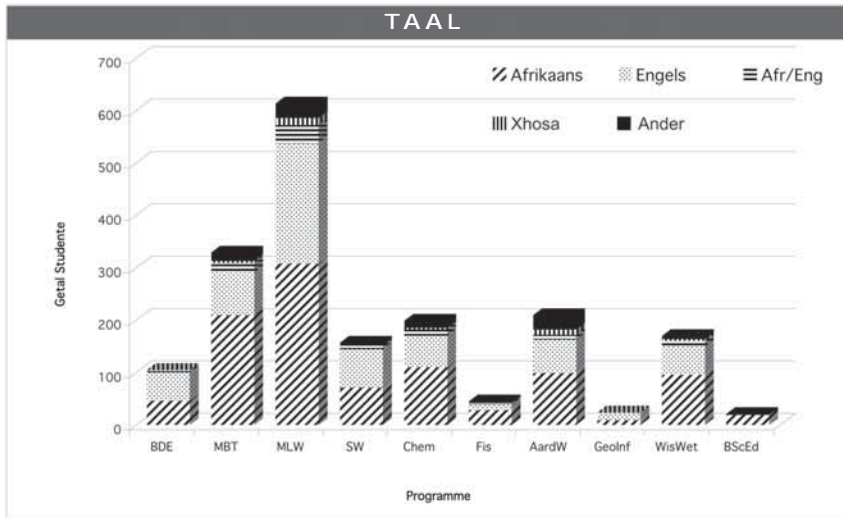
4. Fundamental Theory, Mathematics and Complexity

- Nuclear structure and relativistic nuclear models
- Quantum field theory: fundamental aspects, and applications to condensed matter physics.
- Quantum systems, disordered and polymer systems
- Cellular dynamics and modelling
- Algebra, number theory and geometry
- Analysis, topology and mathematical modelling (SACEMA – epidemiology)
- Computational mathematics and numerical analysis
- Network design and simulation

OUR POSTGRADUATE STUDENT PROFILE IN 2010



ONS VOORGRAADSE STUDENTEPROFIEL IN 2010



Uitgebreide finansiële ondersteuning vanaf industrie en ander organisasies bemagtig ons navorsers om voorpuntnavorsing in die fundamentele en toegepaste wetenskappe te doen. Daarby help dit ons Fakulteit om wesenlike ondersteuning aan nasionale en internasionale nagraadse studente te kan bied.

ONS BELANGRIKSTE NAVORSINGS-FOKUSGEBIEDE BEHELS:

1. Volhoubare Biodiversiteit en Omgewing

- Volhoubare biodiversiteitshulpbronne
- Indringerbiologie en die reaksie daarop
- Sistematiek en evolusie
- Aardsisteemwetenskap
- Mikrobiese ekologie

2. Biotegnologie

- Plantbiotegnologie en natuurlike polimere
- Biologiese biotegnologie
- Molekulêre en sellulêre oefeningfisiologie
- Molekulêre biowetenskappe

3. Tegnologie vir die Industrie

- Nuwe materiale en tegnologie
- Skeidingstegnieke en analise
- Omgewings- en eksploreringeologie
- Laserbronne en toepassings
- Rekenaargebaseerde taalverwerking

4. Fundamentele Teorie, Wiskunde en Kompleksiteit

- Kernstruktuur en relativistiese kernmodelle
- Kwantumveldeteorie: fundamentele aspekte, en toepassings in gekondenseerde materie
- Kwantum-, wanordelike en polimeersisteme
- Sellulêre dinamika en modellering
- Algebra, syfer teorie en meetkunde
- Analise, topologie en wiskundige modellering (SACEMA – epidemiologie)
- Komputasionele wiskunde en numeriese analise
- Netwerkontwerp en simulase

Contact details | Kontakinligting

Tel 021 808 3219

Faks | Fax 021 808 3219

Epos | Email Icon@sun.ac.zaWeb www.sun.ac.za/earthSci

The following staff members have NRF ratings:

- B – Prof Ian Buick
metamorphic petrology, geochemistry and isotope geochemistry
- B – Prof John Clemens
igneous and experimental petrology
- B – Prof Gary Stevens
experimental petrology
- C – Prof Alex Kisters
structural geology and tectonics
- C – Prof Alakendra Roychoudhury
environmental geochemistry and hydrology

RESEARCH INTERESTS

Our research interests include: Tectonics and orogenic processes; sedimentology of the Karoo Basin; petroleum geology; petrogenesis of granitic rocks; metamorphic petrology; trace-element and isotope geochemistry; experimental petrology; shear-zone hosted gold deposits; massive sulphide deposits; heavy mineral placer deposits; metallogenesis of mobile belts; environmental water and soil geochemistry.

RESEARCH OUTPUTS

Articles in accredited journals	26
Editorial activities (books and journals)	3
Conference proceedings and other articles	4
MSc students graduated	3

RESEARCH HIGHLIGHTS

Most Department of Earth Sciences staff and research postgraduate students attended both national and international conferences during 2010.

Of particular significance were the 18th International Sedimentological Congress (Brazil), attended by Dr Daniel Mikeš and students; the 5th International Archaean Symposium (Australia), attended by Prof Gary Stevens and students; and the European Geosciences Union Congress (EGU-2010) in Austria, attended by Prof John Clemens and Dr Mikeš and students. Prof Stevens and Prof Clemens were invited keynote speakers at their respective meetings.

With National Research Foundation (NRF) funding, Prof Clemens visited Australia for one month, making and cementing collaborative research connections with Melbourne and Monash Universities, the Geoscience Victoria and Museum Victoria. This visit has already produced two submitted publications and several more are in progress. Prof Clemens also met with Prof Neil Phillips (Phillips Gold), which resulted in research collaborations being initiated between him and staff in Earth Sciences. During the course of the year, Prof Phillips also visited Stellenbosch University to teach a gold course to honours students as well as a short course to industry participants. Both were very well received.

Prof Ian Buick undertook NRF-funded field work in Northwest India, in collaboration with colleagues from the University of Rajasthan and the Indian Institute of Technology-Kharagpur. A highlight in terms of analytical work has been the development, by Prof Buick and Dr Cris Lana, of a U/Pb LA-ICP-MS geochronology facility. The first publications from this development, on the dating of zircon and monazite, are currently in press.

ACADEMIC AFFAIRS

The Department of Earth Sciences continues to experience the blessings and problems associated with robust first year student recruitment. This year a new organisation of its honours teaching, with timetabled slots for special topics, was introduced to take advantage of evolving research directions of staff members and the expertise of visiting academics.

During 2010 24 honours students, 17 MSc students and 6 PhD students formed part of the Department's postgraduate teaching programme. Taken together this means an increase of nearly 25% on 2009. The numbers are expected to grow even further in 2011.

During 2010 the Department also hosted four postdoctoral research associates – double the number for 2009.

SERVICE TO THE SCIENTIFIC COMMUNITY

Prof John Clemens is the founding president of the Igneous and Metamorphic Studies Group (affiliated with the Geological Society of SA), member of the Post-NOMAD drilling programme steering committee and a member of the NRF Earth Sciences Ratings Panel.

Prof Ian Buick is currently co-editor-in-chief of the journal *Lithos*, and a member of the editorial board of *Gondwana Research*.

Prof Alakendra Roychoudhury is a member of council for the International Association of GeoChemistry (IAGC), a founder member of Africa Earth Observatory Network (AEON), a board member of the Marine Research Institute (MA-RE) at the University of

NAVORSINGSBELANGE

Ons navorsingbelange sluit in: Tektoniek en orogeniese prosesse; sedimentologie van die Karoo-kom; petroleumgeologie; petrogenese van granitiese gesteentes; metamorfe petrologie; spoorelement- en isotopiese geochemie; eksperimentele petrologie; skuifskurdrerende goudafsettings; massiewe sulfiedafsettings; swaarmineraal plaserafsettings; metaalgenese van mobiele stroke; omgewing-, water- en grondgeochemie.

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	26
Redaksionele aktiwiteite (boeke en tydskrifte)	3
Konferensieverrigtinge en ander artikels	4
MSc-studente gegradueer	3

NAVORSINGSHOOGTEPUNTE

Die meeste Aardwetenskappe-personeel en nagraadse navorsingstudente het almal nasionale of internasionale konferensies gedurende 2010 bygewoon. Van besondere belang was die 18de Internasionale Sedimentologiese Kongres (Brasilië), wat bygewoon is deur dr Daniel Mikeš en sy studente, die 5de Internasionale Argeiese Simposium (Australië), wat deur prof Gary Stevens en sy student bygewoon is, en die Kongres van die Europese Geowetenskappe Unie (EGU-2010) wat in Oostenryk bygewoon is deur prof John Clemens, dr Mikeš en hul studente. Prof Stevens en prof Clemens was albei genoemde hoofsprekers by hul onderskeie byeenkomste.

Prof Clemens het danksy befondsing van die Nasionale Navorsingstigting (NNS) 'n maandlange besoek aan Australië gebring, wat hom in staat gestel het om samewerkende navorsingbande te sluit en te versterk met Melbourne en Monash Universiteite, Geowetenskappe Victoria en Museum Victoria. Twee publikasies is reeds ingedien op grond van hierdie besoek, terwyl 'n handvol ander in die pyplyn is. Gedurende die besoek is navorsingbande ook gesmee met prof Neil Phillips (Phillips Gold), wat verdere samewerking met personeel in die Departement Aardwetenskappe beteken. Prof Phillips het ook Stellenbosch besoek om 'n goudkursus aan te bied vir US honneursstudente, asook 'n kortkursus vir deelnemers uit die industrie. Albei kursusse is baie goed ontvang.

Prof Ian Buick het danksy NNS-befondsing veldwerk in Noordwes-Indië onderneem, in samewerking met kollegas van die Universiteit van Rajasthan en die Indiese Instituut van Tegnologie-Kharaghpur.

'n Hoogtepunt in terme van analitiese werk is die ontwikkeling van 'n U/Pb LA-ICP-MS geochronologie fasiliteit deur prof Buick en dr Cris Lana. Die eerste publikasies wat voortspruitend is uit hierdie ontwikkeling, oor die datering van sirkoon en monasiet, is tans in druk.

AKADEMIESE SAKE

Die Departement Aardwetenskappe gaan voort om die voor- en nadele te ervaar wat voortspruit uit robuuste eerstejaarstudentewerwing. Aspekte rondom die honneurs-onderwysprogram is herorganiseer om plek op die rooster toe te laat vir spesiale onderwerpe en om voorsiening te maak vir die ontwikkelende navorsingsrigtings van ons personeel en die kundigheid van besoekende akademië.

Gedurende die akademiese jaar was 24 honneursstudente, 17 MSc-studente en 6 PhD-studente deel van die departementele struktuur. Dit dui op 'n toename van byna 25% vanaf 2009. Nagraadse studentegetalle behoort ook verder in 2011 te groei.

Die Departement Aardwetenskappe was gedurende die jaar ook die gasheer vir vier nadoktorale navorsingsgenote - dubbel die getal van 2009.

DIENS AAN DIE WETENSKAPLIKE GEMEENSAP

Prof John Clemens is die medestigter en voorsitter van die Stollings-en Metamorfe Studiegroep van die Geologiese Vereniging van Suid-Afrika, 'n stuurkomiteelid van die Post-NOMAD boorprogram en 'n lid van die NNS Aardwetenskappe graderingspaneel.

Prof Ian Buick is tans hoof-mederedakteur van die tydskrif *Lithos* en 'n lid van die redaksionele raad van *Gondwana Research*.

Personeel | Staff

Doserend | Academic

Prof JD Clemens (uitvoerende hoof)
Dr R Boshoff
Prof IS Buick
Dr CE Clarke
Prof A Kisters
Dr M Klausen
Dr D Mikeš
Dr J Miller
Prof A Roychoudhury
Prof A Rozendaal
Prof G Stevens

Erenavorsingspersoneel

Buitengewone prof W Verwoerd
Buitengewone prof N Phillips
Buitengewone medeprof D Frei

Ondersteuningspersoneel

L Conradie
G Olivier
F Timmey

Cape Town, a steering committee member of Africa Climate Change and Earth System Sciences (ACCESS), and the South African representative of the International Geotraces Programme.

Prof Gary Stevens is a member of the NRF Specialist Committee for Earth Sciences and a committee member of the Western Cape Regional Expensive Equipment Programme (REEP). He also contributes in his position as director of the Central Analytical Facility at Stellenbosch University and, perhaps most importantly, as the SARChI Chair of Experimental Petrology, hosted within the Department of Earth Sciences, as part of the South African Research Chair Initiative (SARChI) Programme. He is a member of the editorial boards of *Lithos* and the *South African Journal of Geology*.

Dr Jodie Miller is the chairperson of the Western Cape branch of the Geological Society of South Africa (GSSA).

AWARDS TO OUR STUDENTS

Mr Bjorn von der Heyden received the prestigious Haughton Award as the top geosciences honours student in South Africa. The award, which is open to any South African honours student in geosciences, is presented annually by the Geological Society of South Africa (GSSA). Mr von der Heyden completed his honours degree under the guidance of his supervisors Prof Alakendra Roychoudhury and Dr Cathy Clarke. His research project focused on the remediation of polluted soils. He is currently registered for a PhD at SU.

STAFF MATTERS

There were, thankfully, no changes in the full-time staffing in the Department of Earth Sciences. However, it is a pleasure to announce that, during 2010, we made no fewer than three extraordinary research appointments.

They are Prof Wilhelm Verwoerd, a well-known former head of the Department and an expert on the petrogenesis of alkaline igneous rocks, Prof Neil Phillips (of Phillips Gold), an internationally recognised expert on the genesis of gold mineralisation, and Associate Prof Dirk Frei, a prominent researcher working on U-Pb dating of accessory minerals, and who is also employed within the Central Analytical Facility (CAF).

COMMUNITY INTERACTION

The Department's exhibition of minerals and semi-precious stones once again caught the eye of prospective students at the annual Stellenbosch University Open Day.

FUNDING

Anglo Base Metals
AngloGold
AngloPlatinum
Australian Research Council
Chevron Texaco
ConocoPhillips
European Union
ExxonMobil
Geological Society of South Africa
Government of Gabon
Inkaba ye Africa
Kumba Resources
Namaqua Sands
National Research Foundation (NRF)
Schlumberger
StatoilHydro
TransHex
Water Research Commission (WRC)

COLLABORATION

SOUTH AFRICA

Agricultural Research Council (Nietvoorbij)
Council for Geosciences
iThemba Labs
Rhodes University
South African Nuclear Energy Corporation (NECSA)
University of Cape Town (UCT)
University of Pretoria (UP)
University of the Western Cape (UWC)
University of the Witwatersrand

AFRICA

Geological Survey of Namibia
University of Namibia

INTERNATIONAL

Australia

Australian National University
Curtin University of Technology
James Cook University
Monash University
Museum Victoria
University of Adelaide

Prof Alakendra Roychoudhury is 'n raadslid van die Internasionale Vereniging van Geochemie (IAGC), 'n stigterslid van die Africa Earth Observatory Network (AEON), 'n bestuurslid van die Mariene Navorsingsinstituut (MA-RE) aan die Universiteit van Kaapstad, 'n bestuurskomiteelid van die Toegepaste Sentrum vir Klimaat- en Aardsisteem-wetenskap (ACCESS), en die Suid-Afrikaanse verteenwoordiger van die Internasionale Geotrace Program.

Prof Gary Stevens is 'n lid van die NNS Spesialiskomitee vir Aardwetenskappe en 'n komiteelid van REEP, die Wes-Kaapse program wat kyk na die aankoop van duur toerusting by universiteite. Hy is direkteur van die Sentrale Analitiese Fasiliteit (SAF) aan die US, en is ook die houer van die SARChI Leerstoel van Eksperimentele Petrologie in die Departement Aardwetenskappe wat deur die Suid-Afrikaanse Navorsingsleerstoelprogram ondersteun word. Hy dien op die redaksionele rade van *Lithos* en die *Suid-Afrikaanse Tydskrif vir Geologie*.

Dr Jodie Miller is voorsitter van die Geologiese Vereniging van Suid-Afrika in die Wes-Kaap.

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Mnr Bjorn von der Heyden het die gesogte Haughton-prys as Suid-Afrika se beste honneursstudent in geowetenskap gewen. Dié prys, waarom enige Suid-Afrikaanse honneursstudent in geowetenskap kan meeding, word jaarliks deur die Geologiese Vereniging van Suid-Afrika toegeken. Mnr Von der Heyden het sy honneursgraad onder studieleiers prof Alakendra Roychoudhury en dr Cathy Clarke voltooi oor die herstel van besoedelde grond, en sit tans sy studies as 'n doktorsale student aan die US voort.

PERSONEELSAKE

Dit is verblydend dat daar geen veranderinge in die voltydse personeelkorps van die Departement Aardwetenskappe was nie.

Selvs meer verblydend is die aanstelling van drie buitengewone navorsingsgenote. Hulle is prof Wilhelm Verwoerd, 'n bekende voormalige hoof van die Departement Aardwetenskappe en 'n kenner van die petrogenese van alkaliese stollingsgesteentes, prof Neil Phillips van Phillips Gold, 'n internasionaal gerekende kundige oor die ontstaan van goud-mineralisasie, en medeprofessor Dirk Frei, 'n kundige oor die U-Pb-datering van bykomstige minerale en ook lid van die US se Sentrale Analitiese Fasiliteit.

GEMEENSKAPSINTERAKSIE

Die Departement Aardwetenskappe se uitstalling van minerale en halfedelgesteentes by die US Opedag het weer eens die aandag van voornemende studente getrek.

SAMEWERKING

SUID-AFRIKA

Landbou Navorsingsraad (Nietvoorbij)
iThemba Labs
Raad op Geowetenskappe (RGW)
Suid-Afrikaanse Kernenergie-korporasie (NECSA)
Universiteit van Kaapstad (UK)
Universiteit van Pretoria (UP)
Universiteit van Rhodes
Universiteit van Wes-Kaapland (UWK)
Universiteit van die Witwatersrand

AFRIKA

Geologiese Opname van Namibië
Universiteit van Namibië

INTERNASIONAAL

Australië

Australiese Nasionale Universiteit
Curtin Universiteit van Tegnologie
James Cook Universiteit
Museum Victoria
Universiteit van Adelaide
Universiteit van Monash

BEFONDSING

Anglo Base Metals
AngloGold
AngloPlatinum
Australiese Navorsingsraad
Chevron Texaco
ConocoPhillips
Europese Unie
ExxonMobil
Geologiese Vereniging van Suid-Afrika
Inkaba ye Africa
Kumba Hulpbronne
Namaqua Sands
Nasionale Navorsingstigting (NNS)
Regering van Gaboen
Schlumberger
StatoilHydro
TransHex
Watervorsingskommissie (WVK)

CAF provides analytical expertise

The Central Analytical Facility (CAF) aims to provide the best possible support for research and capacity building in analytical expertise at Stellenbosch University (SU), in the Western Cape and nationally. CAF contributes to the training of several hundred postgraduate students and produces data not only essential to the research conducted within the SET faculties at SU, but also data essential to industry and other academic institutions.

Prof Gary Stevens, holder of the South African Research Chair (SARChI) in Experimental Petrology in the Department of Earth Sciences, serves as the CAF director.

CAF consists of operational units built around logical clusters of equipment that are managed by dedicated analytical scientists. They provide advice to users on relevant analytical and sample preparation techniques, perform analyses for clients and train users to perform their own analyses.



The Environmental Laboratory undertakes analysis of soil, sediment, rock, water and plant materials for environmental, ecological, geological and agricultural investigations. A complete water analysis service is also available.



The ICP-MS Laboratory allows for inorganic and speciation analysis on water, as well as soil, rock and plant digests, the geochemical analysis of mineral separates and fused bulk rock samples, and U/Pb dating of zircons and monazite (also see p 28).

The Mass Spectrometry Unit performs quantitative and qualitative analysis of organic molecules using mass spectrometry.

The DNA Sequencing Facility offers services relating to DNA sequencing plasmid extraction.

The Materials Analysis Laboratory undertakes single crystal and powder X-ray diffraction experiments for structure elucidation and phase analysis.

In the Imaging Unit instrumentation is available for high resolution imaging and the identification of chemical signatures by SE/CL/BSD and EDS/WDS on a single specimen by Scanning Electron Microscopy. Fluorescence microscopy is used to determine localization/co-localization as well as mean intensity of a molecule of interest. Flow Cytometry performs multicolour quantification and sorting of cell or particle populations.

Brazil

Federal University of Ouro Preto

Canada

University of Ottawa

China

China University of Geosciences

Denmark

Geological Survey of Denmark and Greenland

Finland

University of Helsinki

France

University Blaise-Pascal, Clermont-Ferrand

University of Paris VII

University of Rennes

University of St Etienne

Germany

Aachen University of Technology

Freiburg University

Memorial University

University of Hamburg

India

University of Rajasthan

Indian Institute of Technology-Kharagpur

Ireland

University College Dublin

Italy

University of Padova

Japan

Shizuoka University

The Netherlands

Delft University of Technology

Rijksuniversiteit Groningen

University of Utrecht

Spain

University of Grenada

Sweden

Stockholm University

United Kingdom

Durham University

Kingston University

Leeds University

Liverpool University

University of Edinburgh

University of Newcastle

United States of America

Colorado School of Mines

Lehigh University

Princeton University

Brasilië

Federale Universiteit van Ouro Preto

China

Chinese Universiteit van Geowetenskappe

Denemarke

Geologiese Opname van Denemarke en Groenland

Duitsland

Aachen Universiteit van Tegnologie

Freiburg Universiteit

Memorial Universiteit

Universiteit van Hamburg

Finland

Universiteit van Helsinki

Frankryk

Universiteit van Blaise-Pascal, Clermont-Ferrand

Universiteit van Parys VII

Universiteit van Rennes

Universiteit van St Etienne

Ierland

Universiteitskollege van Dublin

Indië

Indiese Instituut van Tegnologie-Kharagpur

Universiteit van Rajasthan

Italië

Universiteit van Padova

Japan

Shizuoka Universiteit

Kanada

Universiteit van Ottawa

Nederland

Delft Universiteit van Tegnologie

Rijksuniversiteit Groningen

Universiteit van Utrecht

Spanje

Universiteit van Grenada

Swede

Universiteit van Stockholm

Verenigde Koninkryk

Kingston Universiteit

Leeds Universiteit

Liverpool Universiteit

Universiteit van Durham

Universiteit van Edinburgh

Universiteit van Newcastle

Verenigde State van Amerika

Colorado Skool van Mynbou

Lehigh Universiteit

Princeton Universiteit

SAF bied analitiese dienste



Die Sentrale Analitiese Fasiliteit (SAF) streef daarna om die beste moontlike ondersteuning vir navorsing en kapasiteitsbou in analitiese kundigheid te verskaf, nie by die Universiteit Stellenbosch (US) nie, maar ook in die Wes-Kaapse omgewing en nasionaal. Elke jaar lewer die SAF 'n bydrae tot die opleiding van etlike honderde nagraadse studente en genereer data wat nie net belangrik is vir die navorsing wat binne die SET-fakulteite (fakulteite gemoeid met wetenskap, ingenieurswese en tegnologie) aan die US gedoen word nie, maar ook data essensieel vir nywerhede en ander akademiese instellings.

Prof Gary Stevens, houer van die Suid-Afrikaanse Navorsingsleerstoel (SARChI) in Eksperimentele Petrologie in die Departement Aardwetenskappe, dien as die direkteur van die SAF.

Dit bestaan uit operasionele eenhede gebou om klusters toerusting. Dit word bestuur deur toegewyde analitiese wetenskaplikes wat aan gebruikers advies gee oor tersaaklike analitiese en monstervoorbereidingstegnieke, analyses uitvoer vir kliënte, gebruikers oplei om hulle eie analyses te kan doen en goeie instandhouding, kalibrering en werking van die toerusting verseker.

Die Omgewingslaboratorium ontleed grond, sediment, gesteentes, water en plantmateriaal vir omgewings-, ekologiese, geologiese en landboukundige ondersoeke.

Die Eenheid vir Massaspektrometrie doen kwantitatiewe en kwalitatiewe analise van organiese molekules met behulp van massaspektrometrie.

In die ICP-MS Laboratorium is instrumentasie beskikbaar vir onder meer anorganiese en spesiasie-analise van water, asook grond-, gesteente- en plantversamelings, asook U/Pb-datering van sirkone en monasiet deur laserablasie-ICP-MS gedoen word (sien bl 29).

Die Materiaalanaliselaboratorium onderneem eksperimente met betrekking tot enkelkristal- en poeier-X-straal-diffraksie vir struktuurtoelgting en fase-analise.

Die Fasiliteit vir DNS-Opeenvolgingsbepaling bied dienste aan met betrekking tot die volgordebepaling van DNS.

In die Beeldingseenheid is instrumentasie beskikbaar vir hoëresolusiebeelding en die identifisering van kenmerke deur SE/CL/bsd en EDS/WDS op 'n enkele monster deur skandering-elektronmikroskopie. Fluoresensiemikroskopie word gebruik om lokalisering/ko-lokalisering asook gemiddelde intensiteit van 'n molekule van belang te bepaal. Vloei-sitometrie voer multikleur-kwantifisering en sortering van sel- of deeltjiepopulasies uit.

Contact details | Kontakinligting

Tel 021 808 5862

Faks | Fax 021 808 5862

Epos | Email biochair@sun.ac.zaWeb www.sun.ac.za/biochem

The following staff members have NRF ratings:

- A – Prof Jannie Hofmeyr
systems biology and complexity studies
- B – Prof Jacky Snoep
systems biology
- C – Prof Dirk Bellstedt
molecular systematics and immunology
- C – Prof Ann Louw
steroid receptors
- C – Prof Johann Rohwer
systems biology
- C – Dr Amanda Swart
bioactivity of rooibos and honeybush
- C – Prof Pieter Swart
adrenal steroidogenesis, affinity separation and protein immobilisation
- P – Prof Erick Strauss
mechanistic enzymology and inhibitor development

RESEARCH INTERESTS

Antibiotics and membrane active peptides; bioactivity of rooibos and *Sutherlandia frutescens*; biocatalysis; computational and experimental systems biology; enzyme inhibitor development; malaria metabolism and antimalarial drugs; mechanistic enzymology; membrane affinity separation; natural products; ostrich pathology and vaccine development; plant molecular systematics; potato virus systematics and detection; steroid hormone biosynthesis; steroid receptors and binding proteins.

RESEARCH OUTPUTS

Articles in accredited journals	24
Editorial activities (books and journals)	5
Books, conference proceedings, chapters in books	3
MSc students graduated in 2010	4
PhD students graduated in 2010	3

RESEARCH HIGHLIGHTS

The standard of research in the Department of Biochemistry was enhanced through various visits, conferences and initiatives in which its staff members and students were involved.

Dr Donita Africander visited Prof Robin Shattock at the Centre for Infection and Immunity in the Division of Clinical Sciences at St George's, University of London (England) and started the groundwork for the development of collaborative investigations. She also presented a poster at the 14th International Congress on Hormonal Steroids and Hormones & Cancer in Edinburgh (Scotland).

Prof Dirk Bellstedt and his postdoctoral students, Dr Margaret de Villiers and Dr Mike Pirie, presented lectures at the 19th Association pour l'Etude Taxonomique de la Flore d'Afrique Tropicale (AETFAT) congress in Antananarivo (Madagascar) in April 2010. The Stellenbosch group also used this opportunity to collect plants for Prof Bellstedt's plant molecular systematic studies.

Dr Annelise Botes delivered an oral presentation at the 18th Congress of the International Organization for Mycoplasma in Chianciano Terme (Italy) in July 2010. She also visited Dr Joachim Spergser at the Institute of Bacteriology, Mycology and Hygiene at the University of Veterinary Sciences in Vienna (Austria).

Prof Ann Louw was invited to give a lecture entitled "HRT, Breast Cancer and Phytoestrogens" at the CANSA Women's Health Conference in Gauteng in September 2010.

Prof Marina Rautenbach and her PhD student, Mr Hans Eyéghé-Bickong gave lectures at the first International Conference on Antimicrobial Research in Valladolid (Spain) during November 2010. They also visited the Department of Inorganic and Analytical Chemistry at the University of Debrecen (Hungary) in August 2010 and November 2010 for training and research respectively, in advanced NMR analysis of cyclic antimicrobial peptides. In turn Prof Laszlo Szilagyi and Prof Katalin Kövér from the University of Debrecen and Prof Graham Jackson (University of Cape Town), in collaboration with the group of Prof Rautenbach, held a workshop on the NMR of cyclic peptides and complexes in December 2010 in Stellenbosch and Cape Town. Prof Rautenbach also gave an invited lecture in November 2010 at the Leibniz Institute of Molecular Pharmacology in Berlin (Germany), and also conducted a research visit to Dr Margitta Dathe as part of a South-African-Germany collaborative grant on cyclic antimicrobial peptides.

Prof Johann Rohwer delivered oral presentations at two national and two international conferences: the 22nd Conference of the South African Society of Biochemistry and Molecular Biology in Bloemfontein; the Cape Biotechnology Forum in Somerset West; the 14th Workshop of the International Study Group for Systems Biology in Vladimir (Russia); and the 10th International Conference on Systems Biology in Edinburgh (Scotland). Two of his doctoral students, Mr Danie Palm and Mr Justin Smith, also delivered oral presentations at the conference in Russia. As members of the international STRENDA Commission, whose brief it is to define Standards for Reporting Enzymology Data, Prof Rohwer and Prof Jannie Hofmeyr co-authored a position paper in *Nature Chemical Biology* outlining the standards, initiative and progress achieved to date.

Prof Erick Strauss and his PhD student, Mr Renier van der Westhuyzen, reported their discovery of the first known inhibitors of the enzyme Coenzyme A disulfide reductase,

NAVORSINGSFOKUSSE

Aar tappelvirus sistematiek en deteksie; antibiotika en membraan aktiewe peptiede; biowerking van rooibos en *Sutherlandia frutescens* ensiem-inhibitor-ontwikkeling; malaria metabolisme en antimalaria-middelnavorsing; molekulêre plantsistematiek; meganistiese ensiemologie; membraan-affiniteitsuiwering; natuurprodukte; rekenaarmatige en eksperimentele sisteembioogie; steroïedhormoon-biosintese, steroïed-reseptore en steroïedbindende proteïene; volstruis patologie en entstofontwikkeling.

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	24
Redaksionele aktiwiteite (boeke en joernale)	5
Boeke, konferensieverrigtinge, hoofstukke in boeke	3
MSc-studente gegradueer in 2010	4
PhD-studente gegradueer in 2010	3

NAVORSINGSHOOGTEPUNTE

Die standaard van navorsing in die Departement Biochemie is verhoog danksy talle besoeke, konferensies en inisiatiewe waarby personeellede en studente betrokke was gedurende die jaar.

Dr Donita Africander het besoek by Prof Robin Shattock van die Sentrum vir Infeksie en Immunitet in die Afdeling vir Kliniese Wetenskappe van St George's, Universiteit van Londen (Engeland) afgele. Tydens die besoek is die basis gelê vir toekomstige samewerking. Sy het ook 'n plakkaataanbieding gemaak by die 14de Internasionale Kongres oor Hormoonsteroïede en Hormone en Kanker in Edinburgh (Skotland).

Prof Dirk Bellstedt en sy nadoktorale studente, dr Margaret de Villiers en dr Mike Pirie, het voordragte gelewer by die 19de Association pour l'Etude Taxonomique de la Flore d'Afrique Tropicale (AETFAT) kongres in Antananarivo (Madagaskar) gedurende April 2010. Die span het ook van die geleentheid gebruik gemaak om plante te versamel vir prof Bellstedt se studies oor plant molekulêre sistematiek.

Dr Annelise Botes het 'n referaat gelewer by die 18de Kongres van die Internasionale Organisasie vir Mikoplasmologie in Chianciano Terme (Italië) in Julie 2010. Sy het terselfdertyd ook vir dr Joachim Spergser van die Instituut van Bakteriologie, Mikologie en Higienie by die Universiteit van Veerartsenykunde in Wene (Oostenryk) besoek.

Prof Ann Louw is genooi om 'n lesing aan te bied met die titel "HRT, Breast Cancer and Phytoestrogens" by KANSA se Konferensie oor Vrouegesondheid in Gauteng in September 2010.

Prof Marina Rautenbach en haar PhD-student, mnr Hans Eyéghé-Bickong, het lesings by die Eerste Internasionale Kongres oor Antimikrobiese Navorsing in Valladolid (Spanje) in November 2010 aangebied. Hulle het ook besoek afgele by die Departement van Anorganiese en Analitiese Chemie van die Universiteit van Debrecen (Hongarye) in Augustus 2010 en November 2010. Hier het hulle onderskeidelik opleiding ontvang en navorsing gedoen in die gevorderde KMR-analise van sikliese antimikrobiese peptiede. Prof Laszlo Szilagyi en prof Katalin Kövér van die Universiteit van Debrecen het op hul beurt ook besoek aan Stellenbosch gebring. Prof Graham Jackson van die Universiteit van Kaapstad het in samewerking met die navorsingsgroep van prof Rautenbach, 'n werkswinkel gehou oor die KMR van sikliese peptiede en komplekse. Dit is in Desember 2010 te Stellenbosch en Kaapstad gehou. Prof Rautenbach het ook 'n genooide lesing in November 2010 by die Leibniz Instituut van Molekulêre Farmakologie in Berlyn (Duitsland) aangebied, en ook 'n navorsingsbesoek aan dr Margitta Dathe as deel van 'n Suid-Afrikaanse-Duitse samewerkingsooreenkoms op sikliese antimikrobiese peptiede gebring.

Prof Johann Rohwer het mondelinge aanbiedings by twee nasionale en twee internasionale kongresse gemaak: die 22ste Kongres van die Suid-Afrikaanse Vereniging vir Biochemie en Molekulêre Biologie in Bloemfontein; die Kaapse Biotechnologie Forum in Somerset-Wes; die 14de Werkswinkel van die Studiegroep vir Sisteembioogie in Vladimir (Rusland); en die 10de Internasionale Konferensie oor Sisteembioogie in Edinburgh (Skotland). Twee van sy doktorale studente, mnr Danie Palm en mnr Justin Smith, het ook voordragte by die kongres in Rusland gelewer.

As lede van die internasionale STRENDA kommissie, wat die taak het om standarde rondom die rapportering van ensiemologiese data vas te stel, het prof Rohwer en prof

Personeel | Staff

Doserend

Prof P Swart (voorsitter)
Dr DJ Africander
Prof DU Bellstedt
Dr A Botes
Prof J-HS Hofmeyr
Prof A Louw
Prof M Rautenbach
Prof JM Rohwer
Prof JL Snoep
Prof E Strauss
Dr AC Swart

Buitengewone professore

Prof WCA Gelderblom

Ondersteuningspersoneel

W Maart (sekretaresse)
AP Arends
KD Botha
R Brandt
G Damonse
CA de Villiers
L du Toit
A Februarie
LL Foster
GD Gerstner
C Langeveldt
RP Louw
Dr MA Stander

Rock dating now possible at SU



Stellenbosch University (SU) boasts the first university facility in Africa where minerals such as zircon and monazite can be geochronologically dated at high spatial resolution on a commercial scale. This is a major bonus to local geologists in the academia and industry.

Until recently South African scientists have had to travel abroad, at significant cost, to undertake uranium/lead geochronology via ion microprobe or Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS) methods.

Geochronology is used to establish the absolute ages of the crystallisation of magmatic rocks such as granites, the formation of mountain belts such as the Alps, and the formation of mineral deposits. It is also used to fingerprint the sources of sediment that contribute to the development of sedimentary basins.

Because minerals such as zircon or monazite are very fine grained ($\ll 1\text{mm}$ in diameter) and contain domains within different ages, it is important to be able to target and date small portions of individual crystals.

At SU, the LA-ICP-MS facility is part of the SU Central Analytical Facility. Associate professor Dirk Frei, an expert in geochronology, heads up the facility that is based in the Department of Earth Sciences. The LA-ICP-method provides the ability to obtain age estimates based on the radioactive decay of isotopes of uranium and thorium to isotopes of lead from material excavated from very small holes drilled by a laser into mineral crystals.

It is expected that from June 2011, this capability will be greatly enhanced through the further purchase of a new instrument that will allow up to 600 age determinations to be made per day, each within a minute. This will be done in an automated fashion, with each age determined from a drill hole only 15-20 thousandths of millimetres wide and less than 10 thousandths of a millimetre deep. This will provide a geochronology capacity unmatched elsewhere in Africa, and comparable with only a couple of institutions overseas.

Prof Ian Buick, professor of metamorphic petrology in the Department of Earth Sciences, who did much of the initial work to set up the facility, says that the first international and domestic publications have already been seen.

"We are entering an exciting period where fundamental problems about the tectonic evolution of the African continent can be answered faster, easier and more cost-effectively," he says. "This will make SU a focus for geochronological research, both locally and internationally."

a potential target for antibacterial drug development, in one of the leading journals of the chemical sciences, the *Journal of the American Society*. Prof Strauss was also invited to present a lecture at the 5th International Congress on Biocatalysis 2010 (biocat2010) held at the Hamburg University of Technology in Hamburg (Germany) from 29 August to 2 September 2010.

Prof Pieter Swart attended the XIVth Adrenal Cortex Conference in San Diego, California (USA) in June 2010. He chaired a session at the 14th International Congress on Hormonal Steroids and Hormones and Cancer in Edinburgh (Scotland). Prof Swart also delivered two invited talks at the Medical College of Georgia in Augusta (USA).

Dr Amanda Swart also attended the XIVth Adrenal Cortex Conference in San Diego, California (USA) and presented her research on the 16α -hydroxylase activity of human cytochrome P450 17α -hydroxylase/17,20 lyase. She also gave an invited lecture at the Department of Physiology in the Medical College of Georgia, Augusta (USA).

ACADEMIC AFFAIRS

The Department of Biochemistry's postgraduate student numbers continue to show a steady increase from year to year. In 2010, a total of 21 Honours students, 27 MSc students, 22 PhD students and eight postdoctoral fellows were enrolled.

SERVICE TO THE SCIENTIFIC COMMUNITY

Prof Erick Strauss served as the Stellenbosch University representative on the steering committee of the South African Malaria Initiative.

Prof Ann Louw was chair of the Experimental Biology Group (EBG).

Prof Pieter Swart was a board member of the Chemical Incubator of the Eastern Cape (Cheminc) and was a member of the Angora Research Advisory Committee.

Prof Johann Rohwer was a member of the international Standards for Reporting Enzymology Data (STREND) Commission and served as an associate editor of *BMC Systems Biology*. He was also the secretary of the South African Society of Biochemistry and Molecular Biology (SASBMB). In turn, Dr Donita Africander was elected as the treasurer of SASBMB.

AWARDS TO STAFF AND STUDENTS

Dr Donita Africander was co-investigator on a grant with Prof Janet Hapgood (University of Cape Town) which was obtained from the South African HIV/AIDS Research (and Innovation) Platform. This initiative of the Department of Science and Technology (DST) is managed by LIFE/ab.

Prof Pieter Swart and Dr Amanda Swart both received Ernst Oppenheimer Fellowship Grants for sabbatical studies in the USA on adrenal steroidogenesis and natural products affecting steroid output from the adrenal gland.

Prof Erick Strauss's submission to the prestigious journal *Nature Chemical Biology's* "Grand Challenges" essay competition was one of the ten essays to be published in the December 2010 issue of the journal. The competition was held to commemorate the tenth anniversary of the *Nature Chemical Biology*. Except for one contribution from Australia, all the other winners were from the USA. Prof Strauss also received one of the ten grants awarded nationally under the auspices of the newly established SA-Italy bilateral research agreement. This grant will strengthen the collaboration between his research group and that of Dr Marco Moracci at the Institute of Protein Biochemistry (CNR) in Naples (Italy).

STAFF MATTERS

Dr Donita Africander was promoted from junior lecturer to lecturer with effect from 1 April 2010.

Prof Dirk Bellstedt was promoted to full professor with effect from 1 January 2010.

COMMUNITY INTERACTION

Dr Donita Africander gave a presentation to high school learners during the "Molecular Biology is Fun" Day which was hosted by the Genetics, Microbiology and Biochemistry departments of Stellenbosch University.

Prof Dirk Bellstedt held a nature conservation field outing with learners from the Riverlands Secondary School in the Malmesbury district.

Jannie Hofmeyr 'n belangrike publikasie in *Nature Chemical Biology* gepubliseer om hierdie inisiatief rondom standaardisering en die huidige vordering uit te stip.

Prof Erick Strauss en sy PhD-student, mnr Renier van der Westhuyzen, het verslag gedoen oor hulle ontdekking van die eerste bekende inhibitors van die ensiem koënsiem A disulfiedreduktase. Hierdie studie oor 'n moontlike teiken vir antibakteriële middelontwikkeling het in een van die belangrike joernale in die chemiese wetenskappe, die *Journal of the American Society* verskyn. Prof Strauss is ook genooi om 'n lesing by die 5de Internasionale Kongres oor Biokatalise 2010 (biocat2010) aan te bied. Dit is gehou by die Hamburg Universiteit van Tegnologie in Hamburg (Duitsland) van 29 Augustus tot 2 September 2010.

Prof Pieter Swart het die XIVde Adrenale Korteks Konferensie in San Diego, Kalifornië (VSA) in Junie 2010 bygewoon. Hy was 'n sessievoorsitter by die 14de Internasionale Kongres oor Hormonale Steroïede en Hormone en Kanker in Edinburgh (Skotland) in September 2010. Prof Swart het ook twee genooide voorlesings by die Mediese Kollege van Georgia in Augusta (VSA) gelewer.

Dr Amanda Swart het ook die XIVde Adrenale Korteks Konferensie bygewoon, waar sy 'n referaat gelewer het oor die 16 α -hidroksilase aktiwiteit van menslike sitochroom 450 17 α -hidroksilase/17,20 liase. Sy het ook 'n genooide lesing by die Departement van Fisiologie aan die Mediese Kollege van Georgia Augusta (VSA) gelewer.

AKADEMIESE SAKE

Die Departement Biochemie se nagraadse studentegetalle neem van jaar tot jaar bestendig toe. In 2010 was 'n totaal van 21 Honneursstudente, 27 MSc studente, 22 PhD studente en agt nadoktorale genote ingeskryf.

DIENS AAN DIE WETENSKAPLIKE GEMEENSAP

Prof Erick Strauss het as die verteenwoordiger van Universiteit Stellenbosch op die bestuurskomitee van die Suid-Afrikaanse Malaria Inisiatief gedien.

Prof Ann Louw het as voorsitter van die Eksperimentele Biologie Groep (EBG) opgetree.

Prof Pieter Swart het op die raad van die Chemiese Inkubator van die Oos-Kaap (Chemin) gedien en was ook 'n lid van die Adviesgroep oor Angoranavorsing.

Prof Johann Rohwer was 'n lid van die internasionale "Standards for Reporting Enzymology Data" (STREND) Kommissie. Hy het gedien as mede-uitgewer van *BMC Systems Biology*, en was die sekretaris van die Suid-Afrikaanse Vereniging van Biochemie en Molekulêre Biologie (SASBMB). Op haar beurt is dr Donita Africander verkies as SASBMB se nuwe tesourier.

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Dr Donita Africander was mede-ondersoeker van 'n navorsingstoekening saam met prof Janet Haggood (Universiteit van Kaapstad) wat verkry is van die Suid-Afrikaanse MIV/VIGS Navorsings- (en Innovasie) Platform. Hierdie inisiatief van die Departement van Wetenskap en Tegnologie (DWT) word deur LIFE*lab* bestuur.

Prof Pieter Swart en dr Amanda Swart kon albei danksy die toekennings van die Ernst Oppenheimer Genootskap Trust studieverlof in die VSA neem om adrenale steroïedogenese en natuurprodukte wat die steroïed-uitset van die bynier beïnvloed, te bestudeer.

Prof Erick Strauss se inskrywing in die invloedryke joernaal *Nature Chemical Biology* se "Grand Challenges" opstelkompetisie is gekies as een van die tien opstelle wat uiteindelik in die Desember 2010-uitgawe gepubliseer is. Die kompetisie is gehou ter herdenking van die tiende bestaan van die joernaal. Behalwe vir die bydrae van prof Strauss en 'n ander uit Australië, was al die ander wenners uit die VSA. Prof Strauss was ook die ontvanger van een van tien nasionale toekennings onder die vaandel van die nuutgestigte SA-Italië bilaterale navorsingsooreenkoms. Hierdie toekening sal die samewerking tussen prof Strauss se navorsingsgroep en dié van dr Marco Moracci van die Instituut van Proteïenbiochemie (CNR) in Naples (Italië) versterk.

PERSONEELSAKE

Dr Donita Africander is bevorder van junior lektor tot lektor vanaf 1 April 2010.

Prof Dirk Bellstedt is tot volle professor vanaf 1 Januarie 2010 bevorder.

Ouderdomsbepaling van gesteentes nou

Die Universiteit Stellenbosch (US) spog met die eerste universiteitsfasiliteit in Afrika waar die geochronologiese ouderdom van minerale soos sirkoon en monasiet op kommersiële skaal teen hoë ruimtelike resolusie bepaal kan word. Dit is 'n groot bonus vir plaaslike geoloë in die akademie sowel as die bedryf.

Deur geochronologie word die absolute ouderdomme van die kristallisatie van magmatiese gesteentes soos graniet, bergreeksformasies soos die Alpe, sowel as mineraalafsettings bepaal, en vasgestel waar sedimente vandaan kom wat sedimentêre komme help ontwikkel.

Aangesien minerale soos sirkoon en monasiet uiters fyn-korrelrig is (<<1 mm in deursnee) en uit domeine van verskillende ouderdomme bestaan, is dit belangrik om die ouderdom van klein afsonderlike gedeeltes van individuele kristalle te kan bepaal. Die metodes wat gewoonlik hiervoor gebruik word, is hetsy ioonmikrosondering of LA-ICP-MS (laser-ablasie inductief gekoppelde plasma-massaspektrometrie).

Tot onlangs moes Suid-Afrikaanse wetenskaplikes groot onkoste aangaan om oorsese instellings se geochronologiese toerusting te gebruik. Die US se eie LA-ICP-MS-geriewe is nou deel van die Sentrale Analitiese Fasiliteit. Dit word bestuur deur medeprofessor Dirk Frei, 'n kenner van geochronologie in die Departement Aardwetenskappe.

Met die LA-ICP-MS-metode bestudeer geoloë materiaal aan die hand van die radioaktiewe verval van uraan- en torium-isotope tot lood-isotope om die geraamde ouderdomme van gesteentes te bepaal.



Hierdie fasiliteit word van Junie 2011 versterk deur nóg 'n instrument waarmee tot 600 geoutomatiseerde ouderdomsbepalings per dag binne minder as 'n minuut elk gedoen kan word.



Elke ouderdom sal uit 'n boorgatjie van slegs 15 tot 20 duisendstes van 'n millimeter breed en minder as 10 duisendstes van 'n millimeter diep bepaal word. Hierdie vermoë sal enig in sy soort wees in Afrika en is net by 'n paar instellings oorsee beskikbaar.

Volgens prof Ian Buick, professor in Metamorfiese Petrologie in die Departement Aardwetenskappe, het die eerste internasionale en plaaslike publikasies reeds die lig gesien.

"Ons staan aan die vooraand van 'n opwindende tydperk waarin grondliggende vrae oor die tektoniese evolusie van die Afrikavasteland vinniger, makliker en meer bekostigbaar beantwoord sal kan word," sê hy. "Veral ons nuwe instrument sal die US plaaslik en internasionaal 'n spilpunt vir geochronologiese navorsing maak."

Prof Jannie Hofmeyr is a regular participant in the RSG radio programme *Hoe verklaar jy dit?* In turn, Prof Ann Louw gave several interviews on her research on honeybush tea and phytoestrogenic activity on various national radio programmes.

Prof Marina Rautenbach gave a talk entitled "The ancient hunter's curse: Our adrenalin addiction" to the Somerset West Rotary Club to showcase the role of biochemistry in our everyday lives.

FUNDING

BBI-enzymes
Cancer Association of South Africa (CANSA)
Ernst Oppenheimer Fellowship Trust Fund
German/South African Bilateral Fund
Hungarian/South African Bilateral Fund
Klein Karoo Group
Medical Research Council (MRC)
Mohair South Africa
National Research Foundation (NRF)
Potatoes South Africa
Research Solutions
South African HIV/AIDS Research (& Innovation) Platform
South African Malaria Initiative
South African Rooibos Council
SurePure
Stellenbosch University (SU)
THRIP
Water Research Commission (WRC)

COLLABORATION

SOUTH AFRICA

BBI-enzymes
CSIR Biosciences
Diasorin
Elsenburg Agricultural College
Grootfontein Agricultural Development Institute
Klein Karoo Group
Mohair South Africa
Post Harvest & Wine Technology Division, ARC Infruitec-Nietvoorbij
Potatoes South Africa
Research Solutions
Rhodes Food Group
SAB-Miller
South African Sugarcane Research Institute (SASRI)
SurePure
University of Cape Town (UCT)
University of KwaZulu-Natal (UKZN)
University of the North West (UNW)
University of Pretoria (UP)
University of Western Cape (UWC)
University of the Witwatersrand

AFRICA

National Museums of Kenya

INTERNATIONAL

Australia

Australian National University
La Trobe University

Germany

Leibniz Institute of Molecular Pharmacology
Max Planck Institute of Molecular Plant Physiology

Hungary

University of Debrecen

Spain

Universitat Autònoma de Barcelona

Switzerland

University of Zürich

United Kingdom

Edinburgh University
Royal Botanical Gardens Edinburgh

United States of America

Medical College of Georgia
University of Wisconsin

GEMEENSKAPSINTERAKSIE

Dr Donita Africander het 'n voordrag gelewer aan hoërskoolleerders tydens die "Molekulêre Biologie is Pret" Dag wat deur die Departemente van Genetika, Mikrobiologie en Biochemie van die Universiteit Stellenbosch aangebied is.

Prof Dirk Bellstedt het 'n natuurbewaringsvelduitstap saam met leerders van die Riverlands Sekondêre Skool in die Malmesbury-distrik onderneem.

Prof Jannie Hofmeyr is 'n gereelde deelnemer aan die RSG radioprogram *Hoe verklaar jy dit?* Op haar beurt het prof Ann Louw 'n reeks radio-onderhoude oor haar navorsing op heuningbostee en fito-estrogeniese aktiwiteit gevoer op verskeie nasionale programme.

Prof Marina Rautenbach het 'n voordrag met die titel "The ancient hunter's curse: Our adrenalin addiction" gelewer aan die Somerset-Wes Rotariërklub om die belang van biochemie in ons alledaagse lewe uit te beeld.

SAMEWERKING

SUID-AFRIKA

Aartappels Suid-Afrika
Afdeling vir Na-Oes & Wyntegnologie, LNR Infruitec-Nietvoorbij
BBI-enzymes
Diasorin
Elsenburg Landboukollege
Grootfontein Landbouontwikkelingsinstituut
Klein Karoo Groep
Noordwes Universiteit (NWU)
Research Solutions
Rhodes Food Group
SAB-Miller
Suid-Afrikaanse Suikerriet Navorsingsinstituut
SurePure
Sybokhaar Suid-Afrika
Universiteit van Kaapstad (UK)
Universiteit van KwaZulu-Natal (UKZN)
Universiteit van Pretoria (UP)
Universiteit van Wes-Kaapland (UWK)
Universiteit van die Witwatersrand
WNNR Biosciences

AFRIKA

Nasionale Musea van Kenia

INTERNASIONAAL

Australië

Australiese Nasionale Universiteit
La Trobe Universiteit

Duitsland

Leibniz Instituut vir Molekulêre Farmakologie
Max Planck Instituut vir Molekulêre Plantfisiologie

Hongarye

Universiteit van Debrecen

Spanje

Universitat Autònoma de Barcelona

Switserland

Universiteit van Zürich

Verenigde Koninkryk

Edinburgh Universiteit
Koninklike Botaniese Tuine Edinburgh

Verenigde State van Amerika

Mediese Kollege van Georgia
Universiteit van Wisconsin

BEFONDSING

Aartappels Suid-Afrika
BBI-enzymes
Duits/Suid-Afrikaanse Bilaterale Fonds
Ernst Oppenheimer Genootskap Trustfonds
Hongaars/Suid-Afrikaanse Bilaterale Fonds
Kankervereniging van Suid-Afrika (CANSA)
Klein Karoo Groep
Mediese Navorsingsraad (MNR)
Nasionale Navorsingstigting (NNS)
Research Solutions
Suid-Afrikaanse MIV/vigs Navorsing (en Innovasie) Platform
Suid-Afrikaanse Malaria Inisiatief
Suid-Afrikaanse Rooibosraad
SurePure
Sybokhaar Suid-Afrika
THRIP
Universiteit Stellenbosch (US)
Waternavorsingskommissie (WNK)

Contact details | Kontakinligting

Tel 021 808 3020

Faks | Fax 021 808 3342

Epos | Email hodchemie@sun.ac.zaWeb www.sun.ac.za/chemistry

The following staff members have NRF ratings:

- A – Prof Len Barbour
functional nanostructured materials
- A – Prof Bert Klumperman
living radical polymerization and advanced macromolecular architectures
- B – Prof Ben Burger
chemical communication in living organisms
- B – Prof Klaus Koch
platinum group metals
- B – Prof David McLachlan
electrical and magnetic properties of composites
- B – Prof Harald Pasch
analytical polymer science, multidimensional chromatography
- B – Prof Helgard Raubenheimer
ligand design aimed at applications in homogeneous catalysis: gold chemistry
- C – Prof Jan Dillen
computational chemistry: applications and development
- C – Prof Ed Jacobs
membrane and process development
- C – Dr Robbie Luckay
ligand design for metal ion coordination in industrial and medical applications
- C – Prof Selwyn Mapolie
homogeneous catalysis via dendrimeric complexes
- C – Prof Ron Sanderson
polymeric materials
- C – Prof Albert van Reenen
polyolefins
- P – Dr James McLeary
environmentally friendly polymers for coatings applications
- Y – Dr Gareth Arnott
inherently chiral calixarenes and asymmetric methodology
- Y – Dr Delia Haynes
crystal engineering of non-metal containing materials
- Y – Prof Willem van Otterlo
organic synthesis and medicinal chemistry

RESEARCH INTERESTS

Synthetic methodology directed towards useful new compounds and materials (catalysts, polymers, other supramolecular frameworks with application potential, membranes and biologically active compounds); separation technology and advanced analysis (GC-MS, HPLC-MS, GPC, electroanalysis, NMR, polymer separation, AFM, ICP-MS, CRYSTAF and X-ray diffraction); modelling of molecular structure; platinum metals chemistry research in the context of refining and purification.

RESEARCH OUTPUTS

Articles in accredited journals	66
Articles in non-accredited journals	7
Books, conference proceedings, chapters in books	3
Research reports	1
MSc students graduated in 2010	11
PhD students graduated in 2010	12

RESEARCH HIGHLIGHTS

Through its various endeavours, the Department of Chemistry and Polymer Science aims to take a leading position in teaching and research on the African continent.

Several staff members and students contributed to international conferences.

Prof Klaus Koch was an invited keynote speaker at the 39th International Coordination Chemistry Conference (ICCC) in Australia, where he also attended the executive planning committee of the ICCC where plans for future conferences in this series were discussed. He was invited to present a lecture at the joint Euromar 2010 and 17th ISMAR Worldwide Magnetic Resonance Conference (Italy), as well as a keynote lecture at Analitika 2010.

Prof Harald Pasch was invited plenary speaker at Analitika 2010, which was held in Stellenbosch. He was also an invited speaker together with Prof Peter Mallon at the 3rd International Conference on Polyolefin Characterization in Shanghai (China).

Dr Delia Haynes was invited to submit a paper in the *New Talent* issue of *CrystEngComm*, which was co-authored by Mr James Odendal, Ms Jocelyn Bruce and Prof Klaus Koch - a pleasing result from collaboration within the Department.

The Department hosted several international visitors, the highlight of which was a visit by Prof Richard Ernst, the 1991 Nobel Laureate in Chemistry for his invention of Fourier Transform Nuclear Magnetic Resonance (FT-NMR). Prof Ernst gave an inspirational lecture titled "NMR and its Noble Glory" to staff and students. The audience also included several local school teachers and learners.

Other important visitors to the Department who collaborate with staff members and presented seminars include Prof Rudi van Eldik of the University of Erlangen-Nürnberg (Germany), Prof Ebbe Nordlander of the University of Lund (Sweden), Prof Arup Sengupta of Lehigh University, (USA), Prof Valerio Causin of the University of Padua (Italy), Prof Hans-Joachim Knölker of Dresden University of Technology (Germany), Prof Timothy Egan of the University of Cape Town (UCT), Prof Heinrich Lang of Chemnitz University of Technology (Germany), and Prof Bruce Gates of the University of California (USA).

The National Research Foundation (NRF) awarded new ratings to staff members Prof Harald Pasch (B1) and Dr Gareth Arnott (Y2), while Prof Len Barbour was re-rated (A2) together with Emeritus Professor David McLachlan (B2). The research chair of Prof Bert Klumperman, which is part of the South African Research Chair Initiative Programme (SARChI), was extended for another term of five years.

In the Polymer Science section, a substantial investment of R3 million was made under direction of Prof Harald Pasch in a unique high-temperature 2D-HPLC laboratory for the analysis of polymers. This will be the only facility of its kind on the African continent.

The comprehensive renovation of laboratory and other physical facilities of the Polymer Science section at a cost of ca R25 million was completed in December. This significant investment by the University will certainly contribute to positioning the Department of Chemistry and Polymer Science as a leading teaching and research organization on the African continent. The Polymer Science division is the only one of its kind in South Africa and enjoys a significant international reputation.

NAVORSINGSFOKUSSE

Sintetiese metodologie gemik op bruikbare nuwe verbindings en materiale (katalisatore, polimere, ander supramolekulêre netwerke met toepassingspotensiaal, membrane en biologies-aktiewe verbindings); skeidingstechnologie en gevorderde analise (GC-MS, HDVC-MS, GPC, elektroanalise, KMR, polimeerskeidings, atoomkragmikroskopies, IGP-MS, CRYSTAF en diffraksietegniese); chemiese struktuurmodellering; platinummetaalchemie navorsing in die konteks van affinerings en suiwerings.

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	66
Artikels in nie-geakkrediteerde tydskrifte	7
Boeke, konferensieverrigtinge, hoofstukke in boeke	3
Navorsingsverslae	1
MSc-studente gradueer in 2010	11
PhD-studente gradueer in 2010	12

NAVORSINGSHOOGTEPUNTE

Die Departement Chemie en Polimeerwetenskap poog deur sy verskillende aktiwiteite om 'n leidende rol te speel in opleiding en navorsing in Afrika.

Verskeie personeellede en studente het bydraes tot internasionale konferensies gelewer.

Prof Klaus Koch het as hoofspreekster by die 39ste Internasionale Koördinasie Chemie Konferensie (ICCC) in Australië opgetree, waar hy ook betrokke was by die ICCC uitvoerende beplanningskomitee wat toekomstige konferensies in hierdie reeks beplan. Hy is genooi om 'n lesing aan te bied by die gesamentlike Euromar 2010 en 17de ISMAR Wêreldwye Magnetiese Resonansie Konferensie (Italië), en het ook 'n toonaangewende lesing by Analitika 2010 op Stellenbosch aangebied.

Prof Harald Pasch was 'n genooide hoofspreekster by Analitika 2010, en saam met prof Peter Mallon, by die 3de Internasionale Konferensie oor Poliolefin Karakterisering in Shanghai (China).

Dr Delia Haynes is genooi om 'n artikel te publiseer in die *New Talent* uitgawe van *CrystEngComm*, met mede-outeurs mnr James Odendal, me Jocelyn Bruce en prof Klaus Koch - die bevredigende resultaat van samewerking binne die Departement.

Die Departement was gasheer vir verskeie internasionale besoekers. Die hoogtepunt was die besoek deur prof Richard Ernst, wat in 1991 die Nobelprys vir Chemie ontvang het vir sy uitvinding van Fourier Transformasie Kernmagnetiese Resonansie (FT-KMR). Prof Ernst het 'n inspirerende lesing, getiteld "NMR and its Noble Glory", vir personeellede, studente, asook leerkragte en leerders van plaaslike skole aangebied.

Ander belangrike besoekers en medewerkers wat seminare aangebied het, sluit in prof Rudi van Eldik van die Universiteit van Erlangen-Nürnberg (Duitsland), prof Ebbe Nordlander van die Universiteit van Lund (Swede), prof Arub Sengupta van die Lehigh Universiteit (VSA), prof Valerio Causin van die Universiteit van Padua (Italië), prof Hans-Joachim Knölker van die Dresden Universiteit van Tegnologie (Duitsland), prof Timothy Egan van die Universiteit van Kaapstad, prof Heinrich Lang van Chemnitz Universiteit van Tegnologie (Duitsland), en prof Bruce Gates van die Universiteit van Kalifornië (VSA).

Nuwe evaluering is deur die Nasionale Navorsingstigting (NNS) aan personeellede prof Harald Pasch (B1) en dr Gareth Arnott (Y2) toegeken, terwyl prof Len Barbour (A2) herevalueer is tesame met emeritus-prof David McLachlan (B2). Die SARChI-leerstoel van prof Bert Klumperman, wat deel is van die Suid-Afrikaanse Navorsingsleerstoelinisiatief Program (SARChI), is vir 'n verdere vyfjaar termyn verleng.

In die afdeling Polimeerwetenskap is daar onder leiding van prof Harald Pasch 'n aansienlike investering van R3 miljoen gedoen in die vestiging van 'n unieke hoë-temperatuur 2D-HPLC laboratorium vir die analise van polimere. Hierdie fasiliteit sal enig in sy soort in Afrika wees.

Die omvattende vernouing van die laboratoria en ander fisiese fasiliteite van die afdeling Polimeerwetenskap, teen 'n koste van bykans R25 miljoen, is teen Desember 2010 voltooi. Hierdie aansienlike belegging deur die Universiteit sal beslis bydra om die

Personeel | Staff

Doserend

Prof KR Koch (uitvoerende hoof)
 Dr GE Arnott
 Prof LJ Barbour
 Dr MAL Blackie
 Dr L Cronje
 Dr AJ de Villiers
 Dr K De Villiers-Chen
 Prof JLM Dillen
 Dr C Esterhuysen
 Dr WJ Gerber
 A Gericke
 Dr DA Haynes
 Prof EP Jacobs
 Prof L Klumperman
 Dr T le Roex
 Dr M le Roux
 Dr RC Luckay
 Dr M Lutz
 Prof PE Mallon
 Prof SF Mapolie
 Dr N Mautjana
 Prof H Pasch
 Prof WAL van Otterlo
 Prof AJ van Reenen
 Dr PFM Verhoeven

Buitengewone professore

Prof W Hiller
 Prof WM Mackenroth
 Prof PJF Sandra

Buitengewone navorser

Dr JB McLeary

Emeritus professore

Emeritus Prof BV Burger
 Emeritus Prof PS Steyn
 Emeritus Prof HG Raubenheimer
 Emeritus Prof R Sanderson

Ondersteuningspersoneel

JG Goldie (departementele bestuurder)
 JE Joubert
 SG May
 D Williams
 Dr MJ Hurndall
 MMG Cooper
 AE Fourie (almal sekretaresse/administrasie)
 WJ Adonis
 PJ Allen
 LD Bailey
 M Bickerstaff
 DS Christians
 MC de Jongh
 JD Groenewald
 Dr GW Harding
 DJ Koen
 R Lawrence
 CW Maart
 EP Malherbe
 MG Marupula
 S Mohamed
 JS Motshweni
 J Smit
 A van Zaal
 U Wanza
 E Ward
 GR Willemse

Polymer Science Building receives facelift

The Polymer Science Building on the campus of Stellenbosch University has received a much-needed facelift thanks to upgrades, extensions and renovations to the tune of R25 million.

The building has housed the Division of Polymer Science of the Department of Chemistry and Polymer Science since the early 1970s, and has over the years had to cope with the increasing demand for postgraduate students and research being done in the field.

The 13-month building project was funded by Stellenbosch University, with financial support being received from the South African Department of Higher Education. It was coordinated by the SU Facilities Management division.

Two extensions were added to the building to include bigger chemical store rooms, more office space for students, a recreational area and new laboratory space for the Plascon Freeworld Research Group.

The gas, electricity and water supply networks, as well as the air-conditioning and ventilation systems received an overhaul, while all laboratories were refurbished and new fume hoods were installed.

During the planning process, work space was allocated for 65 postgraduate students in total. At the moment the building houses six academics and their research teams, which include more than 35 postgraduate students from honours to postdoctoral level.

This means that SU is well-prepared for any future growth and developments in polymer science in the next decade.

A new seminar room was named after Prof Ron Sanderson, who for many years was the driving force behind polymer science education and research at the University. SU is still the only South African institution to offer a comprehensive teaching programme in polymer science from BSc Hons to PhD level.

Hot topics of research being done by SU polymer scientists include the development of novel polymers for medical applications, the use of polymers in nanotechnology, smart nanofibres, multidimensional analytical techniques and polyolefin structure-property correlations.

The Platinum Group Metals Chemistry research group acquired a new *Spectro-ARCOS* inductively-coupled plasma optical emission spectrometer (ICP-OES) at a cost of R750 000. It enables advances in chemical speciation and fundamental analytical chemistry research of the precious metals. This system is already contributing to exciting new research areas in the chemistry of the platinum group metals.

The year 2010 also marked the 10th anniversary of the existence of this research group, which was established in 2000 when Prof Klaus Koch joined Stellenbosch University. This group is largely supported by the economically important platinum metals industry in South Africa.

ACADEMIC AFFAIRS

Following earlier initiatives in 2009, the Department continued with a planned comprehensive curriculum review at undergraduate and BSc(Hons) level. The focus was on the first year courses, which have large student numbers. A workshop on the review of first year practical sessions was held and some of the decisions have been implemented in the current academic year. This process is to be continued and expanded to also include second and third year BSc courses as well as BSc(Hons) in the current and following years.

Dr Margaret Blackie successfully carried out a comprehensive curriculum revision of the important Chemistry 111 course offered to first year medical students. The review, which was long overdue, has been implemented in the current academic year. We appreciate this huge task and she is to be commended for her effort in this regard.

The Department introduced a revised policy for the assessment of MSc degrees in Chemistry and Polymer Science to maintain the highest possible academic standard, comparable with international benchmarks. This includes a compulsory formal open MSc presentation to the Department and invited persons, which is assessed as the oral presentation counts toward the final mark achieved by the candidate.

SERVICE TO THE SCIENTIFIC COMMUNITY

Dr André de Villiers acted as chair of the scientific committee responsible for the successful hosting of *Analitika 2010*, an international symposium held in Stellenbosch. He was assisted by Prof Ben Burger. Dr de Villiers is also a board member of ChromSA (Western Cape).

Dr Catherine Esterhuysen is vice-chair of the South African branch of the International Union of Crystallography, and co-editor of the journal *Acta Crystallographica E*.

Prof Harald Pasch serves as editor on the editorial board of the *Springer Laboratory series in Polymer Analysis*, and as member of the board of the *IUPAC Journal in Polymer Analysis and Characterization*. He also holds a UNESCO Chair in Polymer Characterization at the University of Technology in Darmstadt (Germany).

By end 2010 Prof Klaus Koch completed his three year term of service on the Chemistry Specialist Committee of the NRF scientific ratings process. He continues to serve on the executive planning committee of the International Coordination Chemistry Conferences (ICCC) as South Africa's representative.

Many staff participate as reviewers in numerous international specialist journals, too many to list here.

AWARDS TO STAFF AND STUDENTS

Several members of staff were honoured with Stellenbosch University (SU) Rector's Awards for Excellence in Research. They are Prof Selwyn Mapolie, Prof Klaus Koch, Dr André de Villiers and Dr Robbie Luckay. Dr Tanya le Roex and Dr Catherine Esterhuysen received SU Rector's Awards for Excellence in Teaching, while Mrs Erinda Cooper, Mrs Ursula Wanza, Mr Eric Ward, Mr Shafiek Mohamed, Mr William Adonis and Mr Calvin Maart received SU Rector's Awards for Service Excellence.

Mr Glen de Jongh received his 25 year long-service award from Stellenbosch University.

Several students of the Department were recipients of accolades. Ms Anneli Kleyn, an MSc student under supervision of Prof Len Barbour, won one of the prizes for the best poster presentations at the ACS Pacificchem Conference in Hawaii. Only 43 winners were picked from the 5900 posters presented from across the world. Her work was also highlighted in *Chemical and Engineering News* (CEN) - a tremendous achievement.

Mr Gareth Bayley, a doctoral student in polymer science, won the Carl Klason prize for

Departement Chemie en Polimeerwetenskap te posisioneer as 'n leidende onderrig- en navorsingsinstansie op die vasteland van Afrika. Die Polimeerwetenskap-afdeling is enig in sy soort in Suid-Afrika en geniet aansienlike internasionale erkenning.

Die Platinumgroepmetaalchemie Navorsingsgroep het 'n nuwe *Spectro-ARCOS* induktief-gekoppelde plasma-optiese emissiespektrometer (IGP-OES) teen 'n koste van R750 000 bekom. Dit sal ontwikkeling in chemiese spesiasie en fundamentele analitiese chemiese navorsing op edelmetale bevorder. Hierdie sisteem dra reeds by tot opwindende nuwe navorsingsmoontlikhede in die chemie van die platinumgroepmetale.

Die Platinumgroepmetaalchemie Navorsingsgroep het in 2010 sy 10de herdenking aan die Universiteit Stellenbosch gevier. Dit het in 2000 tot stand gekom met die aanstelling van prof Klaus Koch, en word grootliks ondersteun deur Suid-Afrika se ekonomies belangrike platinummetaalindustrie.

AKADEMIESE SAKE

Die Departement Chemie en Polimeerwetenskap het voortgegaan met vroeëre inisiatiewe wat reeds in 2009 begin is om die kurrikulums van die voorgraadse en BSc (Hons)-programme omvattend te hersien. Die fokus was op die eerstejaarkursusse met hul groot studentegedagte. 'n Werkswinkel in verband met die eerste hersiening van eerstejaarpraktika is gehou en sommige van die besluite is reeds in die huidige akademiese jaar geïmplementeer. Hierdie proses word voortgesit en uitgebrei om tweede- en derdejaar BSc-kursusse en BSc(Hons) in die huidige en daaropvolgende jare in te sluit.

Dr Margaret Blackie het 'n geslaagde omvattende kurrikulumhersiening van die belangrike Chemie 111-kursus vir eerstejaar mediese studente uitgevoer, wat in die huidige akademiese jaar geïmplementeer is. Dit was 'n groot taak en sy verdien vermelding vir haar bydrae in hierdie verband.

'n Hersiene beleid vir die assessering van MSc-grade in die Departement Chemie en Polimeerwetenskap is ingevoer ten einde die hoogste moontlike akademiese standaard, vergelykbaar met internasionale standaarde, te verseker. Dit sluit 'n verpligte formele MSc mondelinge aanbieding voor die Departement en genooide persone in, wat geassesseer word en waarvan die punt bydra tot die finale punt wat deur die student behaal word.

DIENS AAN DIE WETENSKAPLIKE GEMEENSAP

Dr André de Villiers het as voorsitter van die Wetenskaplike Komitee opgetree wat verantwoordelik was vir die suksesvolle aanbieding van Analitika 2010, 'n internasionale simposium wat op Stellenbosch gehou is. Hy is bygestaan deur prof Ben Burger. Dr De Villiers is ook 'n bestuurslid van ChromSA (Wes-Kaap).

Dr Catherine Esterhuysen is vise-voorsitter van die Suid-Afrikaanse tak van die Internasionale Kristallografie Unie en mederedakteur van die joernaal *Acta Crystallographica E*.

Prof Harald Pasch dien as redakteur van die *Springer Laboratory series in Polymer Analysis* en as lid van die redaksie van die *IUPAC Journal in Polymer Analysis and Characterization*. Hy is ook die houer van 'n UNESCO-leerstool in Polimeer karakterisering aan die Universiteit van Tegnologie in Darmstadt (Duitsland).

Teen die einde van 2010 het prof Klaus Koch sy dienstermyn van drie jaar op die Chemie Spesialiskomitee van die NNS se wetenskaplike evalueringproses voltooi. Hy dien steeds op die uitvoerende beplanningskomitee van die Internasionale Koördineringschemie Konferensies (ICCC) as die Suid-Afrikaanse verteenwoordiger.

Verskeie personeellede dien as resensente vir 'n groot aantal internasionale spesialisjournale - te veel om hier op te noem.

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Verskeie personeellede is vereer deur die ontvangs van die Universiteit Stellenbosch Rektorstoekennings vir Voortreflike Navorsing. Hulle is prof Klaus Koch, prof Selwyn Mapolie, dr André de Villiers en dr Robbie Luckay. US Rektorstoekennings vir Voortreflike Onderrig is aan dr Tanya le Roex en dr Catherine Esterhuysen toegeken, terwyl US Rektorstoekennings vir Voortreflike Dienslewering aan mev Erinda Cooper, mev Ursula Wanza, mnr Eric Ward, mnr Shafiek Mohamed, mnr William Adonis en mnr Calvin Maart gegaan het.

Mnr Glen de Jongh het sy 25-jaar langdienstoekening van die Universiteit Stellenbosch ontvang.

Polimeerwetenskap-gebou kry nuwe baadjie



Die Polimeerwetenskap-gebou op die kampus van die Universiteit Stellenbosch (US) het gedurende 2010 'n broodnodige vernouing ondergaan danksy verbeterings, uitbreidings en opknapping ter waarde van R25 miljoen.

Die gebou huisves sedert die vroeë 1970's die Afdeling Polimeerwetenskap van die Departement Chemie en Polimeerwetenskap, en moes oor die jare heen die toenemende aanvraag vir nagraadse studente en navorsing op hierdie gebied hanteer.

Die bouprojek van 13 maande is moontlik gemaak deur befondsing van die US, met finansiële ondersteuning deur die Suid-Afrikaanse Departement van Hoër Onderwys. Die projek is deur die US se Afdeling Fasiliteitsbestuur gekoördineer.

Twee nuwe aanbouings verseker onder andere groter chemiese stoorkamers, meer kantoorkamers vir studente, 'n ontspanningsarea en nuwe laboratoriumruimte vir die Plascon Freeworld Navorsingsgroep.

Die gas-, elektrisiteits- en watervoorsieningsnetwerke asook die lugreëling en ventilasiesistels is opgeknap, terwyl laboratoria verbeter en nuwe dampkaste ook geïnstalleer is.

Tydens die beplanningsproses is werkrumte vir 'n totaal van 65 nagraadse studente beskikbaar gemaak. Die gebou huisves tans ses akademiese en hul navorsings-groepe, wat 35 nagraadse studente van honneurs- tot nadoktorale vlak insluit. Die ekstra spasie beteken dat die US voorbereid is op enige groei en ontwikkeling in polimeerwetenskap in die volgende dekade.

'n Nuwe seminaarkamer is vernoem na prof Ron Sanderson, wat jare lank die dryfkrag agter polimeerwetenskap-onderrig en -navorsing aan die US was. Die US is steeds die enigste Suid-Afrikaanse instelling wat 'n omvattende onderrigprogram in polimeerwetenskap vanaf BSc Hons- tot PhD-vlak bied.

Opwindende onderwerpe vir navorsing wat deur US polimeerwetenskaplikes uitgevoer word, sluit die ontwikkeling van nuwe polimere vir mediese toepassings, die gebruik van polimere in nanotegnologie, slim nanovesels, multidimensionele analitiese tegnieke en poliolefinstruktureienskap-korrelasies in.

New spectrometer boosts research into platinum group metals



The Platinum Group Metals (PGM) Research Group in the Department of Chemistry and Polymer Science acquired a new Spectro-ARCOS inductively-coupled plasma optical emission spectrometer (ICP-OES) in 2010 to support the PGM research being done at Stellenbosch University over the last decade.

The funding of R750 000 was made available by Stellenbosch University and through research funding provided by Prof Klaus Koch.

According to Prof Koch, who is head of the Department of Chemistry and Polymer Science and also heads up the PGM Research Group, this bench-top instrument makes on-demand and online analysis of various metals in aqueous and organic media possible.

"It can be used for our research into platinum group metals as well as gold and other transition metals," he explains.

The equipment will not only be used for postgraduate research purposes, but will also provide practical experience in modern atomic spectroscopy for the third year and BSc(Hons) teaching programmes of Analytical Chemistry.

This system is already contributing to exciting new research areas in the chemistry of the platinum group metals. Especially the relatively low wavelength (<200 nm) detection capabilities of the Paschen-Runge mount optic assembly makes simultaneous detection of halogens and heavy metals possible, opening new avenues in PGM metal complex ion speciation.

the best oral paper presented by a student at the World Forum on Advanced Materials (POLYCHAR18) in Siegen (Germany).

Mr Simon Herbert, a doctoral student in organic chemistry, received the Young Chemist Award at the 11th Frank Warren Conference in Pietermaritzburg. The event covers all branches of organic chemistry and is held by the South African Chemical Institute. Simon's research project, under supervision of Dr Gareth Arnott, focuses on creating asymmetrical bowl-shaped molecules called calixarenes. He is one of about 30 South Africans to receive a prestigious scholarship from the Commonwealth Scholarship Commission and is currently studying at the University of Manchester (UK).

Ms Ilne Grobelaar and Ms Helen Wahl, who obtained their BSc(Hons) *cum laude*, were both awarded Academic Colours with bursaries by Stellenbosch University for their outstanding achievement. They are currently continuing their studies for MSc degrees.

Mr James Odendal, a PhD student in the Platinum Metals Group (PMG) Chemistry research group, was one of twelve students from across the globe selected for a talent recruitment grant by the German chemical giant BASF for a weeklong visit to Ludwigshaven in Germany. Mr Pieter Murray, a final year PhD student in the PGM Chemistry research group, obtained a three month DAAD fellowship to carry out research with Prof Rudi van Eldik at the University of Erlangen-Nürnberg (Germany). PhD student Ms Storm Potts spent three months at Cambridge University working with Dr Jeremy Rawson and Dr Gareth Lloyd.

Other pleasing awards were made in 2010 to students who had excelled the previous year: Mr Sean Robinson was awarded the Merck medal and prize as the top BSc Chemistry student, while Ms Corli Joubert received the Element Six (DST/NRF Centre of Excellence) award for the best BSc finalist in Chemistry with polymer science subjects. The SMM award for the best BSc(Hons) student in Chemistry was made to Ms Ilne Grobler, while Mr Paul Reader received the AMS Laboratory Technologies award as well as an Element Six (DST/NRF Centre of Excellence) award for the best BSc(Hons) student in Polymer Science. The Mattie Jooste prize for best MSc students in Textile Science was jointly awarded to Mr Haydn Kriel and Ms Ilana Malherbe.

STAFF MATTERS

In 2010 several new staff appointments were made, through which our staff plan was completed to strategically place the Department of Chemistry and Polymer Science in a position to achieve a leading position of teaching and research on the African continent.

Prof Willem van Otterlo was appointed as professor of organic chemistry, Dr Alpheus Mautjana as senior lecturer in analytical chemistry, Dr Willem Gerber as lecturer in physical-analytical chemistry, Dr Margaret Blackie as lecturer in organic chemistry and Dr Marietjie Lutz in general chemistry. Prof Wolf Hiller from the University of Dortmund (Germany), an expert in NMR spectroscopy and in particular interfaced with HP Liquid Chromatography, was appointed as extraordinary professor for a period of three years.

Dr Catherine Esterhuysen spent six months on study and research leave at the Phillips University of Marburg (Germany) collaborating with Prof Gernot Frenking. She presented some of her results at the European Crystallographic Meeting, ECM26, also in Germany.

Dr Delia Haynes spent five months at the University of California (USA) as a Fulbright scholar, working in the laboratory of Prof Jeff Long.

It was with great regret that we learned that Dr Con Meyer, a highly valued and stalwart member of the organic chemistry section of the Department, had passed away shortly after his retirement at the end of 2009. We are saddened by his untimely and sudden departure.

COMMUNITY INTERACTION

A highlight in this context was the visit and public lecture by Prof Richard Ernst (1991 Nobel Laureate in Chemistry) to which several local school pupils and their teachers were invited.

Dr Catherine Esterhuysen participated in the Stellenbosch University Science Winter Week as the chemistry presenter, while Prof Harald Pasch participated in the Winter School in Polymer Science held in Stellenbosch.

Dr Margaret Blackie served as advisor for school chemistry curriculum reform. She

Verskeie studente van die Departement Chemie en Polimeerwetenskap was ontvangers van toekennings. Me Anneli Kleyn, 'n MSc-student onder leiding van prof Len Barbour, het een van die pryse vir die beste plakkaataanbiedings by die ACS Pacifichem Konferensie in Hawaii gewen. Slegs 43 weners is uit 5900 plakkaate van regoor die wêreld gekies. Haar werk is ook uitgelig in *Chemical and Engineering News* (CEN) – 'n baie groot prestasie.

Mnr Gareth Bayley, 'n PhD-student in polimeerwetenskap, het die Carl Klason prys vir die beste mondelinge aanbieding deur 'n student by die Wêreldforum vir Gevorderde Materiale (POLYCHAIR18) in Siegen (Duitsland) gewen.

Mnr Simon Herbert, 'n PhD-student in organiese chemie, het die Jong Wetenskaplike Toekenning by die 11de Frank Warren Konferensie in Pietermaritzburg ontvang. Die byeenkoms dek alle vertakkinge van organiese chemie en word deur die Suid-Afrikaanse Chemiese Instituut aangebied. Simon se navorsingsprojek, onder leiding van dr Gareth Arnott, fokus op die skep van asimmetriese bakvormige molekules, wat kaliksarene genoem word. Hy is daarby ook een van sowat 30 Suid-Afrikaners wat 'n gesogte beurs van die Commonwealth Beurskommissie ontvang het, wat studie aan die Universiteit van Manchester (VK) vir hom moontlik maak.

Me Ilne Grobelaar en me Helen Wahl, wat albei hul BSc(Hons) cum laude behaal het, het akademiese ereleure met beurse van die Universiteit Stellenbosch ontvang vir hul uitmuntende prestasie. Albei sit tans hul MSc-studies voort.

Mnr James Odendal, 'n PhD-student in die Platinummategroep (PMG) Navorsingsgroep, was een van twaalf studente van regoor die wêreld wat danksy 'n talentwerwingstoekenning deur die Duitse chemiese reus BASF 'n weeklange besoek aan Ludwigshaven (Duitsland) geniet het. Mnr Pieter Murray, 'n finalejaar PhD-student in die PGM Navorsingsgroep, het 'n DAAD-beurs ontvang om vir drie maande navorsing met prof Rudi van Eldik aan die Universiteit van Erlangen-Nürnberg (Duitsland) te doen. Nog 'n doktrale student, me Storm Potts, het op haar beurt drie maande by dr Jeremy Rawson en dr Gareth Lloyd aan die Universiteit van Cambridge gewerk.

Ander verblydende toekennings is in 2010 gemaak aan studente wat in die vorige jaar presteer het: Mnr Sean Robinson het die Merck-medalje en -prys vir die beste BSc-student in Chemie ontvang, terwyl me Corli Joubert die Element Six-toekenning (DWT/NNS Sentrum van Uitnemendheid) vir die beste BSc-student in Chemie met polimeerwetenskapvakke ontvang het. Die SMM-prys vir die beste BSc(Hons)-student in Chemie is aan me Ilne Grobler toegeken, terwyl mnr Paul Reader die AMS Laboratory Technologies-toekenning asook 'n Element Six-toekenning (DWT-NNS Sentrum van Uitnemendheid) vir die beste BSc(Hons) student in Polimeerwetenskap ontvang het. Die Mattie Jooste-prys vir die beste MSc-studente in Tekstielwetenskap is gedeel deur mnr Haydn Kriel en me Ilana Malherbe.

PERSONEELSAKE

Verskeie nuwe aanstellings is in 2010 gemaak as deel van ons personeelplan om die Departement Chemie en Polimeerwetenskap strategies te posisioneer om 'n leiersrol in Afrika op die gebied van onderrig en navorsing te kan speel. Prof Willem van Otterlo is aangestel as professor van organiese chemie, dr Alpheus Mautjana as senior lektor in analitiese chemie, dr Willem Gerber as lektor in fisies-analitiese chemie, dr Margaret Blackie as lektor in organiese chemie en dr Marietjie Lutz in algemene chemie. Prof Wolf Hiller van die Universiteit van Dortmund (Duitsland) is aangestel as buitengewone professor vir 'n periode van drie jaar. Hy is 'n deskundige op die gebied van KMR-spektroskopie, spesifiek gekoppel met HPLC.

Dr Catherine Esterhuysen was vir ses maande met studie- en navorsingsverlof by die Phillips Universiteit van Marburg (Duitsland), waar sy saamgewerk het met prof Gernot Frenking. Sy het van haar resultate by ECM 26, die Europese Kristallografie Byeenkoms (Duitsland) aangebied. Dr Delia Haynes het as 'n Fulbright-beurshouer vyf maande spandeer in die laboratorium van prof Jeff Long by die Universiteit van Kalifornië (VSA).

Dit was met groot leedwese dat ons verneem het dat dr Con Meyer, 'n hoogsgewardeerde lid van die organiese afdeling en staatmaker in die Departement, kort na sy aftrede aan die einde van 2009 oorlede is. Ons is diep bedroef deur sy heengaan.

GEMEENSKAPSINTERAKSIE

'n Hoogtepunt in hierdie verband was die besoek en openbare lesing deur prof Richard Ernst, die 1991 Nobelpryswenner in Chemie, waarheen verskeie plaaslike skoolleerders en hul onderwysers genooi is.

Nuwe spektrometer gee hupstoot aan navorsing oor platinumgroepmetale

Die Platinumgroepmetale- (PGM) navorsingsgroep van die Departement Chemie en Polimeerwetenskap het 'n nuwe Spectro-ARCOS induktief-gekoppelde plasma-optiese emissiespektrometer (ICP-OES) in 2010 aangekoop om die navorsing wat in die afgelope dekade in hierdie vakrigting aan die Universiteit Stellenbosch (US) gedoen word, te bevorder.

Die finansiering van R750 000 is deur die US beskikbaar gestel asook deur navorsingsbefondsing vanaf prof Klaus Koch.

Hierdie stelsel dra reeds by tot opwindende nuwe navorsingsgebiede in die chemiese samestelling van die platinumgroepmetale.

Volgens prof Koch, hoof van die Departement Chemie en Polimeerwetenskap asook hoof van die PGM-navorsingsgroep, maak hierdie laboratoriumvriendelike instrument die ontleding van verskeie metale in waterige en organiese media waar nodig moontlik. Ontledings kan ook aanlyn gedoen word.

"Dit kan gebruik word vir ons navorsing in verband met die platinumgroepmetale sowel as oor goud en ander oorgangselemente," verduidelik hy.

Die toerusting sal nie net gebruik word vir nagraadse navorsingsdoeleindes nie, maar ook praktiese ervaring in moderne atomiese spektroskopie vir derdejaars- en BSc (Hons)-programme in Analitiese Chemie moontlik maak.

"Hierdie belegging sal waarskynlik lei tot vele positiewe voordele vir sowel my PGM-chemienavorsing as die analitiese opleidingprojekte van die Departement," sê prof Koch verder.

Die stelsel bestaan uit 'n outomatiese optiese emissiespektrometer wat gelyktydige metings kan neem, met 'n induktiefgekoppelde aansporing- en semigeleier-opsporingstelsel. Die polichromator met 'n Paschen-Runge-montering het 'n golflengte van 130–770 nm.

served on the organizing committee for the ASSAF-sponsored "Mind the Gap" Forum in Cape Town, and also organized a two-day workshop for physical science teachers which was held at both the University of Cape Town and Stellenbosch University.

FUNDING

Anglo Platinum
 BASF
 BioPAD
 Borealis
 Dutch Polymer Institute
 ESKOM
 Harmony Gold
 Heraeus GmbH, Germany
 Ikusasa Chemicals
 KVV
 Mintek
 Mondi
 National Equipment Programme
 National Research Foundation (NRF)
 Netherlands Polymer Institute
 NRF Thuthuka
 Plascon
 Sasol
 Sastech
 South African Research Chairs Initiative (SARChI)
 THRIP
 Water Research Commission (WRC)

COLLABORATION

SOUTH AFRICA

Cape Peninsula University of Technology (CPUT)
 Department of Science and Technology's South African Research Chair Initiative Programme (SARChI)
 Durban University of Technology (DUT)
 Nelson Mandela Metropolitan University (NMMU)
 University of Cape Town (UCT)
 University of Fort Hare
 University of Johannesburg (UJ)
 University of KwaZulu-Natal (UKZN)
 University of Pretoria (UP)
 University of South Africa (UNISA)
 University of the Western Cape (UWC)
 University of the Witwatersrand
 Walter Sisulu University

INTERNATIONAL

Australia

Monash University
 University of Western Australia

Austria

Borealis
 Mondi

Belgium

Katholieke Universiteit Leuven
 University of Ghent
 Vrije Universiteit Brussels

Canada

University of Waterloo

Czech Republic

Technical University of Liberec

Germany

Bergische Universität GH Wuppertal
 Deutsches Kunststoff Institut
 Heraeus GmbH, Hanau
 Leipzig University
 Max Planck Institute for Colloids and Interfaces
 Technical University of Munich
 University of Duisburg
 University of Erlangen, Nuremberg
 University of Münster
 University of Ulm

India

Indian Institute of Technology, Kanpur

Mauritius

University of Mauritius

The Netherlands

Delft University of Technology
 Eindhoven University of Technology
 University of Leiden-Gorleus Laboratory
 Utrecht University

Dr Catherine Esterhuysen was as aanbieder verantwoordelik vir die chemie-afdeling by die jaarlikse Universiteit Stellenbosch Natuurwetenskappe Winterweek, terwyl prof Harald Pasch betrokke was by die Winterskool in Polimeerwetenskap wat op Stellenbosch gehou is.

Dr Margaret Blackie het as raadgewer gedien vir die hersiening van die skoolkurrikulum vir chemie. Sy was ook lid van die beplanningskomitee vir die "Mind the Gap" Forum in Kaapstad, wat deur die Wetenskap-akademie van Suid-Afrika (oftewel die "Academy of Science of South Africa" of ASSAf) ondersteun is. Sy het ook 'n twee-dag werkswinkel vir fisiese wetenskaponderwysers gereël wat by sowel die Universiteit van Kaapstad as die Universiteit Stellenbosch gehou is.

SAMEWERKING

SUID-AFRIKA

Departement van Wetenskap en Tegnologie se Suid-Afrikaanse Navorsingsleerstoel Program (SARChI)
 Durban Universiteit van Tegnologie (DUT)
 Kaapse Skiereiland Universiteit van Tegnologie (KPUT)
 Nelson Mandela Metropolitaanse Universiteit (NMMU)
 Universiteit van Fort Hare
 Universiteit van Johannesburg (UJ)
 Universiteit van Kaapstad (UK)
 Universiteit van KwaZulu-Natal
 Universiteit van Pretoria (UP)
 Universiteit van Suid-Afrika (UNISA)
 Universiteit van Wes-Kaapland (UWK)
 Universiteit van die Witwatersrand
 Walter Sisulu Universiteit

INTERNASIONAAL

Australië

Universiteit van Monash
 Universiteit van Wes-Australië

België

Katolieke Universiteit Leuven
 Universiteit van Gent
 Vrije Universiteit Brussels

Duitsland

Bergische Universität GH Wuppertal
 Deutsches Kunststoff Institut
 Heraeus GmbH, Hanau
 Max Planck Institute for Colloids and Interfaces
 Tegiese Universiteit van München
 Universiteit van Duisburg
 Universiteit van Erlangen, Nuremberg
 Universiteit van Leipzig
 Universiteit van Münster
 Universiteit van Ulm

Indië

Indiese Instituut van Tegnologie, Kanpur

Kanada

Universiteit van Waterloo

Mauritius

Universiteit van Mauritius

Nederland

Delft Universiteit van Tegnologie
 Eindhoven Universiteit van Tegnologie
 Universiteit van Leiden-Gorleus Laboratorium
 Universiteit Utrecht

Oostenryk

Borealis
 Mondri

Pole

Poolse Akademie van Wetenskappe

BEFONDSING

Anglo Platinum
 BASF
 BioPAD
 Borealis
 Duitse Polimeer Instituut
 ESKOM
 Harmony Gold
 Heraeus GmbH, Duitsland
 Ikusasa Chemicals
 KVV
 Mintek
 Mondri
 Nasionale Navorsingstigting (NNS)
 Nasionale Toerustingprogram
 Nederlandse Polimeer Instituut
 NNS Thuthuka
 Plascon
 Sasol
 Sastech
 Suid-Afrikaanse Navorsingsleerstoel Inisiatief (SARChI)
 THRIP
 Waternavorsingskommissie (WNK)

Instrument worth R3 million strengthens polymer science

For Prof Harald Pasch the recent installation of a state-of-the-art High-Temperature high-performance liquid chromatography (HT-HPLC) instrument in the Polymer Science Building – the first of its kind to be used in Africa – holds very personal significance.

The new instrument at SU excluded, it is as yet only available at two other laboratories in the world, namely at Prof Pasch's former home university in Germany and at Dow Chemical in Freeport, USA.

In 2005, his research team at the University of Technology in Darmstadt jointly developed the technology to analyse bulk polymers called polyolefins along with the British instrument company Polymer Laboratories (now part of Agilent Inc.). The Spanish company Polymerchar then coupled HT-HPLC to size exclusion chromatography. This coupled HT-HPLC/SEC instrument, also known as high-temperature two-dimensional liquid chromatography (HT-2D-LC), has since been commercialised.

"Analytical methods in polymer science are crucial because they provide the most needed information on molecular parameters of newly developed polymers," says Prof Pasch, an expert in the field of analytical polymer science who currently holds the SASOL research chair in analytical polymer science in the SU Department of Chemistry and Polymer Science. "These parameters are the molar mass, chemical composition and polymer architecture."

The R3 million funding for the local facility was received jointly from Stellenbosch University and one of its key industrial partners, SASOL.

"Through this collaboration, we do not only ensure that cutting edge technological research can be done here at Stellenbosch University to the benefit of our postgraduate students, but we also ensure a steady supply of well-trained and capable graduates in this growing field," says Prof Pasch. "In turn, SASOL, as the major African polyolefin producer, will have access to world-class technology that will benefit its processes and products."

Polyolefins such as polyethylene and polypropylene are the most important type of bulk polymers, with an annual global production of over 50 million tons. These synthetic materials can be used for anything from packaging to pipes and automotive parts.

All solution measurements for polyolefins must be conducted at temperatures higher than 130 degrees Celsius, and dedicated and often custom-made equipment must be used to ensure accurate measurements.

High-temperature gradient HPLC is the only method currently available to scientists to do chemical composition fractionation based on chromatographic principles.

With the HT-HPLC instrument method it is possible to fractionate complex polyolefins irrespective of their crystallinity regarding chemical composition distribution – all within 30 minutes.

Poland

Polish Academy of Sciences

Sweden

Chalmers Institute of Technology

Lund University

Swedish Royal Institute of Technology

United Kingdom

St Andrews University, Scotland

University of Cambridge

University of Cardiff

University of Durham

University of Leeds

United States of America

Cornell University

University of California, Berkeley

University of Missouri-Kansas City

University of North Carolina

University of Southern Mississippi

University of Wisconsin, Madison

Swede

Chalmers Instituut van Tegnologie
Sweedse Koninklike Instituut van Tegnologie
Universiteit van Lund

Tsjeggiese Republiek

Tegniese Universiteit van Liberec

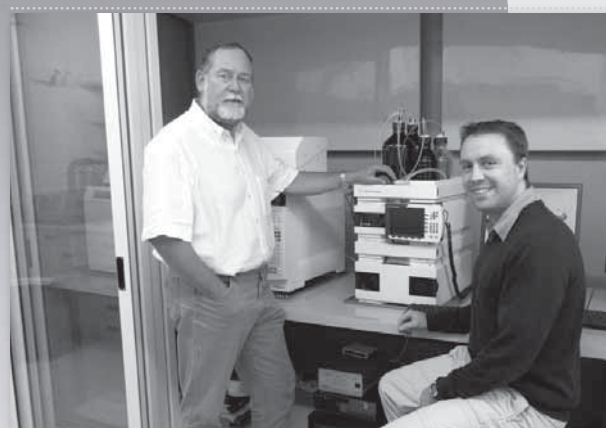
Verenigde Koninkryk

Universiteit van Cambridge
Universiteit van Cardiff
Universiteit van Durham
Universiteit van Leeds
Universiteit van St Andrews

Verenigde State van Amerika

Cornell Universiteit
Universiteit van Kalifornië, Berkeley
Universiteit van Missouri-Kansas City
Universiteit van Noord-Carolina
Universiteit van Suid-Mississippi
Universiteit van Wisconsin, Madison

Polimeerwetenskaplikes kry R3 miljoen instrument



Vir prof Harald Pasch is die onlangse installasie van 'n wêreldklas hoëtemperatuur- hoëverrigting- vloeistofchromatografie (HT-HPLC) instrument in die Polimeerwetenskap-gebou – die eerste van sy soort om in Afrika gebruik te word – van groot persoonlike waarde.

Dit is tans net by twee ander laboratoria ter wêreld beskikbaar, naamlik by prof Pasch se voormalige tuisuniversiteit in Duitsland en by Dow Chemical in Freeport, VSA.

In 2005 het sy destydse navorsingspan by die Universiteit van Tegnologie in Darmstadt, gesamentlik die tegnologie ontwikkel om massapolimere genaamd poli-olefiene tesame met die Britse instrumentmaatskappy Polymer Laboratories (nou deel van Agilent Inc) te analiseer. Die Spaanse maatskappy Polymerchar het daarna die HT-HPLC met grootte-uitsluitingschromatografie gekoppel. Hierdie gekoppelde HT-HPLC/SEC-instrument, ook bekend as hoëtemperatuur- tweedimensionele vloeistofchromatografie (HT-2D-LC), is sedertdien gekommersialiseer.

“Analitiese metodes is uiters noodsaaklik, want dit bied die nodigste inligting oor molekulêre parameters van nuut ontwikkelde polimere,” sê prof Pasch, wat die SASOL-navorsingstoel in analitiese polimeerwetenskap in die US se Departement Chemie en Polimeerwetenskap beklee. “Hierdie parameters is die molekulêre massa, chemiese samestelling en polimeerargitektuur.”

Die befondsing van R3 miljoen vir die plaaslike fasiliteit is gesamentlik vanaf die US en een van sy belangrikste bedryfsvennote, SASOL, ontvang.

“Dit help ons om voorpunttegnologiese navorsing by die US te doen tot voordeel van ons nagraadse studente, en om 'n konstante stroom goed opgeleide en bekwame gegradueerdes in hierdie groeiende gebied te verseker,” sê hy. “Op sy beurt kry SASOL, as die grootste poli-olefienverskaffer in Afrika, toegang tot wêreldklastegnologie tot voordeel van sy prosesse en produkte.”

Poli-olefiene soos poliëtiëen en polipropiëen is die belangrikste soort massapolimere. Jaarliks word meer as 50 miljoen ton geproduseer. Hierdie sintetiese stowwe word vir enigiets van verpakking tot pype en motoronderdele soos brandstoftenks en buffers gebruik.

Oplossingsmetings vir poli-olefiene word teen temperature hoër as 130 grade Celsius uitgevoer. Toegewyde en soms pasgemaakte toerusting verseker akkurate metings. Hoëtemperatuur-gradiënt-HPLC is tans die enigste manier om fraksionering van chemiese samestelling deur chromatografiese beginsels te doen. Komplekse poli-olefiene word binne 30 minute gefraksioneer, ongeag hul chemiese samestellingsverspreiding.

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The following staff members have NRF ratings:

- B – Dr Alexander Avdeenkov
theoretical physics
- B – Prof Anthony Cowley
nuclear physics
- B – Prof Hendrik Geyer
theoretical physics
- B – Prof Dieter Heiss
theoretical physics
- B – Prof Michael Kastner
theoretical physics
- B – Prof Frederick Scholtz
theoretical physics
- B – Prof Heinrich Schwoerer
laser physics
- B – Prof Herbert Weigel
theoretical physics
- C – Prof Hans Eggers
theoretical physics
- C – Prof Kristian Müller-Nedebock
theoretical physics
- C – Prof Erich Rohwer
laser physics
- C – Prof Hubertus von Bergmann
laser physics
- Y – Dr Paul Papka
nuclear physics
- Y – Dr Kostyantyn Zloschastyev
theoretical physics

RESEARCH INTERESTS

Laser physics (spectroscopy and ultrafast science); nuclear physics (interaction cross-section of protons with nuclei); theoretical physics (condensed matter and complexity).

RESEARCH OUTPUTS

Articles in accredited journals	80
Hons students graduated in 2010	2
MSc students graduated in 2010	10
PhD students graduated in 2010	8

RESEARCH HIGHLIGHTS

The development of a sophisticated ultra-fast electron gun triggered by a femtosecond laser and the development of stable white light source using photonic crystal fibres pumped by a femtosecond laser, count among the highlights of the research achievements of the Department of Physics.

Theoretic physics expert Prof Herbert Weigel received a B1-rating from the National Research Foundation (NRF).

The nuclear physics research group will benefit from an international agreement with the Joint Centre for Nuclear Research at Peking University (China) which has been approved for the next three years.

The nuclear physics group acquired the Nuclear Reaction Video (NRV) mirror server which provides researchers across the globe quick access to a large collection of data and computer programs which are commonly used by the nuclear physics research community.

This research group also played host to a number of international scientists during 2010. These include Prof Fedor Simkovic of the Joint Institute for Nuclear Research (Russia), Prof Andrey Denikin of Dubna International University (Russia), as well as Peking University researchers Prof Jie Meng, Dr Shuangquan Zhang, Dr Chunyan Song, Dr Haozhao Liang and Mr Pengwei Zhao (China).

Dr Papka was invited to take part in an international experiment at GANIL using the ^6He Radioactive Ion Beam facility. Dr Paul Papka also presented a paper at the Second Workshop on State of the Art in Nuclear Cluster Physics conference (SOTANCP2) in Brussels (Belgium).

Dr Shaun Wvyngaardt was invited to give a presentation at the South Africa-IJNR symposium on "Models and Methods in few and many-body systems" in Dubna (Russia).

Projects linked to the development of the Pebble Bed Modular Reactor (PBMR), Square Kilometre Array (SKA) and the Earth Anti-Neutrino Tomograph (EARTH) projects remain active.

The Laser Research Institute (LRI) was host to a number of laser specialists from abroad that participated in research activities. These include Prof Harry Ihee of the Korea Advanced Institute of Science and Technology (South Korea), Prof Thomas Feurer of the University of Bern (Switzerland), Prof Tony Parker of Rutherford Appleton Laboratories (UK), Prof Herbert Stafast of the University of Jena (Germany) and Prof Derck Schlettwein of the University of Giessen (Germany).

The fibre laser development work at the LRI has received considerable recognition in the form of prizes for best student presentations at several international conferences in 2010.

MSc laser physics student, Ms Ilana Boshoff, spent five months at the University of Münster (Germany) working in the field of laser generated x-ray radiation.

ACADEMIC AFFAIRS

A PhD student in nuclear physics, Ms Daphne Singo, was a speaker at the TED2010 conference, and through her endeavours secured a \$1 million grant from Google for the African Institute for Mathematics (AIMS).

SERVICE TO THE SCIENTIFIC COMMUNITY

Staff members were closely involved with several national councils and organization, as well as with the organizing of international conferences and schools.

NAVORSINGSFOKUSAREAS

Laserfisiika (spektroskopie en ultra-vinnige wetenskap); kernfisiika (reaksiekansvlak van protone met atoomkerne); teoretiese fisiika (komplekse sisteme en gekondenseerde materie).

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	80
Hons-studente gegradueer in 2010	2
MSc-studente gegradueer in 2010	10
PhD-studente gegradueer in 2010	8

NAVORSINGSHOOGTEPUNTE

Die ontwikkeling van 'n gesofistikeerde ultravinnige elektrongeweer wat deur 'n femtosekonde laser geaktiveer word, asook die ontwikkeling van 'n stabiele wittligbron wat gebruik maak van fotoniese kristalvesels wat deur 'n femtosekonde laser gepomp word, tel onder die navorsingshoogtepunte van die Departement Fisiika gedurende 2010.

Teoretiese fisikus prof Herbert Weigel het 'n B1-evaluasie van die Nasionale Navorsingstigting (NNS) ontvang.

Die kernfisiika navorsingsgroep sal gedurende die volgende drie jaar baat vind uit 'n internasionale ooreenkoms wat met die Gesamentlike Sentrum vir Kernfisiika Navorsing by Peking Universiteit (China) gesluit is.

Hierdie navorsingsgroep het toegang verkry tot die Nuclear Reaction Video (NRV) speelbediener wat navorsers oor die hele wêreld heen vinnige toegang tot groot hoeveelhede data en rekenaarprogramme gee wat deur alle navorsingsgemeenskappe in kernfisiika gebruik word.

Die kernfisiika navorsingsgroep is gedurende 2010 deur verskeie internasionale wetenskaplikes besoek. Onder die besoekers tel onder meer prof Fedor Simkovic van die Gesamentlike Instituut vir Kernfisiika Navorsing (Rusland) en prof Andrey Denikin (Dubna Internasionale Universiteit (Rusland), asook Peking Universiteit (China) akademici prof Jie Meng, dr Shuangquan Zhang, dr Chunyan Song, dr Haozhao Liang en mnr Pengwei Zhao.

Dr Papka is uitgenooi om deel te neem aan die internasionale eksperiment by GANIL, wat gebruik maak van die ^6He Radioaktiewe loonstraalfasiliteit. Hy het ook 'n referaat by die Tweede Werkwinkel oor Toonaangewende Kernkluster Fisiika (SOTANCP2) in Brussel (België) gelewer.

Dr Shaun Wyngaardt is uitgenooi om 'n referaat te lewer by die Suid Afrikaanse JINR simposium oor "Models and Methods in few and Many-Body systems" in Dubna (Rusland).

Projekte gekoppel aan die ontwikkeling van die Korrelbed Modulêre Reaktor, die Square Kilometre Array Projek (SKA) en die Earth Anti-Neutrino Tomograph (EARTH) is steeds aktief aan die gang.

Die Instituut vir Lasernavorsing (ILN) het gasheer gespeel vir 'n aantal laserspesialiste uit die buiteland wat aan navorsingsaktiwiteite deelgeneem het. Hulle sluit in prof Harry Ihee van die Korea Gevorderde Instituut vir Wetenskap en Tegnologie (Suid-Korea), prof Thomas Feuerer van die Universiteit van Bern (Switserland), prof Tony Parker van die Rutherford Appleton Laboratories (VK), prof Herbert Stafast van die Universiteit van Jena (Duitsland) en prof Derck Schlettwein van Universiteit van Giessen (Duitsland).

Die ILN het aansienlike erkenning vir ontwikkelinge op die gebied van vesellasers gekry, deurdat studente by verskeie internasionale kongresse gedurende die jaar toekennings vir hul kongresbydraes ontvang het.

'n MSc-student in laserfisiika, me Ilana Boshoff, het 'n studietydperk van vyf maande by die Universiteit van Münster deurgebring waar sy gewerk het op die gebied van lasergegeneerde x-straal uitstraling.

AKADEMIESE SAKE

'n PhD student in kernfisiika, me Daphny Singo, het 'n voordrag by die TED2010 konferensie gelewer en daardeur 'n bedrag van \$1 miljoen van Google verseker vir die ondersteuning van die Afrika Instituut van Wiskundige Wetenskappe (AIMS).

Personeel | Staff

Doserend

Prof EG Rohwer (uitvoerende hoof)
L Boonzaaier
C Dreyer
Prof HC Eggers
Prof HB Geyer
H Kriel
Prof KK Müller-Nedebock
Dr P Papka
Prof FG Scholtz
Prof HPH Schwoerer
Dr JA Stander
Dr CM Steenkamp
Dr BIS van der Ventel
Dr P van der Westhuizen
J van Zyl
Prof H Weigel
Dr SM Wyngaardt

Buitengewone professore

Dr A Avdeenkov
Prof K Bharuth-Ram
Dr LR Botha
Prof AA Cowley
Prof T Dlamini
Prof CA Dominguez
Dr A du Plessis
Prof A Forbes
Prof WD Heiss
Dr M Kastner
Prof J Meng
Prof R Newman
Dr I Snyman
Prof H Stafast

Emeritus professore

Prof PR de Kock
Prof HM von Bergmann
Prof PE Walters

Ondersteuningspersoneel

DC Beukman
MC Botha
AS Botha
J Burns
C April
SH February
JM Germishuizen
CD Pool
DP Pool
H Randall
C Richardson
CJ Ruperti
EJ Shields

Nuclear physics web server available at SU



A nuclear physics knowledge based web server is being developed as part of a joint project between the relevant research groups in the Stellenbosch University (SU) Department of Physics and Military Academy, iThemba LABS and the Joint Institute for Nuclear Physics and Dubna International University in Russia.

It aims to provide theoretical models and computing codes which can be used to describe and analyze different low-energy nuclear reactions and the structural mechanisms involved.

"Once completed, these computational codes and models will be freely accessible on the web-server to any remote end user," explains Dr Shaun Wyngaardt, who leads the Nuclear Physics Research Group in the SU Department of Physics.

The models and codes being developed will form an integral part of the existing "Knowledge Base" package called the Nuclear Reaction Video (NRV) on low energy nuclear physics. It already operates in a web environment under any web browser.

The current nuclear physics knowledge base provides fast and visual access to experimental data on nuclear structure and cross sections of nuclear reactions. This provides the end user with the option of processing and systematically analyzing experimental data with a graphics interface for data plotting.

It also makes the modelling of the processes of nuclear dynamics possible within the modern foolproof codes based on the well-established physical approaches, through a window of the web browser.

This collaboration has seen some significant progress in the areas of nuclear reaction studies and nuclear structure physics.

A priority of the venture has been the installation of a mirror server at the SU Department of Physics of the JINR's extensive knowledge base. It was completed in 2010 through seed funding from SU and iThemba LABS.

"This helps our MSc and PhD students to acquire the necessary skills and experience in nuclear science, computer science and web development," Dr Wyngaardt says of the international collaboration project.

Prof Frederik Scholtz is the first director of National Institute for Theoretical Physics (NITheP), while Prof Hendrik Geyer is the director of Stellenbosch Institute for Advanced Studies (STIAS).

Prof Scholtz was the convener of the National Research Foundation (NRF) evaluation panel for physics.

Prof Scholtz and Mr Gurthwin Bosman, as student representative, serve on the board of the South African Institute of Physics (SAIP). Prof Geyer is chair of the SAIP Theoretical Physics specialist group, while Prof Erich Rohwer is chair of the SAIP Lasers, optics and spectroscopy specialist group.

Prof Rohwer also serves on the steering committee of the Photonics Initiative of South Africa (PISA), while Prof Hubertus von Bergmann is a director of the African Laser Centre (ALC).

Dr Shaun Wyngaardt is a member of the iThemba LABS directors' council, while Dr Paul Papka served on its Physics Advisory Committee of the Materials Research Department.

Members of staff helped to organise smaller workshops under the auspices of NITheP. These include the Workshop on Active Materials, which is a growing field in the physics of biological systems. It was organised by Prof Kristian Müller-Nedebock in November as part of an NRF and National Science Foundation bilateral agreement. It was also partially supported by NITheP. Various overseas speakers also presented their work at the workshop to an audience of mainly South African and African participants.

Prof Dieter Heiss organised a workshop on the Physics of Exceptional Points during November, which was funded by NITheP.

Prof Heinrich Schwoerer, Prof Rohwer and Prof Scholtz organised the 21st Chris Engelbrecht Summer School for Theoretical Physics on Quantum Optics. Seven international and three national scientists presented a lecture series. The event, which was attended by 40 participants from all over South Africa, took place at STIAS under the auspices of NITheP. The guest speakers at the Summer School, which included Sir Peter Knight of Imperial College London (UK), Prof Helmut Zacharias of the University of Münster (Germany), Prof Pierre Meystre, of the University of Arizona (USA), Prof Jason Twamley of Macquarie University (Australia), Prof Peter van der Slot of Twente University (Netherlands), Prof Andreas Wipf of the University of Jena (Germany), and Prof Andreas Zumbusch of the University of Konstanz (Germany), were all also visitors to the LRI.

The LRI was the host to the 3rd African Laser Centre (ALC) Student Workshop which was attended by 61 students and researchers from ten African countries. Prof Piet Walters was the organizer. Prof Tony Parker of Rutherford Appleton Laboratories and Prof Thomas Feurer of the University of Bern (Switzerland) were the guest speakers.

AWARDS TO STAFF AND STUDENTS

A prize worth US\$5 000 was awarded to Dr Christine Steenkamp at the 4th Conference of the Organisation for Women in Science for the Developing World (TWAS), which was held in Beijing (China) in June 2010. She was one of 12 laureates from all over the world, of which three were from Africa, to receive the awards from the Chinese vice president Xi Jinping at a ceremony in the Great Hall of the People in Tiananmen Square.

Ms Daphne Singo received the Department of Trade and Industry's THRIP award for the Best Black or Female Researcher. She is studying towards a doctorate in nuclear physics.

The Dean's Medal winner of the Faculty of Science was Ms Marisa Geyer.

A doctoral student in laser physics, Mr Alexander Heidt received an award for the best student paper at the Photonics Europe SPIE Conference in Belgium, and also won a first prize for his student presentation at the SPIE conference on Specialty Optical Fibres in Mexico.

At the annual South African Institute of Physics (SAIP) conference, which was held at the Council for Scientific and Industrial Research (CSIR) in Pretoria, the postgraduate students of the Department of Physics again received several awards. The prize winners were Mr Alex Heidt and Mr Gurthwin Bosman (exceptional oral presentation by a PhD student in the field of Lasers, Optics & Spectroscopy), Mr Egmont Rohwer and Mr Gibson Nyamuda (the best poster by a MSc and PhD student in the field of Lasers, Optics & Spectroscopy respectively), Mr Dawie van Niekerk (2nd place in the oral presentations by a PhD student in the Nuclear, Particle and Radiation Physics), and Mr Jacobus Diener and Mr Karl Möller (the best PhD oral and best oral presentation by an PhD and MSc student in Theoretical Physics respectively).

At the African Laser Centre (ALC) Student Workshop Mr Gibson Nyamuda received the award for the best PhD presentation.

DIENS AAN DIE WETENSKAPLIKE GEMEENSAP

Personeel van die Departement Fisika was betrokke by verskeie nasionale rade en organisasies, asook die organisering van nasionale en internasionale konferensies en skole.

Prof Frederik Scholtz is die eerste direkteur van die Nasionale Instituut vir Teoretiese Fisika (NITheP), terwyl prof Hendrik Geyer op sy beurt die direkteur van Stellenbosch Instituut vir Gevorderde Navorsing (STIAS) is.

Prof Scholtz was die sameroeper van die Nasionale Navorsingstigting (NNS) se evalueringspaneel vir fisika. Prof Scholtz en mnr Gurthwin Bosman as studenteverteenwoordiger dien op die raad van die Suid-Afrikaanse Instituut vir Fisika (SAIF). Prof Hendrik Geyer is voorsitter van die SAIF Teoretiese Fisika-spesialisgroep, terwyl prof Erich Rohwer voorsitter van die dienoooreenkomstige spesialisgroep vir lasers, optika en spektroskopie is.

Prof Rohwer het ook op die beheerkomitee van die Fotonika Inisiatief vir Suid Afrika (PISA) gedien, terwyl prof Hubertus von Bergmann 'n direkteur van die Afrika Lasersentrum was.

Dr Shaun Wyngaardt het op die iThemba LABS direkteursraad gedien, terwyl dr Paul Papka 'n lid van hul Fisika Raadgewende Komitee van die Departement Materiaalnavorsing was.

Personeel het gehelp om kleiner werkwinkels onder die vaandel van NITheP te reël. Dit sluit onder meer 'n werkwinkel in oor aktiewe materiale, wat 'n vinniggroeiende veld in die fisika van biologiese stelsels is. Prof Kristian Müller-Nedebock het dit in November georganiseer as deel van 'n bilaterale ooreenkoms tussen die NNS en die Nasionale Wetenskap Stigting. Verskeie oorsese sprekers het hul werk aangebied voor 'n gehoor van deelnemers wat hoofsaaklik uit Suid-Afrika en Afrika afkomstig was.

Prof Dieter Heiss het op sy beurt 'n werkwinkel oor die fisika van buitengewone punte georganiseer wat gedurende November plaasgevind het danksy befondsing van NITheP.

Prof Heinrich Schwoerer het saam met prof Rohwer en prof Scholtz die 21ste Chris Engelbrecht Somerskool vir Teoretiese Fisika oor Kwantum Optika georganiseer. Sewe internasionale en drie Suid-Afrikaanse wetenskaplikes het lesings aangebied. Die byeenkoms, wat deur 40 wetenskaplikes van regoor Suid-Afrika bygewoon is, het by STIAS onder die vaandel van NITheP plaasgevind. Die genooide sprekers by die geleentheid, Sir Peter Knight van die Imperial College Londen (VK), prof Helmut Zacharias van die Universiteit van Münster (Duitsland), prof Pierre Meystre van die Universiteit van Arizona (VSA), prof Jason Twamley van Macquarie Universiteit (Australië), prof Peter van der Slot van Twente Universiteit (Nederland), prof Andreas Wipf van die Universiteit van Jena (Duitsland) en prof Andreas Zumbusch van die Universiteit Konstanz (Duitsland), het ook besoek gebring aan die Instituut vir Lasernavorsing (ILN) in die Departement Fisika.

Die ILN het die 3de Afrika Lasersentrum (ALC) Studentewerkwinkel georganiseer onder leiding van Prof Piet Walters. Dit is deur 61 studente en navorsers van tien Afrikalande bygewoon. Prof Tony Parker van die Rutherford Appleton Laboratories (VSA) en prof Thomas Feurer van die Universiteit van Bern (Switserland) was die gassprekers.

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Dr Christine Steenkamp het in Junie 2010 'n toekening van US\$5 000 by die Organisasie vir Vroue in Wetenskap vir die Ontwikkelende Wêreld (TWAS) se vierde kongres in Beijing ontvang. Sy was een van twaalf ontvangers van hierdie eerbewys, waarvan drie uit Afrika afkomstig was. Die toekenningsseremonie is deur die Chinese vise-president, mnr Xi Jinping, tydens 'n seremonie by die Groot Saal van die Volk op Tiananmenplein waargeneem.

Me Daphne Singo, 'n doktorsale student in kernfisika, het 'n THRIP-toekening van die Departement van Handel en Nywerheid ontvang as die beste vroulike of swart navorser.

Me Marisa Geyer het die Dekaansmedalje van die Fakulteit Natuurwetenskappe ontvang.

'n Doktorsale student in laserfisika, mnr Alexander Heide, het na afloop van die Phototonics Europe SPIE-konferensie in België die toekening vir die beste voordrag deur 'n student ontvang. Daarby het hy ook 'n eerste plek verower vir sy voordrag by die SPIE-konferensie oor Spesiale Optiese Vesels in Meksiko.

Die Departement Fisika se nagraadse studente het weer eens verskeie pryse by die jaarlikse kongres van die Suid-Afrikaanse Instituut vir Fisika (SAIF) verower. Dit is in Julie by die Wetenskaplike Navorsings- en Nywerheidsraad (WNNR) in Pretoria gehou. Die prysweners was mnre Alexander Heide en Gurthwin Bosman (uitsonderlike voordragte deur doktorsale studente op die gebied van Lasers, Optika en Spektroskopie), mnre Egmont Rohwer en Gibson Nyamuda (beste MSc- en PhD-plakkaataanbiedinge in Lasers, Optika en Spektroskopie), mnr Dawie van Niekerk (naasbeste PhD mondelinge aanbieding in Kern-, Deeltjie- en Stralingsfisika), asook mnre Jacobus Diener en Karl Möller (beste PhD- en MSc-mondelinge in Teoretiese Fisika).

Mnr Gibson Nyamuda het tydens die Afrika Lasersentrum (ALC) se studentewerkwinkel

Kernfisika-spieëlbediener by US beskikbaar

'n Kennisgebaseerde kernfisika-internetbediener word tans ontwikkel as deel van 'n gesamentlike projek van die kernfisika-navorsingsgroepe van die Departement Fisika van die Universiteit Stellenbosch (US), Militêre Akademie, iThemba LABS, asook die Gesamentlike Instituut vir Kernnavorsing (JINR) en Dubna Internasionale Universiteit in Rusland.

Die doel is om teoretiese modelle en rekenkodes te voorsien, wat dan gebruik kan word om verskillende lae-energie-kernreaksies en die betrokke strukturele meganismes te beskryf en te ontleed.

"Wanneer dit voltooi is, sal hierdie rekenkodes en modelle vrylik beskikbaar wees op die internetbediener aan enige afgeleë eindgebruiker (remote end user)," verduidelik dr Shaun Wyngaardt, leier van die US Departement Fisika se kernfisika-navorsingsgroep.

Die modelle en kodes wat ontwikkel word, sal 'n integrale deel vorm van die bestaande "kennisbasis"-pakket, naamlik die Kernreaksievideo (KRV) oor lae-energie-kernfisika, wat reeds in 'n internetomgewing met enige webleser werk.

Die huidige kernfisika-kennisbasis voorsien vinnige en visuele toegang tot eksperimentele inligting oor kernstruktuur en kansvlakke van kernreaksies. Dit voorsien die eindgebruiker van die opsie om eksperimentele inligting met 'n grafika-koppelvlak vir data-ontleding te verwerk en sistematies te ontleed.

Deur 'n venster in die webleser, maak die kennisbasis ook die modellering van kerndinamikaprozesse moontlik binne die hedendaagse peutervrye kodes gegrond op die goed gevestigde fisikabederings.

Hierdie samewerking het reeds gelei tot vordering op die gebied van kernreaksiestudies en kernstruktuurfisika.

Een van die prioriteite van die onderneming tot dusver was om in 2010 'n spieëlbediener van JINR se omvattende kennisbasis by die US se Departement Fisika te installeer. Dit is gedoen danksy beleggingskapitaal wat van die US en iThemba-laboratoriums ontvang is.

"Dit help ons MSc- en PhD-studente om die nodige vaardighede en ervaring in die relevante velde van kernwetenskap, rekenaarwetenskap en webontwikkeling te verwerf," meen dr Wyngaardt.

Two academics, Prof Hubertus von Bergmann and Prof Erich Rohwer, were honoured for the pivotal role they played in the establishment of the National Laser Centre (NLC). The awards were handed over by Dr Ndumiso Cingo, manager of CSIR National Laser Centre at a function in Pretoria in October which celebrated the 10th anniversary of the NLC.

Stellenbosch University Rector's Awards were awarded to Ms Heleen Randall and Mr Stanley February for Service Excellence, Prof Erich Rohwer and Dr Shaun Wyngaardt for Research Excellence, and Dr Pieter van der Westhuizen and Mnr JJ van Zyl for Teaching Excellence.

STAFF MATTERS

Prof Richard Newman, a researcher from iThemba LABS, was appointed as extraordinary associate professor in nuclear physics. Prof Thulani Dlamini from the Council for Scientific and Industrial Research (CSIR) was appointed as extraordinary associated professor in laser physics.

COMMUNITY INTERACTION

Dr Shaun Wyngaardt was invited by the Western Cape Department of Education to give an informative talk on nuclear physics to educators in the province.

The Department of Physics and the Laser Research Institute (LRI) organized an Open Day in collaboration with NITheP and iThemba LABS to celebrate the 50th anniversary of the development of the laser. Sir Peter Knight, Prof Jim Gates and Prof Jan Govaerts were the invited guest speakers. The LRI also held an Open Day in celebration of its 10th anniversary, where Prof Herbert Stafast was the guest speaker.

The outreach committee of the Department was very active. Staff and postgraduate students made contributions to the Standard Bank/Maties Mathematics and Science Week, the Stellenbosch University Science Winter Week, and the ESKOM Expo for Young Scientists, all in Stellenbosch.

Postgraduate students of the Stellenbosch student chapter of the Optical Society of America (OSA) who are part of the LRI visited schools in Namibia, the Northern and Western Cape during a outreach tour of three weeks. Financial support was granted by OSA, the International Society for Optics and Photonics (SPIE) and Stellenbosch University. This was part of the international Laserfest. Because of these activities, the Stellenbosch OSA student chapter was named as finalists of the international OSA Excellence Award.

FUNDING

CSIR Department Peace Safety and Security (DPSS)
CSIR National Laser Centre
DAAD (Deutsche Akademische Austausch Dienst)
Earth Anti-Neutrino Tomograph (EARTH) Foundation
Innovation Fund of the Department of Science and Technology (DST)
iThemba LABS
National Institute for Theoretical Physics (NITheP)
National Research Foundation (NRF)
Optical Society of America (OSA)
Pebble Bed Modular Reactor (PBMR)
Scientific Development and Integration
South African Research Chair Initiative Programme (SARChI)
Square Kilometre Array (SKA)

COLLABORATION

SOUTH AFRICA

CSIR National Laser Centre
Free State University (FSU)
iThemba LABS
National Institute for Theoretical Physics (NITheP)
Rhodes University
University of Cape Town (UCT)
University of Pretoria (UP)
University of the Western Cape (UWC)
Square Kilometre Array (SKA)

AFRICA

African Laser Centre (ALC)
Involvement in African initiatives through the African Institute for Mathematical Sciences (AIMS) and the Africa Theoretical Physics Programme at the Stellenbosch Institute for Advanced Study (STIAS)

INTERNATIONAL

Researchers in the Department have numerous international collaborators, as is reflected in the list of international extraordinary professors that have been appointed in the Department. They are Prof Jie Meng of Peking University (China) and Prof Herbert Stafast of the University of Jena (Germany).

The Theoretical Physics Group also has bilateral agreements with groups in India at the SN Bose National Centre for Basic Sciences Kolkata and the Physical Research Laboratory in Ahmadabad, in the UK at Bristol University, and with Syracuse University in the USA.

Prof Helmut Zacharias of the University of Münster (Germany) and Prof Derck Schlettwein of the University Giessen (Germany) are involved in research projects at the LRI.

die toekening ontvang vir die beste PhD voordrag.

Erkenning is aan twee US akademici tydens die viering van die tiende bestaansjaar van die WNNR Nasionale Lasersentrum verleen vir die belangrike rol wat hulle tien jaar gelede gespeel het in die totstandkoming van die inisiatief. Die toekennings aan prof Hubertus von Bergmann en prof Erich Rohwer is oorhandig deur dr Ndumiso Cingo, bestuurder van die WNNR Nasionale Lasersentrum, tydens 'n funksie in Oktober in Pretoria.

Universiteit Stellenbosch Rektorstoekennings is toegeken aan me Heleen Randall en mnr Stanley February vir Uitnemende Dienslewering, prof Erich Rohwer en dr Shaun Wyngaardt vir Uitnemende Navorsing, en dr Pieter van der Westhuizen en mnr JJ van Zyl vir Uitnemende Onderrig.

PERSONEELSAKE

Prof Richard Newman, 'n navorser van iThemba LABS, is as buitengewone medeprofessor in kernfisika aangestel, en prof Thulani Dlamini van die Wetenskaplike Nywerheids- en Navorsingsraad (WNNR) as 'n buitengewone medeprofessor in laserfisika.

GEMEENSKAPSINTERAKSIE

Dr Shaun Wyngaardt is deur die Wes-Kaapse Departement van Onderwys uitgenooi om onderwysers toe te spreek oor kernfisika.

Die Departement Fisika en sy Instituut vir Lasernavorsing (ILN) het in samewerking met NITheP en iThemba LABS 'n opedag ter viering van die 50ste bestaan van die laser gereël. Sir Peter Knight, prof Jim Gates en prof Jan Govaerts was die genooide sprekers. Die ILN het ook 'n opedag gehou ter viering van sy 10de bestaansjaar, met prof Herbert Stafast as gasspreker.

Die departementele uitreikomitee was aktief. Personeel en nagraadse studente was deel van die Standard Bank/Maties Wiskunde-en-Wetenskapsweek, die Universiteit Stellenbosch Natuurwetenskappe Winterweek en die ESKOM Expo vir Jong Wetenskaplikes.

Nagraadse studente wat deel is van die Stellenbosch-afdeling van die Optiese Vereniging van Amerika (OSA) was deel van 'n uitreikveldtog deur die ILN na skole in Namibië en Noord- en Wes-Kaap. Hierdie uitreikaksie van drie weke is gefinansier deur OSA, die Internasionale Vereniging vir Optika en Fotonika (SPIE) en die Universiteit Stellenbosch. Die uitreikaksie het deel gevorm van die internasionale Laserfest bewusmakingsveldtog. Uit erkenning vir hul besondere werk is die Stellenbosch OSA studentegroep aangewys as finaliste vir die internasionale OSA Toekennings vir Uitnemendheid.

SAMEWERKING

SUID-AFRIKA

iThemba LABS
Rhodes Universiteit
Square Kilometer Array (SKA)
Universiteit Kaapstad (UK)
Universiteit van Pretoria (UP)
Universiteit van die Vrystaat (UV)
Universiteit van Wes-Kaapland (UWK)
WNNR Nasionale Lasersentrum
Nasionale Instituut vir Teoretiese Fisika (NITheP)

AFRIKA

Afrika Lasersentrum
Betrokkenheid by Afrika-inisiatiewe deur middel van die Afrika Instituut vir Wiskundige Wetenskappe (AIMS) en die Afrika Teoretiese Fisika Program by die Stellenbosse Instituut vir Gevorderde Navorsing (STIAS)

INTERNASIONAAL

Navorsers in die Departement Fisika het 'n groot aantal internasionale medewerkers, soos weerspieël word deur die internasionale buitengewone professore wat by die Departement aangestel is, naamlik prof Jie Meng van Peking Universiteit (China) en prof Herbert Stafast van die Universiteit van Jena (Duitsland).

Die Teoretiese Fisika Groep het ook formele samewerkingsooreenkomste met groepe in Indië by die SN Bose Nasionale Sentrum vir Basiese Wetenskappe Kolkata, in die VSA met Syracuse University, en in die Verenigde Koninkryk met Bristol Universiteit.

Prof Helmut Zacharias van die Universiteit van Münster (Duitsland) en prof Derck Schlettwein van die Universiteit van Giessen (Duitsland) is betrokke by navorsingsprojekte van die Instituut vir Lasernavorsing (ILN).

BEFONDSING

Deutsche Akademische Austausch Dienst (DAAD)
DWT/NNS Suid-Afrikaanse Navorsingsleerstoel Inisiatief (SARChI)
Earth Anti-Neutrino Tomograph Stigting (EARTH)
iThemba LABS
Korrelbed Modulêre Reaktor (KBMR)
Nasionale Instituut vir Teoretiese Fisika (NITheP)
Nasionale Navorsingstigting (NNS)
Optiese Vereniging van Amerika (OSA)
Scientific Development and Integration
Square Kilometer Array (SKA)
Wetenskaplike Ontwikkelings- en Integrasie Innovasiefonds van die Departement Wetenskap en Tegnologie (DWT)
WNNR Departement van Vrede, Veiligheid en Sekuriteit (DPSS)
WNNR Nasionale Lasersentrum

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The following staff members have NRF ratings:

- B – Prof Kathy Myburgh
skeletal muscle biology
- C – Prof Faadiel Essop
cardiac metabolism
- Y – Prof Anna-Mart Engelbrecht
cell-death and signalling

RESEARCH INTERESTS

Metabolic syndrome, diabetes and heart diseases (myocardial ischemia, diabetic cardiomyopathy); metabolic syndrome and HIV/Aids; muscle physiology and biology; skeletal muscle atrophy and hypertrophy; satellite cells and myoblasts; cardiac metabolism, hypoxia and ischemia; psychological and oxidative stress; cancer and modes of cell death; exercise science.

RESEARCH OUTPUTS

Articles in accredited journals	7
MSc students graduated in 2010	3
MPhil students graduated in 2010	1
PhD students graduated in 2010	1

RESEARCH HIGHLIGHTS

Thanks to the activities of staff and students of the Department of Physiological Sciences, it can look back on a number of achievements during the course of the year.

Prof Faadiel Essop attended the XXth World Congress of the International Society for Heart Research in Kyoto (Japan) in May. He also presented an invited talk at the University of La Reunion (France) and had the opportunity to further strengthen conjoint research activities between Reunion and Stellenbosch University.

Prof Kathy Myburgh was appointed as a research associate in the Muscle Biology Centre of the University of Kentucky Medical Campus at Lexington (USA), where she will be working closely with Prof Michael Reid and Prof Charlotte Peterson. She was also an invited speaker at a prestigious seminar series celebrating the life's work of Prof Roger Cooke of the Macromolecular Structure Group in the Department of Biochemistry at the University of California San Francisco (USA).

Dr Carine Smith attended the 15th Annual Congress of the European College for Sport Science (ECSS), which was held in Antalya (Turkey) in June.

ACADEMIC AFFAIRS

For the past few years, the Department of Physiological Sciences has been looking to secure funding to allow the re-equipping of the undergraduate histology teaching laboratory. During 2010 Prof Faadiel Essop, Prof Anna-Mart Engelbrecht and Dr Rob Smith made a successful application to the Stellenbosch University Strategic Fund that allows for the re-equipment of the laboratory with 60 new Leica student microscopes, a Leica virtual digital microscope for teaching and a high-quality Leica fluorescent microscope for advanced microscopy teaching.

Dr Rob Smith and Dr De Wet Strauss, in conjunction with Dr JP Bosman of the SU Centre for Teaching and Learning, made a successful application to FIRTL for funding to develop podcasting of lectures in the Department of Physiological Sciences. This innovative project aims to capture both the voice and presentation information for the second year physiology students. Lectures will be made available on-line for self-study purposes. The project will be implemented during the second semester of the 2011 academic year.

SERVICE TO THE SCIENTIFIC COMMUNITY

Prof Faadiel Essop continued to service as a member of the editorial board of the *Open Obesity Journal*.

Prof Kathy Myburgh completed a term of six years as president of the Physiological Society of Southern Africa. She continues to serve as associate editor for two international journals, *Medicine and Science in Sports and Exercise*, as well as *BioMed Central Physiology*.

Dr Rob Smith serves as a steering committee member of the Pre-Clinical Drug Development Platform of the National Department of Science and Technology (DST), as a working group member of the DST Bio-economy Strategy, and as a working group member of the DST Health Innovation Plan. He is also a member of the GMO Advisory Subcommittee of the National Department of Agriculture.

NAVORSINGSFOKUSSE

Metaboliese sindroom, diabetes en hartsiektes (miokardiale ischemie, diabetiese kardiomiopatie); metaboliese sindroom en MIV/vigs; spierfisiologie en -biologie; skeletspieratrofie en hipertrofie; satelliet selle en mioblaste; kardiaal metabolisme, hipoksie en isemie; psigologiese en oksidatiewe stres; kanker en meganismes van seldood; oefeningsfisiologie.

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	7
MSc-studente gegradueer in 2010	3
MPhil-studente gegradueer in 2010	1
PhD-studente gegradueer in 2010	1

NAVORSINGSHOOGTEPUNTE

Danksy die bedrywighede van sy personeellede en studente, kan die Departement Fisiologiese Wetenskappe terugkyk op 'n jaar waarin vele hoogtepunte voorgekom het.

Prof Faadiel Essop het in Mei die XXste Wêreldkongres van die Internasionale Vereniging vir Hartnavorsing in Kyoto (Japan) bygewoon. Daarby het hy ook op uitnodiging 'n toespraak by die Universiteit van La Reunion (Frankryk) gelewer en die geleentheid gehad om navorsingsaktiwiteite tussen Reunion en die Universiteit Stellenbosch verder te versterk.

Prof Kathy Myburgh is aangestel as navorsingsgenoot van die Spierbiologie Sentrum van die Universiteit van Kentucky se Mediese Kampus in Lexington (VSA), waar sy met prof Michael Reid en prof Charlotte Peterson sal saamwerk. Sy was ook 'n genooide gasspreker by 'n vooraanstaande seminareeks wat die lewenswerk van prof Roger Cooke van die Universiteit van Kalifornië San Francisco (VSA) se Makro-Molekulêre Struktuurgroep in die Departement Biochemie, gehuldig het.

Dr Carine Smith het in Junie die Europese Kollege vir Sportwetenskap (EKSW) se 15de Jaarlikse Kongres in Antalya (Turkye) bygewoon.

AKADEMIESE SAKE

Die Departement Fisiologiese Wetenskappe het reeds die afgelope paar jaar befondsing probeer verseker vir die opgradering van die voorgraadse histologieselaboratorium. Gedurende 2010 het prof Faadiel Essop, prof Anna-Mart Engelbrecht en dr Rob Smith suksesvol hiervoor aansoek gedoen by die Universiteit Stellenbosch se Strategiese Fonds. Die befondsing maak die opgradering van die laboratorium moontlik, asook die installering van 60 nuwe Leica studentemikroskope, 'n Leica virtuele digitale opleidingsmikroskoop en 'n hoë kwaliteit Leica fluoressensiese mikroskoop wat vir gevorderde mikroskopie-opleiding gebruik kan word.

Dr Rob Smith en dr De Wet Strauss, in samewerking met dr JP Bosman van die US Sentrum vir Onderrig en Leer, het 'n suksesvolle aansoek vir FINLO-befondsing gerig om die potgooi ('podcasting') van lesings in die Departement Fisiologiese Wetenskappe moontlik te maak. Die doel van hierdie innoverende projek is om audiovisuele voordragte vir tweedejaar fisiologiestudente op die Internet beskikbaar te stel vir selfstudie doeleindes. Hierdie projek sal in werking tree gedurende die tweede semester van die 2011 akademiese jaar.

DIENS AAN DIE WETENSKAPLIKE GEMEENSAP

Prof Faadiel Essop het sy verpligtinge as 'n lid van die redaksie van die *Open Obesity Journal* voortgesit.

Prof Kathy Myburgh het 'n termyn van ses jaar as president van die Fisiologiese Vereniging van Suid-Afrika voltooi. Sy gaan voort om as mederedakteur van twee internasionale joernale, naamlik *Medicine and Science in Sport and Exercise* en *BioMed Central Physiology* te dien.

Dr Rob Smith is 'n komiteelid van die Nasionale Departement van Wetenskap en Tegnologie (DWT) se werksgroep vir die Pre-Kliniese Geneesmiddel Ontwikkelingsplatform. Hy dien ook as werksgroeplid van die DWT Bio-ekonomiese Strategie en die

Personeel | Staff

Doserend

Prof MF Essop (voorsitter)
Dr N Brooks
Prof A-M Engelbrecht
Prof KH Myburgh
Dr C Smith
Dr RM Smith
Dr JA deW Strauss

Ondersteuningspersoneel

Dr A Krygsman
M Mbovane
Dr T Nell
GA Simon

Prof Anna-Mart Engelbrecht continued her service as member of the editorial board of the *International Journal of Biomedical Sciences*.

AWARDS TO STAFF AND STUDENTS

The excellent efforts of our staff were recognized by the University. Prof Faadiel Essop and Prof Anna-Mart Engelbrecht both received SU Rector's Awards for Excellence in Research. Dr De Wet Strauss received a SU Rector's Award for Excellence in Teaching, while Mrs Catrina Martins was awarded a SU Rector's Award for Service Excellence.

Our postgraduate students also excelled at national meetings. Mr Danzil Joseph was awarded a first prize for his poster at the annual meeting of the Society for Endocrinology, Metabolism and Diabetes of South Africa (SEMDSA) in Durban.

Dr Fillipo Macaluso, a postdoctoral fellow in the Department's Muscle Research Group, received an award for his poster at the Annual European Muscle Conference in Padua (Italy).

Ms Gina Leisching was the runner-up in the Wyndham Student Presentation competition at the annual congress of the Physiology Society of Southern Africa in East London, with Mr Paul Steyn taking the third place. At the same congress, Ms Heloise le Roux was the runner-up in the Johnny van der Walt Student Poster Presentation competition.

STAFF MATTERS

Prof Faadiel Essop was officially appointed as chairperson of the Department of Physiological Sciences.

COMMUNITY INTERACTION

Prof Anna-Mart Engelbrecht and Dr Theo Nell presented workshops at the annual Maties/Standard Bank Maths and Science Week, which is held on campus for learners.

The Department was also well represented at the annual Eskom Expo for Young Scientists in Stellenbosch, with staff acting as judges in the biological and medical divisions. The Department put in a group effort with all staff members being involved with the annual Stellenbosch University Open Day.

Dr De Wet Strauss annually presents refresher courses in Biology for teachers.

FUNDING

Cancer Association of South Africa (CANSA)
European Union (HEAIDS)
Medical Research Council (MRC)
National Research Foundation (NRF)
Nestlé Nutrition Institute Africa (NNIA)
South Africa-Norway collaboration initiative (NUFU)
Stellenbosch University (SU)

COLLABORATION

SOUTH AFRICA

Cape Peninsula University of Technology (CPU)
Free State University (FSU)
Groote Schuur Hospital (GSH) Lipid Clinic
Nelson Mandela Metropolitan University (NMMU)
University of Cape Town (UCT)
University of KwaZulu-Natal (UKZN)

AFRICA

Kenyatta University (Kenya)

INTERNATIONAL

Australia

Griffith University

Canada

Carleton University

DWT Gesondheidsinnoveringsplan. Daarby is hy ook lid van Nasionale Departement van Landbou se GMO Raadgewende Subkomitee.

Prof Anna-Mart Engelbrecht het haar dienste as lid van die redaksie van die *International Journal of Biomedical Sciences* voortgesit.

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Die uitstekende werk van ons personeel is deur die Universiteit Stellenbosch erken deurdat verskeie personeellede Rektorstoekennings ontvang het. Prof Faadiel Essop en prof Anna-Mart Engelbrecht het albei US Rektorstoekennings vir Voortreflike Navorsing ontvang, terwyl dr De Wet Strauss 'n US Rektorstoekening vir Voortreflike Onderrig ontvang het. Op haar beurt het mev Catrina Martins 'n US Rektorstoekening vir Voortreflike Dienslewering verwerf.

Ons nagraadse studente het ook uitblink by verskeie kongresse. Mnr Danzil Joseph het 'n eerste plek ingeneem vir sy plakkaat by die jaarlikse kongres van die Vereniging van Endokrinologie, Metabolisme en Diabetes van Suid-Afrika (SEMDSA) wat in Durban gehou is.

Dr Fillipo Macaluso, 'n nadoktorale genoot van die Spiernavorsingsgroep, het 'n toekenning ontvang vir sy plakkaat by die jaarlikse Europese Spierkonferensie in Padua (Italië).

Me Gina Leisching het die tweede prys verower in die Wyndham Studentevoordrag-kompetisie by die jaarlikse kongres van die Fisiologiese Vereniging van Suider-Afrika in Oos-Londen, met mnr Paul Steyn wat die derde plek ingeneem het. By dieselfde kongres het me Heloise le Roux die tweede plek behaal in die Johnny van der Walt Studente-plakkaatkompetisie.

PERSONEELSAKE

Prof Faadiel Essop is amptelik as departementele voorsitter van die Departement Fisiologiese Wetenskappe aangestel.

GEMEENSKAPSINTERAKSIE

Prof Anna-Mart Engelbrecht en dr Theo Nell het albei werkwinkels aangebied by die jaarlikse Maties/Standard Bank Wiskunde- en Wetenskapsweek, wat op kampus vir leerders aangebied is.

Die Departement Fisiologiese Wetenskappe is goed verteenwoordig by die jaarlikse Eskom Expo vir Jong Wetenskaplikes in Stellenbosch, met verskeie personeellede wat waardevolle werk as beoordelaars in die biologiese en mediese afdelings gedoen het. Daarby was die Departement as 'n geheel betrokke by die jaarlikse Universiteit Stellenbosch Opedag.

Dr De Wet Strauss het weer eens sy jaarlikse opleidingsessie vir onderwysers in biologie aangebied.

SAMEWERKING

SUID-AFRIKA

Groote Schuur Hospitaal Lipiedkliniek
Kaapse Skiereiland Universiteit van Tegnologie (KPUT)
Nelson Mandela Metropolitaanse Universiteit (NMMU)
Universiteit van die Vrystaat (UV)
Universiteit van Kaapstad (UK)
Universiteit van KwaZulu-Natal (UKZN)

AFRICA

Kenyatta Universiteit (Kenia)

INTERNASIONAAL

Australië
Griffith Universiteit

Frankryk
Universiteit van La Reunion

BEFONDSING

Europese Unie (HEAIDS)
Kankervereniging van Suid-Afrika (KANSA)
Mediese Navorsingsraad (MNR)
Nasionale Navorsingstigting (NNS)
Nestlé Voedingsinstituut Afrika (NNIA)
Suid-Afrika-Noorweë samewerkingsinisiatief (NUFU)
Universiteit Stellenbosch (US)

Boost for microscopy teaching

The Department of Physiological Sciences successfully applied for funding of R1 million from the Stellenbosch University Strategic Fund to re-equip its Microscopy Teaching Laboratory. It is used to teach microscopy and histology to second year, third year and honours physiological sciences students.

Sixty LEICA DM500 Student Microscopes, an accompanying LEICA DMD 108 Teaching Microscope and a LEICA DM5000 Motorised Fluorescent Microscope were purchased. In 2010, the LEICA DM500 student microscope with its recyclable red, white and black packaging won the international Worlddidac Award 2010 for innovation in the education sector.

The re-equipping of the laboratory was needed as some of the current pieces of equipment were nearly 35 years old.

"Tremendous advances have been made in recent years with regards to microscopy, such as the use of fluorescence in imaging," says Dr Rob Smith of the Department of Physiological Sciences. "Our teaching infrastructure is now in line with the internationally accepted norms."

Stellenbosch University, through the Department of Physiological Sciences, is the only tertiary institution in South Africa that offers Microscopy and Histology as part of its undergraduate programmes to non-medical students, in particular to students taking both human and animal physiology.

Physiology is a core discipline in several undergraduate programmes in the Faculty of Science, such as BSc Human Life Science and BSc Sport Science.



The new facilities allow Stellenbosch University to move forward in it's ability to provide excellent teaching and research, and to provide students with practical light microscopy skills.



"The need to provide adequate training is due to the increased use of microscopy in modern science, coupled with an increase in the knowledge base of fluorescent chemistries available to modern scientists," Dr Smith says. "Microscopy serves as a discipline which forms part of the preparation for postgraduate studies in almost all science disciplines, and plays a role in most routine science."

France

University of La Reunion
Greece
Trikala University

Hungary

Biological Research Centre

Norway

University of Bergen

United States of America

University of Maryland

Griekeland

Trikala Universiteit

Hongarye

Biologiese Navorsingsentrum

Kanada

Carleton Universiteit

Noorweë

Universiteit van Bergen

Verenigde State van Amerika

Universiteit van Maryland

Mikroskopie-opleiding kry hupstoot



Die Departement Fisiologiese Wetenskappe het suksesvol by die Universiteit Stellenbosch se Strategiese Fonds aansoek gedoen vir befondsing van R1 miljoen om die Onderriglaboratorium vir Mikroskopie te verbeter. Dit word gebruik om mikroskopie en histologie aan tweede-jaar-, derdejaar- en honneursstudente in fisiologiese wetenskappe te onderrig.

Sestig LEICA DM500 studentemikroskope, 'n LEICA DMD 108 onderrigmikroskoop en 'n LEICA DM5000 gemotoriseerde fluoresserende mikroskoop wat daarmee saam gebruik word, is aangekoop. Die rooi, wit en swart Leica DM500 studentemikroskoop van herwinbare materiaal het in 2010 die internasionale Worlddidac Toekenning vir innovasie in die opvoedkunde sektor ontvang.

Die hertoerusting van die laboratorium was nodig aangesien van die toerusting byna 35 jaar oud was.

“Reusevordering is die afgelope aantal jaar gemaak ten opsigte van mikroskopie, soos die gebruik van fluoressensie in beelding,” sê dr Rob Smith van die Departement Fisiologiese Wetenskappe. “Ons onderriginfrastruktuur is nou in ooreenstemming met die internasionaal aanvaarde norme.”

Die Universiteit Stellenbosch, deur die Departement Fisiologiese Wetenskappe, is die enigste tersiêre instelling in Suid-Afrika wat mikroskopie en histologie as deel van sy voorgraadse programme aan niemediese studente bied, in die besonder aan studente wat beide mens- en dierfisiologie neem.

Fisiologie is 'n kerndissipline in verskeie voorgraadse programme in die Fakulteit Natuurwetenskappe, soos BSc Menslike Lewenswetenskappe en BSc Sportwetenskap.

“Die nuwe fasiliteite maak dit vir ons moontlik om vorentoe te beweeg in ons vermoë om uitmuntende onderrig en navorsing te verskaf, en aan ons studente praktiese vaardighede in ligmikroskopie te kan verskaf,” sê dr Smith.

“Die behoefte om voldoende opleiding te verskaf kan toegeskryf word aan die verhoogde gebruik van mikroskopie in moderne wetenskap, gepaard met 'n uitbreiding in die kennisbasis van fluoresserende chemies beskikbaar vir moderne wetenskaplikes,” sê dr Smith. “Mikroskopie dien as 'n dissipline wat deel uitmaak van die voorbereiding vir nagraadse studies in feitlik alle wetenskap-dissiplines, en speel 'n rol in die meeste roetinewetenskap.”

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The following staff members have NRF ratings:

- A – Prof Doug Rawlings
molecular biology of biomining bacteria and their plasmids
- B – Prof Leon Dicks
lactic acid bacteria, probiotics and bacteriocins
- B – Prof Emile van Zyl
bioethanol from plant material and expression of foreign proteins in yeast and fungi
- C – Prof Marinda Bloom
fungus bioprocessing
- C – Prof Alf Botha
yeast and fungal ecology
- C – Prof Karin Jacobs
microbial ecology
- Y – Dr Heinrich Volschenk
bioprospecting for enzymes associated with lipid and plant material decomposition

RESEARCH INTERESTS

Bioprocessing of agricultural products; bioprospecting for enzymes including plant polysaccharide hydrolytic enzymes; genetic manipulation of yeasts for polysaccharide utilization; genetic manipulation of yeasts for the conversion of plant material to bioethanol and production of enzymes /pharmaceutical proteins in yeast and fungi for use in vaccine production; microbiology of biomining of ores, arsenic resistance and generation of defined mutants and plasmids of biomining bacteria; taxonomy of lactic acid bacteria; characterization of antimicrobial peptides (including bacteriocins) produced by lactic acid bacteria and their industrial application; fungal communities from fynbos soil; biology of soil fungi, particularly *Penicillium* and *Mucor*; the interactions between yeast their biological, chemical and physical environment; taxonomy of ascomycetes; development of probiotic lactic acid bacteria for humans and animals.

RESEARCH OUTPUTS

Articles in accredited journals	38
Patents & Technological developments	7
MSc students graduated in 2010	2
PhD students graduated in 2010	3

The Department of Microbiology continued to make excellent strides towards its goal to excel in terms of research outputs and academic affairs.

RESEARCH HIGHLIGHTS

Prof Doug Rawlings visited the Great Lakes University of Kisumu (Kenya) to attend a conference of the Tropical Institute for Community Health. While there, he was also a guest speaker at Kisumu's graduation ceremony. Prof Rawlings was also invited as a guest speaker to address the autumn meeting of the Society for General Microbiology in Nottingham (UK) and to present a lecture at the International Plasmid Biology Conference in Bariloche (Argentina). Mr Mattias Castro, a PhD student from Santiago (Chile) spent six months in the Rawlings laboratory doing research.

Prof Marinda Bloom and her research team has developed a recombinant yeast strain able to convert raw starch to bio-ethanol.

Prof Leon Dicks wrote six chapters in *Bergey's Manual of Systematic Bacteriology* (2nd Edition, Volume 3, *The Firmicutes*), which is published by Springer (New York). He was also invited to write seven chapters in *The Lactic Acid Bacteria* of Wiley Publishers.

Prof Karin Jacobs attended the International Mycological Congress 9 in Edinburgh in Scotland as well as the International Symposium on Microbial Ecology 13 in Seattle (USA). She also received a C2 rating from the National Research Foundation (NRF).

ACADEMIC AFFAIRS

Staff members of the Department of Microbiology take undergraduate teaching seriously. Without exception they have all received very high recommendations in the student feedback for undergraduate modules.

The Department is characterized by having a high number of postgraduate students and especially postdoctoral and other researchers, relative to the number of academic staff.

SERVICE TO THE SCIENTIFIC COMMUNITY

Prof Doug Rawlings is the national coordinator for Claude Leon Postdoctoral Fellowships and also serves on the editorial committee of the *International Biodeterioration and Biodegradation*, *Transactions of the Royal Society of South Africa* and *Mobile Genetic Elements*.

Prof Alf Botha serves on the National Research Foundation (NRF) panel for the evaluation of scientists in the field of microbiology and plant pathology.

Prof Leon Dicks continues to serve as editor of the *South African Journal of Viticulture and Oenology*.

Prof Karin Jacobs served as the president of the South African Society for Plant Pathology.

Prof Emile van Zyl organised the African Convention of the Global Sustainable Bioenergy

NAVORSINGSFOKUSSE

Bioprosessering van landbou produkte; bioprospektering van onder andere hidrolitiese ensieme vir die afbraak van plant polisakkariede; genetiese manipulasie van giste vir omskakeling van plantmateriaal na bioetanol en produksie van ensieme/farmaseutiese proteïene teen menslike virusse in giste en fungi; mikrobiologie van bio-ontginning van ertse; taksonomie van melksuurbakterieë; karakterisering van antimikrobiese peptiede (oa bakteriosiene) geproduseer deur melksuurbakterieë en hul industriële toepassing; ontwikkeling van probiotiese melksuurbakterieë vir mense en diere; taksonomie van askomisetse; fungusgemeenskappe van fynbosgrond; biologie van grondfungi, spesifiek *Penicillium* en *Mucor*; die interaksies van giste met hul biologiese, chemiese en fisiese omgewings.

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	38
Patente & Tegnologiese ontwikkelinge	7
MSc-studente gegradueer in 2010	2
PhD-studente gegradueer in 2010	3

Die Departement Mikrobiologie volhard steeds in sy strewe om uitnemende navorsingsuitsette te lewer, en akademiese opleiding van 'n hoë standaard te verseker.

NAVORSINGSHOOGTEPUNTE

Prof Doug Rawlings het besoek afgelê by die Great Lakes University of Kisumu (Kenia) om 'n konferensie van die Tropiese Instituut vir Gemeenskapsgesondheid by te woon. Hy het ook as gasspreker by Kisumu se gradeplegtigheid opgetree. Daarby is hy uitgenooi as 'n gasspreker by die herfsbyeenkoms van die Vereniging vir Algemene Mikrobiologie in Nottingham (UK), en het hy 'n lesing by die Internasionale Plasmiedbiologie Konferensie in Bariloche, Argentinië, aangebied. Mnr Mattias Castro, 'n PhD-student van Santiago (Chili) het ses maande in prof Rawlings se laboratorium spandeer.

Prof Marinda Bloom en haar navorsingspan het 'n rekombinante gisras ontwikkel wat rou stysel na bio-etanol kan omskakel.

Prof Leon Dicks het ses hoofstukke geskryf in *Bergey's Manual of Systematic Bacteriology* (2de uitgawe, Volume 3, *The Firmicutes*) wat deur Springer (New York) uitgegee word. Hy is ook genooi om sewe hoofstukke in *The Lactic Acid Bacteria* van Wiley Publishers te skryf.

Prof Karin Jacobs het die Internasionale Mikologiese Kongres 9 in Edinburgh (VK) en die Internasionale Simposium op Mikrobiese Ekologie 13 in Seattle (VSA) bygewoon. Daarby is haar NNS-evaluering ook deur die Nasionale Navorsingstigting (NNS) aangepas na C2.

AKADEMIESE SAKE

Personeel van die Departement Mikrobiologie beskou voorgraadse dosering as 'n baie belangrike deel van hul werk. Sonder uitsondering het elkeen van hulle besonderse goeie terugvoer vanaf studente in die voorgraadse modules ontvang.

Die Departement word gekenmerk deur 'n groot aantal nagraadse en ook nadoktorale studente en ander navorsers, in vergelyking met die hoeveelheid akademiese personeel.

DIENS AAN DIE WETENSKAPLIKE GEMEENSKAP

Prof Doug Rawlings is die nasionale koördineerder van die Claude Leon Nadoktorale Genootskapsfonds en dien ook op die redaksionele komitee van *International Bio-deterioration and Biodegradation, Transactions of the Royal Society of South Africa* and *Mobile Genetic Elements*.

Prof Alf Botha dien op die Nasionale Navorsingstigting (NNS) se evalueringspaneel van wetenskaplikes in die velde van mikrobiologie en plantpatologie.

Prof Leon Dicks dien steeds as redakteur van die joernaal van die Suid-Afrikaanse Wingerd- en Wynvereniging.

Prof Karin Jacobs het as die president van die Suid-Afrikaanse Vereniging vir Plantpatologie gedien.

Personeel | Staff

Doserend

Prof DE Rawlings (voorsitter)
 Prof M Bloom
 Prof A Botha
 Prof TE Cloete (dekaan)
 Prof LMT Dicks
 Prof K Jacobs
 T Jansen
 Prof WH van Zyl
 Dr H Volschenk

Buitengewone professore

Prof B Axcell
 Prof L Lynd
 Prof BA Prior
 Prof J Thevelein

Ondersteuningspersoneel

W Wentzel (sekretaresse)
 JM Cilliers
 LJ Daniels
 M Gey van Pittius
 MH Koopman
 J Lynch
 R Pretorius
 M Stuurman
 T van der Merwe
 L van der Westhuizen

Project, which was held in March. It was attended by 40 stakeholders and leading thinkers from nine countries involved in planning around the sustainable future of biofuels in Africa.

Dr Heinrich Volschenk is a council member of the South African Society for Microbiology, and is responsible for the media and communications portfolio.

AWARDS TO STAFF AND STUDENTS

Prof Leon Dicks was elected as a member of the Academy of Science for South Africa (ASSAf). He specializes in the taxonomy of lactic acid bacteria and the characterization of their antimicrobial peptides, including bacteriocins. Prof Dicks studies the genotypic relatedness of lactic acid bacteria by using molecular taxonomic techniques. His latest research is more directed towards probiotics and the medical application of antimicrobial peptides.

STAFF MATTERS

Dr Karin Jacobs and Dr Marinda Bloom were both promoted from senior lecturer to associate professor.

Prof Daan Toerien was appointed as an extraordinary professor and will serve on the advisory board of the Stellenbosch University Water Institute.

COMMUNITY INTERACTION

Microbiology staff members do not only participate in professional bodies and other community spheres to promote the field of microbiology, but were also involved in a number of educational community related outreach projects.

The Microbiology Schools Day saw Grade 11 and 12 pupils from several schools in the Western Cape visit the Department for educational and informative displays. Talks on microbiology were presented by the postgraduate students of the Department. The requirements to study microbiology and career prospects were also highlighted.

The Department of Microbiology took part in the annual Stellenbosch University Open Day, as well as the annual Stellenbosch University Science Winter Week. Training sessions in microbiology were also held for learners from local schools.

Academic staff members regularly take part in radio and television interviews, as well as articles in newspapers and popular magazines to promote the latest advancements in microbiology.

Members of the Department of Microbiology also donated monthly supplies to Cotlands Somerset West.

FUNDING

Cipla Medpro (Pty) Ltd
Department of Science and Technology (DST)
Mascoma Corporation
National Research Foundation (NRF)
RAPS GmbH & Co
South African National Energy Research Institute (SANERI)
Sloan Trust
Technology Innovation Agency (TIA)
THRIP

COLLABORATION

SOUTH AFRICA

Agricultural Research Council (ARC) Nietvoorbij
Cape Peninsula University of Technology (CPUT)
Council for Scientific and Industrial Research (CSIR)
Medical Research Council (MRC)
Rhodes University
University of the Western Cape (UWC)
Water Research Commission (WRC)

INTERNATIONAL

Chile
University Adrés Bello

Finland
University of Turku

Germany
University of Karlsruhe

Prof Emile van Zyl het die Afrika Konvensie van die Wêreldwye Volhoubare Bioenergieprojek (GSB) in Maart in Stellenbosch georganiseer. Dit is bygewoon deur 40 belanghebbendes en toonaangewende denkers van nege lande wat gemoed is met beplanning vir 'n volhoubare biobrandstoftekoem in Afrika.

Dr Heinrich Volschenk is 'n raadslid van die Suid-Afrikaanse Vereniging vir Mikrobiologie, en is verantwoordelik vir die media- en kommunikasieportefeulje.

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Prof Dicks is verkies tot lid van die Wetenskap-akademie van Suid-Afrika (ASSAf). Hy spesialiseer in die taksonomie van melksuurbakterieë en die karakterisering van antimikrobiële peptiede, insluitend bakteriosiene. Die genotipiese verwantskap van melksuurbakterieë word bestudeer deur molekuleêre taksonomiese tegnieke. Sy nuutste navorsing is meer gerig op die mediese toepassings van antimikrobiële peptiede.

PERSONEELSAKE

Dr Karin Jacobs en dr Marinda Bloom is albei van senior lektor tot medeprofessor bevorder.

Prof Daan Toerien is aangestel as buitengewone professor en sal op die adviesraad van die Universiteit Stellenbosch Waterinstituut dien.

GEMEENSKAPSINTERAKSIE

Personeel van die Departement Mikrobiologie is nie net in leierskapsposisies binne professionele en ander gemeenskapsfere betrokke om die veld van mikrobiologie te bevorder nie, maar gooi ook hul gewig agter talle opvoedkundige uitreikprogramme in.

Die Mikrobiologie Skoledag is vir Graad 11- en 12-leerders van verskeie Wes-Kaapse skole gehou. Die leerders het die Departement besoek vir opvoedkundige en leersame uitstallings. Praatjies oor mikrobiologie is deur die nagraadse studente van die Departement aangebied. Die voorvereistes om in die veld te studeer, asook loopbaanvooruitsigte, is ook vir die leerders uitgelig.

Daarby was personeel en studente ook betrokke by die jaarlikse Universiteit Stellenbosch Opedag, asook die Universiteit Stellenbosch Natuurwetenskappe Winterweek. Opleidingsessies in mikrobiologie is ook vir leerders van plaaslike skole aangebied.

Akademie personeel neem gereeld aan radio- en televisieonderhoude deel, en werk mee aan koerantberigte en populêre tydskrifte om die nuutste ontwikkelinge in die veld van mikrobiologie in die nuus uit te lig.

Lede van die Departement Mikrobiologie het ook maandelikse skenkings gemaak vir voorrade vir Cotlands Somerset-Wes.

SAMEWERKING

SUID-AFRIKA

Kaapse Skiereiland Universiteit van Tegnologie (KPUT)
Landbounavorsingsraad (LNR) Nietvoorbij
Mediese Navorsingsraad (MNR)
Rhodes Universiteit
Universiteit van Wes-Kaapland (UWK)
Wetenskaplike en Nywerheidsnavorsingsraad (WNNR)
Waternavorsingskommissie (WNK)

INTERNASIONAAL

Chili

Universiteit Adrés Bello

Duitsland

Universiteit van Karlsruhe

Finland

Universiteit van Turku

BEFONDSING

Cipla Medpro (Edms) Bpk
Departement van Wetenskap en Tegnologie (DWT)
Mascoma Corporation
Nasionale Navorsingstigting (NNS)
RAPS GmbH & Co
Suid-Afrikaanse Nasionale Instituut vir Energieneavorsing (SANERI)
Sloan Trust
Technology Innovation Agency (TIA)
THRIP

Scientists contribute to SU HOPE Project



The HOPE Project, through which the academic and research expertise at Stellenbosch University (SU) is being put at the service of human need, was launched locally and internationally in July 2010.

The HOPE Project is about doing world-class research on local, regional and African challenges in state-of-the-art facilities with the best expertise available, while providing the best opportunities for learning and the growth of a new generation of thought leaders.

It aims to entrench Stellenbosch University as a leading tertiary institution of the 21st century. The University's three core functions - teaching and learning, research and community interaction - underpin its HOPE Project.

Through the HOPE Project, the University supports the international development agenda by focusing some of its key academic and research programmes on:

- *Eradicating poverty and related condition*
- *Promoting human dignity and health*
- *Promoting democracy and human rights*
- *Promoting peace and security*
- *Promoting a sustainable environment and a competitive industry*

Faculties were invited to develop research proposals that would direct their expertise into achieving these goals. The result has been the formulation of more than 20 visionary academic initiatives focused on these development themes (read more at www.thehopeproject.co.za).

Meeting other strategic objectives such as the maintenance and further development of state-of-the-art academic facilities, technology and infrastructure, as well as ensuring staff and student success will run parallel to the roll-out of the academic initiatives en route to 2015. Other cross-cutting and trans-disciplinary initiatives will in turn help create and sustain an enabling environment for Stellenbosch University to succeed as builder of hope in Africa.

Four projects relating to the Faculty of Science contribute to the HOPE project. These are the Centre for Studies in Complexity (see p 56), the DST-NRF Centre of Excellence for Invasion Biology (see p 58), the Universities Partnership in Adapted Physical Activity (see p 62) and the Stellenbosch University Water Institute (see p 64).

France

Muséum National d'Histoire Naturelle

Italy

Padova University
University of Verona

Japan

Kyushu University
Tokyo University of Agriculture
University of Tokyo

The Netherland

Centraal Bureau voor Schimmelcultures

Sweden

Umea University

United States of America

Dartmouth College
Rutgers State University of New Jersey

Wales

University of Bangor

Frankryk

Muséum National d'Histoire Naturelle

ItaliëPadova Universiteit
Universiteit van Verona**Japan**Kyushu Universiteit
Tokio Universiteit
Tokio Universiteit van Landbou**Nederland**

Centraal Bureau voor Schimmelcultures

Swede

Umea Universiteit

Verenigde State van AmerikaDartmouth Kollege
Rutgers Staatsuniversiteit van New Jersey**Wallis**

Universiteit van Bangor

**Wetenskaplikes dra by tot
US se HOOP-projek**

Die HOOP-projek, waardeur die akademiese en navorsingskundigheid van die Universiteit Stellenbosch (SU) tot diens van die samelewing gestel word, is in Julie 2010 landwyd en internasionaal bekendgestel.

Die HOOP Projek kan opgesom word as wêreldgehalte navorsing oor plaaslike, streeks- en Afrikakwessies in ultramoderne fasiliteite met die voorste kundigheid om die beste geleenthede te skep vir onderrig en leer, en die ontwikkeling van 'n nuwe generasie denkleiers.

Die oogmerk is om die Universiteit as 'n voorloperinstansie van die 21ste eeu te verskans. Die Universiteit se drie kernfunksies - onderrig en leer, navorsing en gemeenskapsinteraksie - stut die HOOP Projek.

Deur die HOOP Projek ondersteun die Universiteit die internasionale ontwikkelingsagenda deur van sy akademiese en navorsingsprogramme te fokus op:

- Die uitwissing van armoede en verwante toestande
- Die bevordering van menswaardigheid en gesondheid
- Die bevordering van demokrasie en menseregte
- Die bevordering van vrede en veiligheid
- Die bevordering van 'n volhoubare omgewing en 'n kompeterende nywerheid

Fakulteite is genooi om navorsingsvoorstelle te ontwikkel waardeur hulle hul kundigheid kan inspan om bogenoemde doelwitte te verwesenlik. Gevolglik is meer as 20 visionêre inisiatiewe geformuleer wat op hierdie ontwikkelingstemas afgestem is (lees meer by www.diehooprojek.co.za).

Tot 2015 sal die inwerkingstelling van hierdie akademiese inisiatiewe gepaardgaan met die verwesenliking van ander strategiese doelwitte, soos die instandhouding en verdere ontwikkeling van ultramodern akademiese fasiliteite, tegnologie en infrastruktuur sowel as die versekering van personeel- en studentesukses. Van die dwarsliggende inisiatiewe sal deur hul omvattende en transdissiplinêre aard 'n bevorderlike omgewing help skep en handhaaf om die US as bouer van hoop in Afrika te kan onderskei.

Vier projekte wat verwant is aan die Fakulteit Natuurwetenskappe vind inslag by die HOOP-projek, Hulle is die Sentrum vir Studies in Kompleksiteit (sien bl 57), die DWT-NNS Sentrum van Uitnemendheid vir Indringerbiologie (sien bl 59), die Universiteitsvennootskap in Aangepaste Bewegingsaktiwiteite (sien bl 63) en die Universiteit Stellenbosch Waterinstituut (sien bladsy 65).

Contact details | Kontakinligting

Tel 021 808 3236

Faks | Fax 021 808 2405

Epos | Email botzoo@sun.ac.za

Web www.sun.ac.za/botzoo

The following staff members have NRF ratings:

- A – Prof Steven Chown
biological invasions and evolutionary physiology
- A – Prof Dave Richardson
biological invasions and conservation biogeography
- A – Prof Terry Robinson
evolutionary genetics and phylogenomics of mammals
- B – Prof Koot Reinecke
ecotoxicology
- B – Prof Valdon Smith
Antarctic and southern island biology and ecology
- C – Prof Mike Cherry
behaviour ecology
- C – Prof Leanne Dreyer
evolution of the Cape Flora
- C – Dr Alex Flemming
reproductive strategies and fetal development in viviparous lizards, particularly those having complex placentas
- C – Prof Bettine Janse van Vuuren
molecular ecology
- C – Prof Conrad Matthee
molecular systematics and phylogeography
- C – Prof Le Fras Mouton
evolutionary ecology of lizards
- C – Prof Sophié Reinecke
stress ecology
- C – Prof Hannes van Wyk
animal physiology, herpetology, endocrine disruptors in water
- C – Dr Theresa Wossler
communication and social organization in hymenopteran
- Y – Dr Bruce Anderson
plant-animal interaction
- Y – Prof Savel Daniels
molecular systematics, phylogeography and conservation of inverts
- Y – Dr Nokwanda Makunga
medicinal plantbiotechnology
- Y – Dr Anton Pauw
the evolutionary ecology of plants and their pollinators
- Y – Dr Victor Rambau
cytogenetics, phylogeography
- Y – Dr Carol Simon
marine invertebrate reproduction and polychaete worm taxonomy
- P – Dr Cang Hui
ecological modelling and mathematical ecology

RESEARCH INTERESTS

Animal biodiversity; Antarctic and southern island research; behavioural ecology of vertebrates; Cape flora; climate change; community ecology; economic botany; conservation genetics and phylogeography; ecotoxicology; ecotoxicogenomics; endocrine disruption; evolutionary genomics of animals; evolutionary physiology of animals; fynbos ecology and genomics; herpetology; indigenous plant use and medicinal plants; insect behaviour and physiology; ecophysiology; invasion biology; macroecology; molecular systematics; palaeontology; plant animal interactions; plant biodiversity; plant biochemistry; plant biotechnology; plant ecology; plant ecophysiology; plant physiology and photosynthesis; plant functional genomics; plant mycorrhiza - fungi; plant systematics; stress ecology; vertebrate functional biology.

RESEARCH OUTPUTS

Articles in accredited journals	137
Editorial activities (books and journals)	64
Books, conference proceedings, chapters in books	12
Book Reviews, articles in specialist journals	4
MSc students graduated in 2010	4
PhD students graduated in 2010	5

RESEARCH HIGHLIGHTS

The Department of Botany and Zoology yet again can look back on a number of research highlights. One of these is the successful publishing of 137 papers in ISI accredited journals, of which 95% were in international outlets.

Three academic staff members received ratings from the National Research Foundation (NRF) for the first time. They are Dr Nox Makunga, Dr Carol Simon and Dr Cang Hui. Of particular interest is the P rating obtained by Dr Hui from the Centre of Invasion Biology (C•I•B), whose research focuses on the interface between ecology and mathematics. Three quarters of the 28 academic staff now have NRF ratings (A = 3; B = 2; C = 9; P = 1; Y = 6).

As a result of the active research programmes of the Department and the C•I•B, 38 new students registered for postgraduate degrees in Botany or Zoology (15 honours; 14 MSc and 9 PhD).

We also attracted many prominent national and international visitors and provided an academic home to sixteen postdoctoral fellows from eleven nationalities.

Through these active collaborations, visits from Dr Madeleine Beekman and Dr Ben Oldroyd from the University of Sydney (Australia), Prof John Stoffolano from the University of Massachusetts (USA), Prof Jaco Greeff and Prof Mike Wingfield from the University of Pretoria, Prof Sue Kilham from Drexel University (USA), Dr Nobby Yamaguchi from the University of Oxford (UK), Prof Hilke Ruhberg of the University of Hamburg (Germany), Dr Karen Gaynor of the Irish Department of Nature Conservation (UK), Dr Denzil Beukes from Rhodes University, Dr Marcel Honza of the Czech Academy of Science (Czech Republic) and Dr Russell Lowers of the Medical University South Carolina (USA) were hosted.

The Department of Botany and Zoology is also the home of choice for several research associates who contribute towards the research productivity. They include Prof Jan Nel, Prof Eddie van Dijk, Prof Jan Giliomee, Prof Dan Baird, Dr Ted Oliver, Dr Edmund Pool, Dr Willie Sirgel, Dr Krystal Tolley and Dr Colin Tillbury.

Academic staff of the Department and the C•I•B attended and presented research at several national and international conferences. International contributions include Prof Sophié Reinecke who attended a Society of Environmental Toxicology and Chemistry (SETAC) conference (Spain), Dr Susana Clusella-Trullas who attended the conference of the Society for Experimental Biology (Czech Republic), Prof Bettine Jansen van Vuuren and Prof Steven Chown who attended the Scientific Committee on Antarctic Research (SCAR) meeting and the Open Science Conference in Argentina, Prof Terry Robinson who attended the 19th International Colloquium on Animal Cytogenetics and Gene Mapping (ICACGM) in Poland, Prof Conrad Matthee who attended a Groupement de Recherche International (GDRI) meeting (France), and Dr Cang Hui who attended a workshop on dynamic species modelling in Spain. Dr Carol Simon

NAVORSINGSFOKUSSE

Antarktiese en suidelike eilande navorsing; bewaringsgenetika en biogeografie; gedrags-ekologie van vertebrate; ekofisiologie; ekonomiese plantkunde; ekotoksikologie; ekotoksikogenomika; inheemse plantgebruik en medisinale plante; dierbiodiversiteit; endokriene verstourings; evolusionêre ekologie; evolusionêre fisiologie van diere; evolusionêre genomika van diere; fynbosekologie en -genomika; gemeenskapsekologie; herpetologie; indringerbiologie; insekgedrag en -fisiologie; Kaapse flora; klimaatsverandering; makro-ekologie; molekuleêre dierkunde; paleontologie; plantbiotegnologie; plant-dier wisselwerkings; plantbiodiversiteit; plantekologie; plantekofisiologie; plantfisiologie en fotosintese; plantmikrohistia - fungi; plantsistematika en -filogenie; funksionele plantgenomika; plantbiochemie; stressekologie; vertebrata funksionele biologie.

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	137
Redaksionele aktiwiteite (boeke en joernale)	64
Boeke, konferensieverrigtinge, hoofstukke in boeke	12
Boekresensies, artikels in spesialis tydskrifte	4
MSc-studente gegradueer in 2010	4
PhD-studente gegradueer in 2010	5

NAVORSINGSHOOGTEPUNTE

Die Departement Plant- en Dierkunde het weer eens 'n besonderse hoeveelheid navorsingsuitsette gelewer. Gedurende 2010 is 137 geakkrediteerde navorsingsartikels in ISI joernale gepubliseer, waarvan 95% in internasionale uitgawes verskyn het.

Drie akademiese personeellede het akkreditasie ontvang van die Nasionale Navorsingstigting (NNS), naamlik dr Nox Makunga, dr Carol Simon en dr Cang Hui. Veral merkwaardig is die P-gradering van dr Hui, wat verbonde is aan die DWT-NNS Sentrum vir Uitnemendheid in Indringerbiologie (S•I•B), wie se navorsing fokus op die raakvlakke tussen ekologie en wiskunde. Driekwart van die Departement se 28 akademiese personeellede is nou NNS-geakkrediteer (A=3; B=2; C=9; P=1; Y=6).

As gevolg van die aktiewe navorsingsprogram van die Departement en die S•I•B het in totaal van 38 nuwe nagraadse studente geregistreer vir grade in Plant-en Dierkunde (15 Honneurs, 14 MSc en 9 PhD). Die Departement en die S•I•B lok baie prominente nasionale en internasionale besoekers en is ook die akademiese tuiste vir 16 nadoktorale genote van elf nasionaliteite.

Die resultaat van aktiewe interaksie en samewerking het vele besoekende wetenskaplikes na die Departement gelok, onder wie dr Madeleine Beekman en dr Ben Oldroyd van die Universiteit van Sydney (Australië), prof John Stoffolano van Massachusetts Universiteit (VSA), prof Jaco Greeff en prof Mike Wingfield van die Universiteit Pretoria, prof Sue Kilham van Drexel Universiteit (VSA), dr Nobby Yamaguchi van Oxford Universiteit (Verenigde Koninkryk), prof Hilke Ruhberg van die Universiteit van Hamburg (Duitsland), dr Karen Gaynor van die Ierse Departement van Natuurbewaring (VK), dr Denzil Beukes van Rhodes Universiteit, dr Marcel Honza van die Tsjeggiese Akademie vir Wetenskap (Tsjeggiese Republiek) en dr Russel Lowers van Suid-Carolina Mediese Universiteit (VSA).

Plant- en Dierkunde is ook die tuiste van verskeie navorsingsgenote wat groot bydraes maak tot ons publikasie-uitsette. Onder hulle is prof Jan Nel, prof Eddie van Dijk, prof Jan Giliomee, prof Dan Baird, dr Ted Oliver, dr Edmund Pool, dr Willie Sirgel, dr Krystal Tolley en dr Colin Tilbury.

Akademiese personeel het verskeie nasionale en internasionale kongresse bygewoon. Prof Sophië Reinecke het die Vereniging van Omgewings toksikologie en Chemie (SETAC) se kongres in Spanje bygewoon, en dr Susana Clusella-Trullas die kongres van die Vereniging vir Eksperimentele Biologie in die Tsjeggiese Republiek. Prof Bettine Jansen van Vuuren en prof Steven Chown was by die Wetenskaplike Komitee oor Antarktiese Navorsing (SCAR) se vergadering en kongres in Argentinië. Prof Terry Robinson het deelgeneem aan die 19de Internasionale Kollokwium oor Diere Sitogenetika en Geen-kartering (ICAVGM) in Pole. Prof Conrad Matthee was teenwoordig by die Franse Internasionale Navorsingsgroep (GDRI) se vergadering in Frankryk, en dr Cang Hui by 'n werkswinkel oor dinamiese spesie-modellering in Spanje. Dr Carol Simon het die Kongres oor Invertebrata Reproduksië en Ontwikkeling in die Tsjeggiese Republiek bygewoon, en prof Dave

Personeel | Staff

Doserend

Prof CA Matthee (uitvoerende hoof)
 Dr BC Anderson
 Prof MI Cherry
 Prof SL Chown
 Prof SR Daniels
 Prof LL Dreyer
 Dr AG Ellis
 Dr AF Flemming
 Dr S Jackson
 Prof B Jansen van Vuuren
 Dr NP Makunga
 Prof PLN Mouton
 Dr CA Pauw
 Dr RV Rambau
 Prof SA Reinecke
 Prof TJ Robinson
 Dr CA Simon
 Prof VR Smith
 Dr AJ Valentine
 Prof JH van Wyk
 Dr S von der Heyden
 Prof TC Wossler

Sentrum van Uitnemendheid vir Indringerbiologie

Prof SL Chown (direkteur)
 Dr S Clusella-Trullas
 Dr C Hui
 Dr JJ le Roux
 Prof DM Richardson

Buitengewone professore

Prof S Barrett
 Prof AM Bauer
 Prof MA du Plessis
 Prof KJ Gaston
 Prof MA McGeogh
 Prof J Podani

Ondersteuningspersoneel

L Willems (eerste sekretaresse)
 JL Basson
 A Fransman
 F Gordon
 RM Honing
 S Johnson
 DJD Julies
 A Kleinert
 MP Sauerman
 M Siebritz
 N Solomons
 RC Thompson
 JP Williams
 H Witbooi

Sentrum van Uitnemendheid vir Indringerbiologie

K Coombe-Davis
 S Davis
 D du Plessis
 A Garthwaite
 K Jumbam
 T Khoza
 S Kritzing-Klopper
 C Momberg
 E Nortje
 M van der Vyver

Researchers tackle complex questions through new Centre

The Centre for Studies in Complexity is one of a handful of cross-cutting initiatives stretching over various faculties, fields of expertise and development themes that have been developed to assist in creating an enabling academic and research environment, and in that way contribute to the success of the HOPE Project.

Complexity theory is a relatively new, yet important academic discipline. It engages in groundbreaking ways with major problems in the human and natural sciences by looking at the general picture instead of focusing on the detail.

The Centre was launched in 2010 at Stellenbosch University. It aims to harness the insights of this field in the search for comprehensive solutions to the challenges of human development in South Africa and the rest of the continent.

The Centre – the only one of its kind in Africa – brings together two experienced A-rated researchers from different fields. They are Prof Jan-Hendrik Hofmeyr from the Department of Biochemistry in the Faculty of Science, and Prof Paul Cilliers of the Department of Philosophy in the Faculty of Arts and Social Sciences. Both are abstract researchers and recipients of the Harry Oppenheimer Fellowship Award.

Abstract and theoretical their investigations may be, but the problems focused on are very real, for example the behaviour of ecosystems, social and economic systems; the cellular organisation that constitutes a living organism; how meaning arise in language; the causes of political intolerance and the functioning of health systems.

The Centre's aims of knowledge generation and dissemination is achieved through collaborative research involving academics worldwide, and through teaching and supervising postgraduate students from various disciplines. The Centre presents a module in complexity theory as part of a doctoral programme hosted by the Centre for Transdisciplinarity, Sustainability, Assessment, Modelling and Analysis (TsamaHub), which is a joint venture of SU, the Sustainability Institute and South Africa's Centre for Scientific and Industrial Research (CSIR).



travelled to the Czech Republic for the Congress of Invertebrate Reproduction and Development, while Prof Dave Richardson joined a Workshop on Invasive Species and Cross-taxa Comparisons in Switzerland. Prof Theresa Wossler attended the International Union Study of Social Insects (IUSSI) in Denmark, and Prof Michael Cherry the International Behavioural Ecology Congress in Australia.

ACADEMIC AFFAIRS

At undergraduate level, the Department of Botany and Zoology is responsible for teaching eighteen modules in either Biology (first year), Biodiversity and Ecology (second and third year) or Science Practice (second year). Some of the first year modules are taught as service courses to large numbers of students. In this respect teaching assistance were provided by Dr Jurie van den Heever, Dr Marnel Mouton, Mr Marinus de Jager, Mr Hannibal Musarurwa, Mr Sjikr Geerts, Mr Christoff Truter and Ms Helen Curran.

The curriculum that has been taught for the past ten years was extensively revised. A revised Biodiversity and Ecology programme was designed, which will be instituted during 2012-2013. The outcome of the new programme specifically aims to deliver well-rounded students with a broad background in science training.

The changed programme will allow undergraduate students more exposure to the field of biodiversity and ecology as more cross-cutting modules will be available, such as Statistics and other skills for Biologists, Principles in Ecology, Diversity and Function of Invertebrates, Principles of Evolution, Vertebrate life, Diversity of Plant form and Function, an Ecology field course, Angiosperm Diversity and Evolution, Global Change Biology, Evolutionary Ecology, Evolutionary Patterns and Process and Conservation Biology.

The Department continued with the interactive tutorial system for small groups of first year students who have different levels of competency. The additional teaching is presented once a week by eleven dedicated senior postgraduate students in the form of formal classes. The same tutor is also available for regular consultation with every student. This programme, which is co-ordinated by Prof Theresa Wossler, proves to be very successful. Despite the larger class sizes, the first year pass rate in most courses again increased during 2010.

Nineteen postgraduates successfully completed their degrees in the Department (13 Hons, 3 MSc and 3 PhD). Three additional students successfully upgraded their MSc degrees to PhD level. At present there are 33 Masters and 37 PhD students registered in the Department. Seventeen MSc and fifteen PhD students successfully presented project proposals during 2010. These proposals were evaluated and approved by the academic committees of the Department.

SERVICE TO THE SCIENTIFIC COMMUNITY

The final French International Research Group (GDRI) Workshop was hosted and organized by Prof Conrad Matthee in the Department of Botany and Zoology in October. The workshop marked ten years of research cooperation between France and South Africa in the field of biodiversity research. More than 60 scientists from eight French research institutions (CNRS, EPHE, INRA, CIRAD) or universities (Montpellier II, Grenoble I, Paris VI, La Réunion), eight South African institutions (the Universities of the Witwatersrand, Pretoria, Rhodes, Stellenbosch, KwaZulu-Natal and Cape Town, the Transvaal Museum, the South African National Biodiversity Institute) and the University of Zimbabwe attended.

Dr Ted Oliver, a renowned botanist, researcher and author of *Ericas of South Africa*, was appointed president of the Botanical Society of South Africa for a three year term.

Several staff members acted as external examiners for courses, or served on advisory panels to various conservation and government bodies. Prof Michael Cherry served as trustee for the Kalahari Research Trust. Prof Leanne Dreyer acted as a scientific consultant to the Dictionary of the Afrikaans Language (WAT). Prof Savel Daniels was part of the SABI Steering Committee and NRF Postdoctoral panel, while Dr Allan Ellis performed external moderation for the honours module at University of Cape Town. Dr Sue Jackson acted as the Review Panel Chair: Fisheries Resources. Prof Conrad Matthee was a member of the Endangered Wildlife Trust (EWT) Riverine Rabbit Steering Committee.

Staff members of the Department were also actively involved in editorial activities. These include Prof Michael Cherry (*Behaviour Processes, Folia Zoologica, South African*

Richardson die Werksgroep oor Indringerspesies: Kruis-taxa Vergelykende Studies in Switserland. Prof Theresa Wossler was by die Internasionale Unie vir die Studie van Sosiale Insekte (IUSI) in Denemarke, terwyl prof Michael Cherry die Internasionale Gedragsekologie Kongres in Australië bygewoon het.

AKADEMIESE SAKE

Op voorgraadse vlak is die Departement Plant- en Dierkunde verantwoordelik vir die onderrig in agtien modules van onderskeidelik Biologie (eerstejaarsvlak), Biodiversiteit en Ekologie (tweede- en derdejaarsvlak) en Wetenskaplike Praktijk (tweedejaarsvlak). Sommige van die eerstejaarsmodules word as dienskursusse vir groot getalle studente aangebied en hiervoor is onderrighulp verleen deur dr Jurie van den Heever, dr Marnel Mouton, mnr Marinus de Jager, mnr Hannibal Musarurwa, mnr Sjikr Geerts, mnr Christoff Truter en me Helen Curran.

Die kurrikulum wat die afgelope tien jaar reeds onderrig word, is breedvoerig hersien. 'n Hersiene Biodiversiteit en Ekologie-program is ontwikkel en sal in 2012-2013 geïmplementeer word. Die veranderde program sal voorgraadse studente meer blootstel aan die velde van biodiversiteit en ekologie. Die nuwe program se uitkomst is spesifiek daarop gemik om afgeronde studente met 'n breë agtergrond en stewige basis in wetenskaplike onderrig te lewer. Meer keusemodules sal beskikbaar wees, soos Statistiek en ander Vaardighede vir Bioloë, Beginsels van Ekologie, die Diversiteit en Funksie van Invertebrate, Beginsels van Evolusie, Verbruatlewe, die Diversiteit van Plantvorme en -funksie, 'n Ekologie Veldkursus, Angiospermdiversiteit en -evolusie, Globale Biologiese Klimaatverandering, Evolusionêre Ekologie, en Evolusionêre Patrone en Prosesse van Bewaringsbiologie.

Die Departement het sy program van interaktiewe tutoriale onderrig vir kleiner groepe eerstejaarsstudente wat oor verskillende vaardigheidsvlakke beskik, voortgesit. Hierdie addisionele onderrig deur elf toegewyde senior nagraadse studente vind een maal per week plaas in die vorm van formele klasse. Dieselfde tutor is ook beskikbaar vir gereelde konsultasiesessies met elke student. Hierdie tutorprogram word deur prof Theresa Wossler gekoördineer. Dit blyk uiters suksesvol te wees, ten spyte van groter klasgroottes, aangesien die eerstejaarslaagsyfers in meeste kursusse in 2010 toegeneem het.

Negentien nagraadse studente het suksesvol hul grade voltooi. Daarvan was 13 honneursstudente, drie MSc-studente en drie PhD-studente. Drie addisionele studente het suksesvol vanaf M- na D-studies opgegradeer.

Teenswoordig is daar 33 meesters- en 37 doktorsale studente in die Departement geregistreer. Sewentien M- en vyftien D-studente het hul projekvoorstelle suksesvol voorgedra. Hierdie voordragte is deur die Departement se akademiese komitees geëvalueer en goedgekeur.

DIENS AAN DIE WETENSKAPLIKE GEMEENSAP

Die finale rondte van werksinkels van die Franse Internasionale Navorsingsgroep, oftewel GDRI, is in Oktober in die Departement aangebied onder leierskap van prof Conrad Matthee. Hierdie werksinkel het tien jaar van studie en samewerking in biodiversiteitsnavorsing tussen Frankryk en Suid Afrika gevier. Dit is bygewoon deur meer as 60 wetenskaplikes vanaf agt Franse navorsingsinstansies (CNRS, EPHE, INRA, CIRAD) of universiteite (Montpellier II, Grenoble I, Parys VI, La Réunion), agt Suid-Afrikaanse instellings (insluitende universiteite soos die Witwatersrand, Pretoria, Stellenbosch, Rhodes, KwaZulu-Natal en Kaapstad, die Transvaal Museum, en die Suid-Afrikaanse Nasionale Instituut vir Biodiversiteit, oftewel SANBI) en ook die Universiteit van Zimbabwe.

Dr Ted Oliver, 'n gerekende plantkundige, navorser en skrywer van *Ericas of South Africa*, is as president van die Botaniese Vereniging van Suid-Afrika verkies vir 'n drie jaar termyn.

'n Hele aantal personeelle is deel van organisatoriese strukture waardeur daar onder meer besluite oor die administrasie van fondse gemaak moet word. Onder hierdie instellings is die Suid-Afrikaanse Vereniging vir Botaniste (SAAB), die Landbounavorsingsraad (LNR), die Taakspan vir die Ontwikkeling en Regulering van Indringerspesies as deel van die Suid-Afrikaanse Biodiversiteitswet, die Wetenskaplike Komitee oor Antarktiese Navorsing (SCAR), die Dierkundige Vereniging van Suider-Afrika (DVSA), die Suid-Afrikaanse Raad vir Natuurwetenskaplike Beroepe, die Suid-Afrikaanse Nasionale Instituut vir Biodiversiteit (SANBI), die Nasionale Navorsingstigting (NNS) se Biodiversiteits-fokuspaneel, die Suid-Afrikaanse Vereniging vir Sistematieke Biologie, die Global Biodiversity Information Facility, die Lagomorf Spesialisgroep, die Onderstepoort Veeartsenydiens Navorsingsinstituut, die Kalahari Navorsingstrust, die Oewerkonyn Werksgroep Bestuurskomitee, die Waternavorsingsraad Bestuurskomitee, die Junior Kaptein Scott paneel van

Navorsers bekyk komplekse vrae



UNIVERSITEIT-STELLENBOSCH-UNIVERSITY HOOP PROJEK HOPE PROJECT

Die Sentrum vir Kompleksiteitsstudies is een van 'n handvol dwarsliggende inisiatiewe oor verskillende fakulteite, kundigheidsgebiede en ontwikkelingsstemas heen wat 'n bevorderlike akademiese en navorsingsomgewing help skep om tot die HOOP Projek se sukses by te dra.

Kompleksiteitsteorie is 'n betreklik nuwe dog belangrike akademiese dissipline wat streef na vindingryke oplossings vir groot probleme in die Geestes- en Natuur-wetenskappe deur die groter pretjie eerder as die fyn besonderhede te bestudeer.

Die Sentrum is in 2010 begin en gebruik die insigte van hierdie vakgebied in die soeke na omvattende oplossings vir die uitdagings van menslike ontwikkeling in Suid-Afrika en die res van Afrika.

Die Sentrum – die enigste in sy soort in Afrika – bring twee ervare A-graad-navorsers van verskillende vakgebiede byeen in die gedeelde strewe na tersaaklike antwoorde. Hulle is prof Jan-Hendrik Hofmeyr van die Departement Biochemie in die Fakulteit Natuurwetenskappe, en prof Paul Cilliers van die Departement Filosofie in die Fakulteit Lettere en Sosiale Wetenskappe. Hulle is albei abstrakte navorsers sowel as ontvangers van die Harry Oppenheimer-genootskapsprys.

Hoe abstrak en teoreties hul studies ook al is, is die probleme waarop hulle konsentreer baie werklik. Dit sluit in die gedrag van ekosisteme; maatskaplike en ekonomiese stelsels; die sellulêre organisasie waaruit 'n lewende organisme bestaan; neuronwisselwerking in die brein; die totstandkoming van betekenis in taal; die oorsake van politieke onverdraagsaamheid, en die funksionering van gesondheidsstelsels.

Die kerndoelwitte van die Sentrum is die skep en verspreiding van kennis. Dit word verwezenlik deur samewerkende navorsing met akademië van oor die hele wêreld, sowel as deur die onderrig van en toesig oor nagraadse studente in verskillende dissiplines. Die Sentrum bied voorts 'n module in Kompleksiteitsteorie aan as deel van 'n doktorsale program van die TsamaHub (oftewel die Sentrum vir Kruisdissiplinariteit, Volhoubaarheid, Beoordeling, Assessering, Modellering en Ontleding). Laasgenoemde is 'n gesamentlike onderneming van die US, die Volhoubaarheidsinstituut en die Wetenskaplike en Nywerheidsnavorsingsraad (WNNR).

Invasion biologists focus on influence of climate change on species



HOPE PROJECT

Projects that are driven by the DST-NRF Centre of Excellence for Invasion Biology (C•I•B) encapsulate the vision of the HOPE Project to promote a sustainable environment and a competitive industry.

The C•I•B was established under the Centres of Excellence Programme of the South African government's Department of Science and Technology (DST) and the National Research Foundation (NRF). Its hub is in Stellenbosch University's Faculty of Science, and it has a network of senior researchers, associates and students at a range of institutions throughout the country.

Invasive species already cost the planet about 5% of its gross domestic product a year. With intercontinental travel having become commonplace, people frequently move species around – sometimes intentionally, but often unintentionally. These movements have consequences, many of them unforeseen. Insects, microorganisms, plants, fish, reptiles and mammals introduced into an area may thrive and become invasive.

The C•I•B has made the impact of climate change on invasion biology a key focus area, because it can have an influence on the spread and impact of invasive species. It could among others have serious consequences for the prevalence of tropical diseases like sleeping sickness and malaria in Africa.

Therefore one of the projects that C•I•B researchers focus on through the HOPE Project is the studying of the potential impact and distribution of tsetse flies due to climate change. Six of the more than 30 species of tsetse flies that occur in Sub-Saharan Africa are carriers of the parasite *Trypanosomiasis* that causes potentially fatal sleeping sickness. This puts more than 60 million people living in Africa at risk.

It is anticipated that the scientific work being done by the C•I•B will make a major difference to people's quality of life and provide relevant expertise to assist policy and decision makers.

Journal of Science and Emu), Prof Steven Chown (editor of *Polar Biology* and editorial board member for *Biology Reviews*, *Proceeds of the Royal Society of London B* and *Antarctic Science*), Prof Dave Richardson (editor-in-chief for *Diversity and Distributions*, associate editor for *Biological Invasions*, *Environmental Management* and *Neobiota*), Dr Allan Ellis (*Botanical Journal of the Linnean Society*), Dr Sue Jackson (*Functional Ecology* and *Journal of Comparative Physiology*), Dr Nox Makunga (*South African Journal of Botany*), Prof Conrad Matthee (*African Journal of Marine Science* and *Koedoe*), Prof Le Fras Mouton (*African Zoology* and *African Journal of Herpetology*), Dr Anton Pauw (*South African Journal of Botany*), Prof Terry Robinson (*Chromosome Research*, *CGR* and *Heredity*), Prof Valdon Smith (*Polar Record*) and Prof Hannes van Wyk (*African Zoology*).

A number of staff are members of the organisational structure responsible for decision-making or the administering of funds for various service organisations. These include the South African Association of Botanists (SAAB), the Agricultural Research Council (ARC), the Task Team for the Development and Regulation of Alien Species under the South African Biodiversity Act, the Scientific Committee on Antarctic Research (SCAR), the Zoological Society of Southern Africa (ZSSA), the South African Council for Natural Scientific Professions, the South African National Biodiversity Institute (SANBI), the National Research Foundation Biodiversity Focus Panel, the South African Society for Systematic Biology Council, Global Biodiversity Information Facility, Lagomorph Specialist Group, Onderstepoort Veterinary Research Institute, the Kalahari Research Trust, the Riverine Rabbit Working Group Steering Committee, the Water Research Commission steering committee, the Junior Captain Scott panel of the "Suid-Afrikaanse Akademie vir Wetenskap en Kuns", the Wildflower Conservation Trust, and the South Africa Reptile Conservation Assessment (SARCA).

Some of the international service organisations we are associated with are the Australian Antarctic Division, Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO) Netherlands, *National Geographic* Society Committee for Research and Exploration (USA), International Union for the Conservation of Nature, the European Union's Organisation for Economic Cooperation and Development's Amphibian panel, UK National Environmental Research Council, and the Netherlands Institute for Ecological Research.

AWARDS TO STAFF AND STUDENT

Dr Susana Clusella-Trullas received the Antarctic Science Award 2010 to study how marine invertebrates on Marion Island respond to changing temperature regimes.

Several staff members were honoured by the South African Academy for Science and Art (also known as the "Suid-Afrikaanse Akademie vir Wetenskap en Kuns"). The Douw Greeff Prize for the best research article in the *South African Journal of Science and Technology* was awarded to Prof Koot Reinecke, Prof Sophié Reinecke and Dr Naomi Mdzeke. Dr Eddie van Dijk, a research fellow in the Department, was the recipient of the Senior Captain Scott medal for his countless contributions to science over the years.

Our students also excelled. PhD student Mr Prince Kaleme won the "Best Developing Country Poster Presentation" at the 4th International Conference on Rodent Biology in Bloemfontein. Mr Patricks Voua-Otoma received the Society of Environmental Toxicology and Chemistry (SETAC) World/Procter & Gamble (P&G) Fellowship for Doctoral Research in Environmental Science. Mr Bernard Coetzee was invited to attend the European Science Foundation's Summer School in Poland. Ms Ethel Phiri was the recipient of the S²A³ Medal from the SA Society for the Advancement of Science. MSc student Mr Dane MacDonald received the Lawrence Award at the Zoological Society of Southern Africa (ZSSA) conference. The ZSSA also awarded certificates to Mr Pieter Botha as best final year student and Mr Jaco Visser as best honours student for 2010.

STAFF MATTERS

Plant evolutionary physiologist Dr Alex Valentine and marine population geneticist Dr Sophié von der Heyden have been appointed as senior lecturer and lecturer respectively.

Dr Carol Simon was promoted from lecturer to senior lecturer. Mr Henri Witbooi was appointed as technical assistant.

Prof Koot Reinecke retired after eighteen years of service to Stellenbosch University. During this period he served as head of the Department three times and also acted as dean of the Faculty of Science during 2004.

die Suid-Afrikaanse Akademie vir Wetenskap en Kuns, die Veldblombewaringstrust en die Suid-Afrikaanse Reptielbewaring Assessering (SARCA).

Sommige van die internasionale diensorganisasies waarby ons akademië betrokke is, sluit die Australiese Antarktiese Afdeling, die Nederlandse Organisasie voor Wetenschappelijke Onderzoek (NWO) Nederland, die National Geographic Society se komitee oor Navorsing en Eksplorاسie (VSA), die Internasionale Union for the Conservation of Nature (IUCN), die Europese Unie se organisasie vir Ekonomiese Samewerking en Ontwikkeling se Amfibiese paneel, die Verenigde Koninkryk se Nasionale Ongewingsnavorsingsraad en die Nederlandse Instituut vir Ekologiese Navorsing in.

Verskeie personelelede het diens as eksterne eksaminatore vir kursusse gelewer, of het op raadgevende panele vir verskeie bewaringsorganisasies en regeringsinstansies gedien. Prof Michael Cherry het as trustee van die Kalahari Navorsingstrust opgetree. Prof Leanne Dreyer is die wetenskaplike konsultant vir die Woordboek vir die Afrikaanse Taal (WAT). Prof Savel Daniels was deel van die SABI loodskomitee en die NSS nadoktorale paneel, terwyl dr Allan Ellis 'n eksterne moderator van 'n honneursmodule by Universiteit van Kaapstad was. Dr Sue Jackson het diens op die Hersieningspaneel vir Vissery Navorsing gedoen, terwyl prof Conrad Matthee lid van die Bedreigde Natuurlewetrust (EWT) se Oewerkonyn Bestuurskomitee was.

Departementele personeel is ook aktief betrokke met redaksionele funksies: prof Michael Cherry (*Behaviour Processes, Folia Zoologica, South African Journal of Science* en *Emu*); prof Steven Chown (redakteur van *Polar Biology* en lid van die redaksionele raad vir *Biology Reviews, Proceeds of the Royal Society of London B* en *Antarctic Science*); prof Dave Richardson (hoofredakteur van *Diversity and Distributions*, assistent-redakteur van *Biological Invasions, Environmental Management* en *Neobiota*); dr Allan Ellis (*Botanical Journal of the Linnean Society*); dr Sue Jackson (*Functional Ecology* en *Journal of Comparative Physiology*); dr Nox Makunga (*South African Journal of Botany*); prof Conrad Matthee (*African Journal of Marine Science* en *Koedoe*); prof Le Fras Mouton (*African Zoology* en *African Journal of Herpetology*); dr Anton Pauw (*South African Journal of Botany*); prof Terry Robinson (*Chromosome Research, CGR* en *Heredity*); prof Valdon Smith (*Polar Record*); prof Hannes van Wyk (*African Zoology*).

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Dr Susana Clusella-Trullas het die 2010 Antarktiese Wetenskapprys ontvang vir navorsing oor mariene invertebrata op Marioneiland, en hoe hulle reageer op veranderende temperatuurkommelinge.

Verskeie navorsers het eerbewyse van die Suid-Afrikaanse Akademie vir Wetenskap en Kuns ontvang. Die Douw Greef-prys vir die beste artikel in die *Suid-Afrikaanse Tydskrif vir Wetenskap en Kuns* is aan prof Koot Reinecke, prof Sophië Reinecke en dr Naomi Mdzeke toegeken. Dr Eddie van Dijk, 'n navorsingsgenoot in die Departement, het die Senior Kaptein Scott-medalje vir sy talle bydraes tot die wetenskap oor etlike jare heen ontvang.

Ook ons studente het uitsonderlik presteer. 'n Doktorale student, mnr Prince Kaleme, het die toekenning vir die beste plakkaataanbieding vanuit 'n ontwikkelende land ontvang by die 4de Internasionale Konferensie oor Knaagdierbiologie in Bloemfontein. Mnr Patrick Voua-Otomo het die Vereniging vir Omgewings toksikologie en -chemie (SETAC) se Proctor & Gamble (P&G) genootskapsprys vir doktorale navorsing in omgewingswetenskappe verwerf. Mnr Bernard Coetzee is genoot om die Europese Wetenskapstigting se somerskool in Pole by te woon. Me Ethel Phiri was die ontvanger van die S²A³ Medalje van die Suid-Afrikaanse Vereniging vir die Bevordering van die Wetenskap. MSc-student mnr Dane MacDonald het die Lawrence-toekenning vanaf die Dierkundige Vereniging van Suider-Afrika (DVSA) ontvang. Die DVSA het voorts ook sertifikate uitgereik aan mnr Pieter Botha as die beste finalejaarstudent en mnr Jaco Visser as die beste honneursstudent.

PERSONEELSAKE

Dr Alex Valentine, 'n evolusionêre plantfisioloog, en dr Sophie von der Heyden, 'n mariene gemeenskapsgenetikus, is as onderskeidelik senior lektor en lektor aangestel.

Dr Carol Simon is bevorder van lektor tot senior lektor.

Mnr Henri Witbooi is aangestel as tegniese assistent.

Prof Koot Reinecke het na agtien jaar diens aan die Universiteit Stellenbosch afgetree. Gedurende hierdie tyd het hy drie keer as hoof van die Departement Plant- en Dierkunde opgetree, en was ook in 2004 die waarnemende dekaan van die Fakulteit Natuurwetenskappe.

Indringerbioloë bekyk invloed van klimaat op spesies

Projekte binne die DWT-NNS Sentrum van Uitnemendheid vir Indringerbiologie (S-I-B) vergestalt die visie van die HOOP Projek om 'n bydrae te maak tot die bevordering van 'n volhoubare omgewing en 'n kompeterende nywerheid.

Die S-I-B is ingevolge die Sentra van Uitnemendheid-program van die Nasionale Departement van Wetenskap en Tegnologie (DWT) en die Nasionale Navorsingstigting (NNS) ingestel. Die Sentrum gebruik die Universiteit Stellenbosch en die Fakulteit Natuurwetenskappe as basis, maar beskik oor 'n netwerk senior navorsers, genote en studente by 'n reeks instellings deur die hele land.

Wêreldwyd gaan daar reeds sowat 5% van die bruto binnelandse produk weens indringerspesies verlore. Namate mense al hoe meer interkontinentaal reis, word spesies heel dikwels – soms doelbewus, maar meestal onwetend – van een plek na 'n ander verskuif. Hierdie verskuiwings het gevolge, baie daarvan onvoorsien. Insekte, mikro-organismes, plante, vis, reptiele en soogdiere wat van buite in 'n gebied ingebring word, kan floreer en indringers word.

Die S-I-B het die impak van klimaatsverandering op indringerbiologie een van sy kernfokusgebiede gemaak, aangesien dit 'n invloed op die verspreiding en impak van indringerspesies kan hê.

Dit kan onder meer ernstige gevolge vir Afrika hê wat die voorkoms van tropiese siektes, soos slaapsiekte en malaria.

Een van die projekte wat bioloë van die S-I-B as deel van die HOOP Projek ondersoek, is die moontlike impak en verspreiding van tsetsevlies weens klimaatsverandering. Ses van die meer as 30 spesies tsetsevlies wat in sub-Sahara Afrika voorkom, dra die parasiet Trypanosomiasis wat die potensieel dodelike slaapsiekte veroorsaak. Dit stel meer as 60 miljoen inwoners van Afrika in gevaar.

Die wetenskaplike werk wat die S-I-B verrig oor hierdie en ander verwante navorsingsvrae sal na verwagting 'n reuseverskil aan mense se lewensgehalte maak en tersaaklike kundigheid voorsien om beleidmakers en besluitnemers by te staan.

COMMUNITY INTERACTION

A number of lecturers were involved in the Stellenbosch University Science Winter Week under the leadership of Prof Leanne Dreyer. Learners were made aware of the sustainable utilization of biodiversity for both commercial and cultural benefits.

The C•I•B limbovane project continues to be very successful in teaching biodiversity to teachers and high school scholars.

FUNDING

Cape Leopard Trust
Citrus Research International
Claude Leon Foundation
Department of Science and Technology (DST)
DST-NRF Centre of Excellence in Tree Health Biotechnology
DST-NRF Centre of Excellence Percy Fitzpatrick Institute of African Ornithology
Ernst Oppenheimer Fellowship Trust Fund
Flower Valley Conservation Trust (FVCT)
French National Centre for Scientific Research (CNRS)
John Ellerman Trust
Marine Coastal Management (MCM)
National Natural Science Foundation of China (NSFC)
National Research Foundation (NRF)
Royal Society, United Kingdom
Sasol Technology
South African Biodiversity Initiative (SABI)
South African National Antarctic Programme (SANAP)
Stellenbosch University (SU)
Table Mountain Fund
Thuthuka
University of Montpellier
Water Research Commission (WRC)
Working for Water (WFW) Programme
World Wide Fund for Nature (WWF)

COLLABORATION

SOUTH AFRICA

Agricultural Research Council, Nietvoorbij
Agricultural Research Council, Pretoria
ARC-Onderstepoort Veterinary Institute (ARC-OVI)
ARC-Plant Protection Research Institute
CapeNature
Cape Peninsula University of Technology
Council for Scientific and Industrial Research (CSIR)
Department of Environmental Affairs
Department of Agriculture, Forestry and Fisheries
DST-NRF Centre of Excellence in Tree Health Biotechnology
Environmentek (CSIR)
Iziko South African Museum
Medical Research Council (MRC)
Nelson Mandela Metropolitan University (NMMU)
Northwest University
Rhodes University
Sasol Technology
South African Institute of Aquatic Biodiversity (SAIAB)
South African National Biodiversity Institute (SANBI)
South African National Parks (SANParks)
University of Cape Town (UCT)
University of KwaZulu-Natal (UKZN)
University of Pretoria (UP)
University of Venda
University of the Western Cape (UWC)
Walter Sisulu University
Working for Water Programme (WFW)

INTERNATIONAL

Australia

Australian Antarctic Division
Australian National University
Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Curtin University of Technology
Department of Environment and Conservation (Western Australia)
Kings Park and Botanic Garden
Macquarie University
Museum Victoria
University of Adelaide
University of Melbourne
University of Queensland
University of Sydney
University of Western Australia

Brazil

Universidade Federal de Santa Catarina

Canada

University of Guelph
University of Toronto
University of Victoria

China

Hefei University of Technology
Lanzhou University

Czech Republic

Academy of Sciences of the Czech Republic

GEMEENSKAPSINTERAKSIE

'n Aantal akademiese personeelle was betrokke tydens die Universiteit Stellenbosch Natuurwetenskappe Winterweek, onder die leierskap van prof Leanne Dreyer. Leerders is bewus gemaak van die volhoubare benutting van ons biodiversiteit, en die kommersiële en kulturele voordele daarvan.

Die Sentrum vir Indringerbiologie (S•I•B) se limbovane-projek is steeds baie suksesvol besig om biodiversiteit aan onderwysers en hoërskoolleerders bekend te stel.

SAMEWERKING

SUID-AFRIKA

CapeNature
 Departement van Omgewingsake
 Departement van Landbou, Bosbou en Seevisserye
 DWT/NNS Sentrum van Uitnemendheid in Boomgesondheid Biotegnologie
 Environmentek (WNNR)
 Iziko Suid-Afrikaanse Museum
 Kaapse Skiereiland Universiteit van Tegnologie
 Landbounavorsingsraad Infruitec-Nietvoorbij (LNR)
 Landbounavorsingsraad Pretoria
 LNR Plantbeskermings- en Navorsingsinstituut
 LNR Onderstepoort Veeartsenykunde Instituut
 Mediese Navorsingsraad (MNR)
 Nelson Mandela Metropolitaanse Universiteit (NMMU)
 Noordwes Universiteit (NWU)
 Rhodes Universiteit
 Sasol Tegnologie
 Suid-Afrikaanse Instituut vir Akwatiese Biodiversiteit (SAIAB)
 Suid-Afrikaanse Nasionale Instituut vir Biodiversiteit (SANBI)
 Suid-Afrikaanse Nasionale Parke (SANParke)
 Universiteit van Kaapstad (UK)
 Universiteit van KwaZulu-Natal (UKZN)
 Universiteit van Pretoria (UP)
 Universiteit van Venda
 Universiteit van Wes-Kaapland (UWK)
 Walter Sisulu Universiteit
 Werk vir Water Program (WvW)
 Wetenskaplike en Nywerheidsnavorsingsraad (WNNR)

INTERNASIONAAL

Australië

Australiese Antarktiese Afdeling
 Australiese Nasionale Universiteit
 Commonwealth Scientific and Industrial Research Organisation (CSIRO)
 Curtin Universiteit van Tegnologie
 Departement van Omgewingsake en Natuurbewaring (Wes-Australië)
 Kings Park en Botaniese Tuin
 Macquarie Universiteit
 Museum Victoria
 Universiteit van Adelaide
 Universiteit van Melbourne
 Universiteit van Queensland
 Universiteit van Sydney
 Universiteit van Wes-Australië

Brasilië

Universidade Federal de Santa Catarina

China

Hefei Universiteit van Tegnologie
 Lanzhou Universiteit

Denemarke

Universiteit van Kopenhagen

Duitsland

Alfred Wegener Instituut vir Navorsing oor die Pole en Mariene Gebiede
 Federale Ministerie vir Opvoeding en Navorsing
 Max Planck Instituut vir Molekulêre Plantfisiologie

BEFONDSING

Claude Leon Stigting
 Departement van Wetenskap en Tegnologie (DWT)
 DWT-NNS Sentrum van Uitnemendheid Bosbou en Landbounavorsingsinstituut
 DWT-NNS Sentrum vir Uitnemendheid aan die Percy FitzPatrick Instituut
 Ernst Oppenheimer Fellowship Trustfonds
 Franse Nasionale Sentrum vir Wetenskaplike Navorsing (CNRS)
 Flower Valley Bewaringstrust (FVCT)
 John Ellerman Stigting
 Kaapse Luiperd Trust
 Mariene- en Kusbestuur
 Nasionale Navorsingstigting (NNS)
 Nasionale Natuurwetenskap Trust van China (NSFC)
 Royal Society, Verenigde Koningryk
 Sasol Tegnologie
 Sitrus Navorsing Internasionaal
 Suid-Afrikaanse Instituut vir Biodiversiteit (SANBI)
 Suid-Afrikaanse Nasionale Antarktiese Program (SANAP)
 Tafelberg Fonds
 Thuthuka
 Universiteit van Montpellier
 Universiteit Stellenbosch (US)
 Waternavorsingskommissie (WVK)
 Werk vir Water Program (WvW)
 Wêreldnatuurfonds (WWF)

Sport initiative promotes human dignity and health

The Universities Partnership in Adapted Physical Activity was chosen as one of the HOPE Projects that focus on the promotion of human dignity and health.

The Centre for Human Performance Sciences based in the Faculty of Science is the driving force behind this initiative. Established in 2007, the Centre, under leadership of Prof Liz Bressan, is fast gaining recognition as a leader in its field. It is the only centre of its kind in Africa. It is a founding member of the International Association of Paralympic Sport Science Centres, an academic network created by five research institutions to share data and conduct joint projects to advance Paralympic high performance.

The field of adapted physical activity holds great promise – not only for people with disabilities, but also for other vulnerable groups, such as women and the youth. This is particularly relevant in Africa, where many people have been disadvantaged by their physical and socio-economic environments.

The Universities Partnership in Adapted Physical Activity is motivated through the fact that sport and other physical activities have been shown to have positive physical and psychological benefits for participants if presented in appropriate ways. The establishment of an adapted physical activity network among African universities will help to develop this important field on the continent. The nucleus of such a network has started taking shape. It consists of Stellenbosch University, the universities of Zululand and Fort Hare in South Africa, Kenyatta University in Kenya, as well as the universities of Botswana and Namibia.

The focus areas include sport, fitness and recreation projects for people with disabilities; youth and community sport projects and the development of women and girls through physical activity.



Botanical Institute
Charles University
Veterinary Research Institute, Brno

Denmark
University of Copenhagen

Finland
University of Jyväskylä

France
Centre de Biologie et Gestion des Populations,
Campus de Baillarguet, Montferrier sur Lez, Montpellier
Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier
French Polar Institute
Institut des Sciences de l'Evolution Université, Montpellier II
Museum national d'histoire naturelle
National Centre for Scientific Research (CNRS)
University of Burgundy
University of Franche-Comte
University of Montpellier
University of Paul Sabatier
University of Poitiers

Germany
Alfred Wegener Institute for Polar and Marine Research
Federal Ministry of Education and Research
Max Planck Institute of Molecular Plant Physiology
University of Braunschweig
University of Hamburg
University of Munich

Hungary
Hungarian Academy of Sciences

India
India Institute of Science, Bangalore

Italy
Institute for Environmental Protection and Research (ISPRA)
University of Rome
University of Trieste

Japan
Kyoto University
Riken Plant Science Centre, Yokohama

Mexico
National University of Mexico

The Netherlands
Alterra Greenworld Institute
Centraal Bureau voor Schimmelcultures
Wageningen University

New Zealand
University of Auckland

Norway
University of Oslo

Poland
Jagiellonian University

Portugal
Instituto Superior de Psicologia Aplicada (IPSA)
University of Coimbra
University of Lisbon

Russia
Institute of Cytology and Genetics

Spain
Alcala University
Centre Tecnològic Forestal de Catalunya
Institut Mediterrani d'Estudis Avancats

Universiteit van Braunschweig
 Universiteit van Hamburg
 Universiteit van München

Finland

Universiteit van Jyväskylä

Frankryk

Centre de Biologie et Gestion des Populations,
 Campus de Baillarguet, Montferrier sur Lez, Montpellier
 Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier
 Franse Nasionale Sentrum vir Wetenskaplike Navorsing (CNRS)
 Franse Pole Instituut
 Institut des Sciences de l'Evolution Université Montpellier II
 Museum national d'histoire naturelle
 Universiteit van Boergondië
 Universiteit van Montpellier
 Universiteit van Franche-Comte
 Universiteit van Paul Sabatier
 Universiteit van Poitiers

Hongarye

Hongaarse Akademie vir Wetenskappe

Indië

Indiese Instituut vir Wetenskap, Bangalore

Italië

Instituut vir Omgewingsbeskerming en -navorsing (ISPRA)
 Universiteit van Rome
 Universiteit van Trieste

Japan

Kyoto Universiteit
 Riken Sentrum vir Plantwetenskap, Yokohoma

Kanada

Victoria Universiteit van British Columbia
 Universiteit van Guelph
 Universiteit van Toronto

Meksiko

Nasionale Universiteit van Meksiko

Nederland

Alterra Greenworld Instituut
 Centraal Buro voor Schimmelcultures
 Wageningen Universiteit

Nieu-Seeland

Universiteit van Auckland

Noorweë

Universiteit van Oslo

Pole

Universiteit van Jagelonië

Portugal

Instituto Superior de Psicologia Aplicada (ISPA)
 Universiteit van Coimbra
 Universiteit van Lisbon

Rusland

Instituut vir Sitologie en Genetika

Spanje

Alcala Universiteit, Madrid
 Centre Tecnològic Forestal de Catalunya
 Institut Mediterrani d'Estudis Avansats
 Universidad de Girona
 Universidad de Pablo de Olavida
 Universidad de Valencia
 Universitat Autònoma de Barcelona

Sportinisiatief bevorder menswaardigheid en gesondheid



UNIVERSITEIT-STELLENBOSCH-UNIVERSITY

HOOP | HOPE PROJEK | PROJECT

Die Universiteitsvennootskap in Aangepaste Bewegingsaktiwiteite is as een van die HOOP-inisiatiewe gekies waardeur menswaardigheid en gesondheid bevorder kan word.

Die Sentrum vir Menslike Prestasiewetenskappe, wat in die Fakulteit Natuurwetenskappe gebaseer is, sorg vir die stukrag agter hierdie inisiatief. Dié Sentrum, wat in 2007 in die lewe geroep is onder leierskap van prof Liz Bressan, maak flink naam as 'n leier op sy gebied. Dit is die enigste in sy soort in Afrika. Dit is 'n stigterslid van die Internasionale Vereniging van Paralimpiese Sportwetenskapsentra, 'n akademiese netwerk wat deur vyf navorsingsinstellings geskep is om, ter bevordering van Paralimpiese hoëprestasiesport, data te deel en gesamentlike projekte te onderneem.

Aangepaste fisiese aktiwiteit is 'n veld met groot moontlikhede – nie net vir mense met gestremdhede nie, maar ook vir ander kwesbare groepe, soos vroue en die jeug. Dit is veral tersaaklik in Afrika, waar baie mense deur hul fisiese en sosio-ekonomiese omgewings benadeel word.

Die Sentrum vir Menslike Prestasiewetenskappe word gedryf vanuit die beginsel dat sport en ander fisiese aktiwiteite baie liggaamlike en sielkundige voordele vir deelnemers inhou. Die vestiging van 'n netwerk vir aangepaste fisiese aktiwiteit onder Afrika-universiteite sal help om hierdie belangrike gebied op die vasteland te ontwikkel. Die kern van so 'n netwerk het reeds begin vorm aanneem. Dit bestaan uit die Universiteit Stellenbosch, die universiteite van Zoeloeland en Fort Hare in Suid-Afrika, die Kenyatta Universiteit in Kenia, en die universiteite van Botswana en Namibië.

Die netwerk konsentreer op sport-, fiksheids- en ontspanningsprojekte vir mense met gestremdhede; jeug- en gemeenskapsportprojekte; en die ontwikkeling van vroue en dogters deur fisiese aktiwiteit.

**SU water researchers
combine forces**



To ensure a sustainable livelihood, we need water. A lack of adequate, safe and affordable water supplies has immediate and negative consequences, especially on vulnerable groups such as children, the elderly and the poor. It simply creates a plethora of health, environmental and socio-economic problems.

The positive attitude in which researchers involved with the Institute tackle water-related challenges, captures the spirit of the HOPE Project through which Stellenbosch University uses its key strengths of academic excellence and cutting-edge research to address seemingly intractable problems in society.

The Stellenbosch University Water Institute, which embodies various objectives of the HOPE Project, unites established water research groups in seven SU faculties under one umbrella. It is rooted in the Faculty of Science, with Prof Pieter Swart, chair of the Department of Biochemistry, as interim director.

Current research projects already being done by its affiliates, in collaboration with government and industry, focus on health, agriculture and food, a sustainable environment, nanotechnology and filtration, effluent treatment and social aspects surrounding water.

"Our University has over the years built up excellent capacity within the field of water research, in various departments and various faculties," says Prof Eugene Cloete, dean of the SU Faculty of Science and chair of the Stellenbosch University Water Institute advisory board. "By uniting our researchers in such a way I believe we have created a national asset that actively contributes towards solving South Africa and the continent's water related challenges."

Microbiologists, polymer scientists, soil scientists, geologists, invasion biologists, engineers, zoologists, food scientists, biochemists, agricultural economists and even a philosopher count among the affiliated researchers who work on topics such as the ethics of freshwater management, ownership of water, the safety of agricultural produce, biofouling and biocorrosion control, community health, financial-economic planning of water use, endocrine disruptors, hydrodynamics, water engineering, catchment and resource management, invasion biology, the geochemical evolution of water and waste waters, water governance and management.

Universidad de Girona
Universidad Pablo de Olavida
Universidad de Valencia
Universitat Autònoma de Barcelona

Sweden
Swedish Agricultural University

Switzerland
University of Bern
University of Zurich

United Kingdom
British Antarctic Survey
British Trust for Ornithology
Cambridge University
Natural History Museum
Oxford University
Royal Botanic Gardens Kew
Trace Network
University of Bristol
University of London
University of Sheffield

United States of America
American Museum of Natural History
Field Museum Chicago
Global Invasive Species Programme (GISP)
The Nature Conservancy (Florida)
Nobel Foundation
Rutgers State University
United States Geological Survey (USGS) Invasive Species Programme
University of California (Davis)
University of California (Berkeley)
University of California (Santa Cruz)
University of Georgia
University of South Carolina
University of North Carolina
University of South Georgia
University of Texas
University of Vermont
University of Villanova
University of Wisconsin
West Virginia University

Swede

Sweedse Landbou Universiteit

Switserland

Universiteit van Bern

Universiteit van Zürich

Tsjeggiese Republiek

Botaniese Instituut

Charles Universiteit

Tsjeggiese Akademie van die Wetenskappe

Veearstnykunde Navorsingsinstituut, Brno

Verenigde Koninkryk

Britse Antarktiese Opname

Britse Trust vir Ornitologie

Cambridge Universiteit

Koninklike Botaniese Tuin Kew

Natuurhistoriese Museum

Oxford Universiteit

Trace Netwerk

Universiteit van Bristol

Universiteit van Londen

Universiteit van Sheffield

Verenigde State van Amerika

Amerikaanse Natuurhistoriese Museum

Field Museum Chicago

Global Invasive Species Programme (GISP)

The Nature Conservancy (Florida)

Nobel Stigting

Universiteit van Georgia

Universiteit van Kalifornië Berkeley

Universiteit van Kalifornië Davis

Universiteit van Kalifornië Santa Cruz

Universiteit van Noord-Carolina

Universiteit van Rutgers

Universiteit van Suid-Carolina

Universiteit van Suid-Georgia

Universiteit van Texas

Universiteit van Vermont

Universiteit van Villanova

Universiteit van Wisconsin (Madison)

United States Geological Survey (USGS) Invasive Species Programme

Wes-Virginia Universiteit

US waternavorsers span kragte saam

Water is nodig vir 'n volhoubare bestaan. Onvoldoende, onveilige en onbekostigbare watervoorrade hou onmiddellike en negatiewe gevolge in, veral vir kwesbare groepe soos kinders, bejaardes en armes. Dit skep eenvoudig 'n oormaat gesondheids-, omgewings- en sosio-ekonomiese probleme.

Die Universiteit Stellenbosch Waterinstituut bied 'n oor-koepelende tuiste vir verskillende navorsingsgroepe in sewe fakulteite van die US wat gemoeid is met waterverwante kwessies. Dit is in die Fakulteit Natuurwetenskappe gesetel, met prof Pieter Swart, voorsitter van die Departement Biochemie, as interim direkteur.

Die positiewe wyse waarop die navorsers verbode aan die Universiteit Stellenbosch Waterinstituut waterverwante kwessies aanpak, vergestalt die gees van die HOOP Projek waardeur die US akademiese uitnemendheid en toonaangewende navorsing gebruik om hardnekkige probleme binne die gemeenskap aan te spreek.

Huidige navorsing in samewerking met die regering en die bedryf handel oor die temas van gesondheid, landbou en voedsel, 'n volhoubare omgewing, nanotegnologie en filtrasie, afloopbehandeling, en maatskaplike aspekte met betrekking tot water.

"By die US het ons oor die jare heen in verskeie departemente en verskeie fakulteite uitstekende vermoë op die gebied van waternavorsing opgebou," meen prof Eugene Cloete, dekaan van die US Fakulteit Natuurwetenskappe en voorsitter van die Universiteit Stellenbosch Waterinstituut se adviesraad. "Deur ons navorsers op dié manier byeen te bring, glo ek het ons 'n nasionale bate geskep wat daadwerklik bydra tot 'n oplossing vir ons land en vasteland se waterverwante uitdagings."

Onder die geaffilieerde navorsers is mikrobioloë, polimeerwetenskaplikes, grondkundiges, geoloë, kenners oor indringerbiologie, ingenieurs, dierkundiges, voedselwetenskaplikes, biochemici, landbou-ekonome en selfs 'n filosoof.

Dié diverse groep werk aan navorsingsonderwerpe soos die etiek van varswaterbestuur, eienaarskap van water, die veiligheid van landbouprodukte, biobesmetting- en biokorrosiebeheer, gemeenskapsgesondheid, die finansiële-ekonomiese beplanning van watergebruik, endokrien-ontwrigters, hidrodinamika, wateringenieurswese, toeloop- en hulpbronbestuur, indringerbiologie, die geochemiese evolusie van water en afvalwater, en waterbeheer en -bestuur.

UNIVERSITEIT-STELLENBOSCH-UNIVERSITY
HOOP | HOPE
PROJEK | PROJECT

Contact details | Kontakinligting

Tel 021 808 3282

Faks | Fax 021 808 3828

Epos | Email rewitzky@sun.ac.za

Web <http://mathsci.sun.ac.za>

Websites of our various divisions:

Applied Mathematics

Web <http://dip.sun.ac.za>

Computer Science

Web <http://cs.sun.ac.za>

Mathematics

Web <http://maths.sun.ac.za>

The following staff members have NRF ratings:

- A – Prof Helmut Prodinger
Analysis of algorithms, number theory and combinatorics
- B – Prof Ben Herbst
Computer vision and machine learning
- B – Prof Leon van Wyk
Ring theory and matrix algebras
- B – Prof Willem Visser
Software failure, software engineering and software development
- B – Prof André Weideman
Numerical analysis and scientific computation
- C – Prof David Holgate
Category theory
- C – Prof AES Krzesinski
Computer networks
- C – Dr Sonja Mouton
Banach algebras and spectral theory
- C – Prof Ingrid Rewitzky
Mathematics of computer science
- C – Prof Lynette van Zijl
Theoretical computer science and assistive technologies
- Y – Prof Florian Breuer
Number theory
- Y – Dr Zurab Janelidze
Category theory and universal algebra
- Y – Prof Konrad Scheffler
Bioinformatics
- Y – Prof Stephan Wagner
Combinatorics and graph theory

RESEARCH INTERESTS

Algebra and number theory; analysis, topology and category theory; approximation theory, computational mathematics, numerical analysis and scientific computing; discrete mathematics; financial mathematics; mathematical and computational biology; machine learning and computer vision; IP networks; automata theory and formal languages; program verification; flow modelling in porous media.

RESEARCH OUTPUTS

Articles in accredited journals	48
Books, conference proceedings, chapters in books	23
MSc students graduated in 2010	18
PhD students graduated in 2010	4

RESEARCH HIGHLIGHTS

Research in Mathematics, Applied Mathematics and Computer Science has steadily been strengthened over the past year. This is reflected by the quality of the research outputs, the number of international visitors received, research talks at national and international conferences, the invitations of researchers to leading research institutions, the quality of the graduate students, the strong collaborative links, and the number of active researchers contributing to relevant open problems in their research fields. Research activities have also been boosted with involvement from our postdoctoral students, and also fruitful graduate exchange programmes.

ACADEMIC AFFAIRS

The department's commitment to expanding the skills base in the mathematical and computer sciences in South Africa and in Africa is evident from our undergraduate and postgraduate involvement.

A record number of students were awarded PhD and Masters degrees - four with PhD in Mathematics, five with MSc (*cum laude*) in Mathematics, four with MSc (*cum laude*) in Applied Mathematics, four with MSc in Mathematics, one with MSc in Applied Mathematics, and four students with MSc in Computer Science. The biomathematics focus of the BSc Honours in Mathematics continued to grow in the second year of its offering with seven students completing this degree.

Postgraduate student numbers have been increasing steadily with 47 masters students and 25 doctoral students registered in 2010. Our graduate students are exposed to the wide range of research areas represented in the department. Over the past few years our postgraduate student body has been broadened in an exciting way through the Stellenbosch/AIMS Masters bursary opportunity. It allows students the option to continue their masters studies after they have completed the Postgraduate Diploma in Mathematical Sciences at the African Institute for Mathematical Sciences (AIMS).

Undergraduate teaching demands much time and effort of academic staff. In 2010 we taught about 5000 first year students, 3000 second year students and 250 third year students from Mathematical Sciences, Engineering, Biological Sciences, and Agrisciences.

Several innovative ideas for improving teaching and learning in Mathematics, Applied Mathematics and Computer Science were implemented during 2010. Various projects were sponsored by the SU Centre of Teaching and Learning's FIRLT initiative. Undergraduate enrichment seminars were introduced in an effort to inspire talented students to pursue their passion for Mathematics and to gain a deeper understanding of mathematical concepts and constructions. In turn, Computer Science held a Computational Biology Research Workshop in June with the objective of introducing the participating undergraduate students to the research topic by tackling an unsolved problem in computational biology.

SERVICE TO THE SCIENTIFIC COMMUNITY

Several academic staff members are involved in research journal editorial activities with Prof Helmut Prodinger having the strongest record in this regard as the member of the editorial board of ten journals.

NAVORSINGSFOKUSSE

Algebra en getalleteorie; analise, topologie en kategorieorie; benaderingsteorie, berekeningswiskunde, numeriese analise en wetenskaplike berekenings; diskrete wiskunde; finansiële wiskunde; biowiskunde en berekeningsbiologie; masjienleer en rekenaarvisie; IP netwerke; outomaatteorie en formele tale; programverifikasie; vloeimodellering in poreuse media.

NAVORSINGSUITSETTE

Artikels in geakkrediteerde tydskrifte	48
Boeke, konferensieverrigtinge, hoofstukke in boeke	23
MSc-studente gradueer in 2010	18
PhD-studente gradueer in 2010	4

NAVORSINGSHOOGTEPUNTE

Navorsing in Wiskunde, Toegepaste Wiskunde en Rekenaarwetenskap het stelselmatig oor die afgelope paar jaar versterk. Dit word gereflekteer deur die gehalte van die navorsingsuitsette, die getal internasionale besoekers wat ontvang is, aanbiedings by nasionale en internasionale vakkonferensies, die uitnodigings aan ons navorsers vanaf vooraanstaande navorsingsinstitute, die gehalte nagraadse studente, die sterk samewerkingsooreenkomste en die getal aktiewe navorsers wat bydraes lewer tot relevante oop probleme in hul navorsingsvelde. Navorsingsaktiwiteite is ook bevorder deur die betrokkenheid van ons na-doktorale studente en produktiewe nagraadse uitruilprogramme.

AKADEMIESE SAKE

Die Departement se verbintenis tot die uitbouing van basiese vaardighede in die wiskundige- en rekenaarwetenskappe in Suid-Afrika en in Afrika, word bewys deur ons voor- en nagraadse betrokkenheid.

'n Rekordgetal studente het PhD en meestersgrade ontvang - vyf met PhD in Wiskunde, vyf met MSc (*cum laude*) in Wiskunde, vier met MSc (*cum laude*) in Toegepaste Wiskunde, vier met MSc in Wiskunde, een met MSc in Toegepaste Wiskunde en vier studente met MSc in Rekenaarwetenskappe. Daarby het die Biowiskunde fokus, as deel van die BSc Honneursprogram in Wiskunde, steeds verdere groei getoon in die tweede jaar van aanbidding, met sewe studente wat hul grade voltooi het in 2010.

Nagraadse studentegetalte het toenemend gegroei met 47 magisterstudente en 25 doktrale studente wat geregistreer is in 2010. Ons nagraadse studente word blootgestel aan 'n wye reeks van navorsingsvelde wat aangebied word binne die Departement. Oor die laaste paar jaar het ons nagraadse studentekorps uitgebrei danksy geleenthede wat geskep is deur die Stellenbosch/AIMS Meerstersgraadbeurse. Dit gee studente die opsie om hul meestergraadstudies voort te sit nadat hulle die Nagraadse Diploma in Wiskundige Wetenskappe aan die Afrika Instituut vir Wiskundige Wetenskappe (AIMS) voltooi het.

Voorgraadse onderrig verg baie tyd en aandag van akademici in die Departement. In 2010 het ons bykans 5000 eerstejaarstudente, 3000 tweedejaarstudente en 250 derdejaarstudente onderrig, vanuit studieprogramme in die Wiskundige Wetenskappe, Ingenieurswese, Biologiese Wetenskappe en Agriwetenskappe.

Heelwat vernuwendes idees vir verbeterde onderrig en leer in Wiskunde, Toegepaste Wiskunde en Rekenaarwetenskap is gedurende 2010 geïmplementeer. Verskeie projekte is geborg deur die US Sentrum van Onderrig en Leer (SOL) se FINLO-inisiatief. Voorgraadse verrykingseminare is aangebied in 'n poging om talentvolle studente te inspireer om hul passie vir Wiskunde na te streef en om dieper kennis en begrip te kry van wiskundige konsepte en strukture. Rekenaarwetenskap het ook 'n navorsingswerkwinkel oor berekeningsbiologie. Dit is in Junie aangebied met die doel om deelnemende voorgraadse studente bekend te stel aan onopgeloste navorsingsprobleme in hierdie veld.

DIENS AAN DIE WETENSKAPLIKE GEMEENSAP

Verskeie akademiese personelede is betrokke by die redaksionele aktiwiteite van navorsingsjoernale. Prof Helmut Prodinge het die beste rekord in hierdie verband, as lid van die redaksionele komitees van tien joernale.

Personeel | Staff

Doserend

Prof IM Rewitzky (Uitvoerende Hoof)
 Dr B Bartlett
 Prof F Breuer
 Dr WH Brink
 Dr J Coetzer
 PH Crous
 Prof JM de Villiers
 Prof JP du Plessis
 Dr A Fransman
 J Geldenhuys
 Prof BW Green
 Dr PJP Grobler
 I Govender
 Prof BM Herbst
 Prof J Hargrove
 HA Haroldt
 Dr M Hoffman
 Prof D Holgate
 Dr K-T Howell
 Dr CP Ingg
 Dr Z Janelidze
 Dr AP Keet
 Dr RS Kroon
 Prof T Krzesinski
 Dr D Kubayi
 Dr MF Maritz
 Dr S Mouton
 Dr MA Muller
 Dr NL Muller
 Dr CG Naude
 Dr F Nyabadza
 Dr P Ouwehand
 A Prins
 Prof H Prodinge
 Prof K Scheffler
 Dr GJF Smit
 JP Swanepoel
 Prof AB van der Merwe
 Dr S van der Walt
 Prof L van Wyk
 Prof L van Zijl
 Prof W Visser
 Prof JAC Weideman
 Prof S Wagner
 LK Wessels
 Prof M Wild
 S Woudberg

Buitengewone professore

Prof G Frey
 Prof N Turok

Buitengewone senior lektore

Dr R Ghomrasni
 Dr A Welte

Buitengewone lektore

Dr A Ouhinou
 Dr SC Oukoumi Noutchie

Ondersteuningspersoneel

M Abrahams
 L Adams
 W Bester
 W Isaacs
 B Jacobs
 OM Marais
 MM Rhoda
 AL Roman
 D Stephanus
 M van Niekerk

NARGA electronic classrooms increase

The electronic lecture facilities at the disposal of lecturers and students in the Natural Sciences and Agricultural Sciences are constantly being improved upon to support teaching and research initiatives at Stellenbosch University.

In 2010 the NARGA G electronic lecture hall was opened on the third floor of the Natural Sciences Building, to accommodate 88 students. The lecture hall, with its striking red wall, is the largest facility of its kind within the NARGA framework. The other five similar NARGA lecture halls together can accommodate 224 students.

The new electronic lecture hall was set up to provide for the increasing demand for larger lecture halls where students can be instructed utilising computers.

Electronic lecture halls are used for teaching Computer Skills, Biometrics, Physics, Biology, Food Science, Genetics, Applied Mathematics, and Computer Science, to name but a few subjects.

"On account of the pressure on our laboratory facilities, more and more lecturers use our electronic lecture halls for tutorials," says NARGA manager Ms Ilse de Kock. "By means of the necessary software lecturers are able to demonstrate various Physics experiments on the computer; whereas other lecturers use it for DNA work."

A similar facility specifically aimed at meeting the needs of the Mathematical Sciences community opens in 2011, also in the Natural Sciences building.

Continuing the tradition of hosting the annual congress South African Society for Numerical and Applied Mathematics, the Division Applied Mathematics' Prof Ben Herbst, Prof André Weideman and Dr Stéfán van der Walt organised the 34th congress of this society. Invited plenary speakers included Prof Bernhard Schölkopf from the Max Planck Institute for Biological Cybernetics (Germany), Prof Peter Markowich from the University of Cambridge (UK) and Prof Uri Ascher from the University of British Columbia (Canada).

Computer Science is playing a key role in various IT initiatives in the Western Cape and the broader South Africa. In particular, during 2010, Prof Willem Visser was elected to the South African National Department of Communication's eSkills working group as the representative of Higher Education South Africa (HESA) and to the board of the Cape IT Initiative (CITI) as the Cape Higher Education Consortium (CHEC) representative.

Over the past few years the Department has attracted a cohort of excellent graduate students from Madagascar. In a move to strengthen the growing connection, Prof Florian Breuer visited the University of Antananarivo in July 2010 and presented a course on number theory. It is anticipated that a long-term collaboration will be established for the mutual benefit of Stellenbosch University and the University of Antananarivo. The main aims will be to train more high quality graduate students from Madagascar, to develop existing and initiate new joint research opportunities, and to reduce the relative academic isolation of mathematicians in Madagascar.

AWARDS TO STAFF AND STUDENTS

The research excellence of Prof Stephen Wagner has been recognised by the Royal Society of South Africa with the award of their prestigious Meiring Naude Medal. This annual award celebrates the scientific achievement of talented young scientists under the age of 35. Prof Wagner's prolific publication record and impressive research ability in the fields of combinatorics, number theory and graph theory has also been recognised at Stellenbosch University through his promotion to associate professor from January 2010.

Prof Marcel Wild received the South African Mathematical Society Award for Research Distinction. He was commended for the wide spectrum of fundamental and applied research topics he has tackled within the fields of lattice theory, non-linear signal processing, discrete mathematics and algorithms. This award is the highest honour that the South African mathematical community can bestow, and is only made once every two years, on average.

Prof Helmut Prodinger received the prestigious President's Award from the National Research Foundation (NRF) for the third time in recognition of his excellence in research and in honour of his status a leading mathematician in the fields of combinatorics and analysis of algorithms. At an award ceremony, in addition to the A rating, he was presented with a trophy and a certificate.

For her remarkable achievement and promise as a women in science, applied mathematician Sonia Woudberg was named as one of five recipients of the inaugural L'Oreal and UNESCO Regional Fellowship for Women in Science in Sub-Saharan Africa. The fellowships form part of L'Oreal Corporate Foundation's continued investment in science. Ms Woudberg's doctoral research work is in the field of fluid modelling and simulation.

Dr Bruce Bartlett was awarded the TM Flett Postgraduate Prize in Pure Mathematics for the best PhD thesis in Pure Mathematics at the University of Sheffield (UK) in 2008/2009.

At the First Year Academy Prestige Evening, where the academic achievement of top first year students is acknowledged, Mr Piet Crous, Prof Johan de Villiers Dr Andrew Fransman, and Dr Karin Howell were honoured as inspiring lectures.

Recognising the contributions of staff in research, teaching and service, Stellenbosch University awarded Rector's Awards for Excellence in Research to Prof Helmut Prodinger, Prof Florian Breuer, Prof Stephan Wagner, Prof Andre Weideman and Prof Ingrid Rewitzky, while Prof Johan de Villiers and Prof Lynette van Zijl received Rector's Awards for Excellence in Teaching.

Ms Rejoyce Gavhi received the Rector's Award for Succeeding Against the Odds. It honours her for her perseverance and achievements despite difficult personal and medical circumstances. Ms Gavhi has remained dedicated to her studies and is determined to complete her PhD in Mathematics by the end of 2011 - she has been an example to all of us.

Mr Francois Singels, a former MSc (Applied Mathematics) student of Dr Willie Brink, received the John Todd Morrison medal. This medal is awarded annually by Stellenbosch University for the best MSc student in Physics or Applied Mathematics.

Computer Science honoured their top students of 2009 at a special award ceremony. Mr Morné Chamberlain received the Science Faculty Dean's Medal for the best Masters

Dit het nou al instelling geword dat die Afdeling Toegepaste Wiskunde die jaarlikse kongres van die Suid-Afrikaanse Vereniging vir Numeriese- en Toegepaste Wiskunde aanbied. Prof Ben Herbst, prof André Weideman en dr Stéfán van der Walt was die organiseerders van die 34ste kongres. Uitgenooide hoofsprekers het prof Bernhard Schölkopf van die Max Planck Instituut vir Biologiese Kibernetika (Duitsland), prof Peter Markowich van die Universiteit van Cambridge (VK) and prof Uri Ascher van die Universiteit van British Columbia (Kanada) ingesluit.

Die Afdeling Rekenaarwetenskap speel 'n sleutelrol in verskeie IT-inisiatiewe in die Wes-Kaap en in Suid-Afrika. So is prof Willem Visser gedurende 2010 tot die Suid-Afrikaanse Nasionale Departement van Kommunikasie se eSkills-werksgroep as die verteenwoordiger van Hoër Onderwys Suid-Afrika (HESA) verkies, en ook tot die raad van die Kaapse IT Inisiatief (CITI) as die verteenwoordiger van die Kaapse Hoër Onderwys Konsortium (CHEC).

Die Departement het die afgelope paar jaar 'n groep uitstaande nagraadse studente van Madagaskar gelok. Om die groeiende band te versterk het prof Florian Breuer die Universiteit van Antananarivo in Julie 2010 besoek om 'n kursus in getalleteorie aanbied. Daar word verwag dat 'n langtermyn samewerkingsverhouding gevestig sal word tot die gesamentlike voordeel van die US en die Universiteit van Antananarivo. Die hoofdoel sal wees om meer uitnemende nagraadse studente uit Madagaskar op te lei, om bestaande asook nuwe gesamentlike navorsingsgeleenthede te ontwikkel en om die relatiewe akademiese isolasie van wiskundiges in Madagaskar te verminder.

TOEKENNINGS AAN PERSONEEL EN STUDENTE

Die uitstaande navorsingsprestasies van prof Stephen Wagner is erken deur die Royal Society of South Africa, met die toekenning van hul toonaangewende Meiring Naudé Medalje. Hierdie jaarlikse toekenning erken die wetenskaplike prestasies van talentvolle jong wetenskaplikes onder die ouderdom van 35. Prof Wagner se produktiewe publikaserekord en indrukwekkende navorsingsvermoëns in die velde van kombinatorika, getalleteorie en grafiekteorie is ook deur die Universiteit Stellenbosch erken in sy bevordering tot medeprofessor vanaf Januarie 2010.

Prof Marcel Wild het die Suid-Afrikaanse Wiskundige Vereniging se Toekenning vir Uitnemende Navorsing ontvang. Hy is geloof vir die wye spektrum van fundamentele en toegepaste navorsingsonderwerpe wat hy aangepak het in die velde van tralieteorie, nie-linéêre seinverwerking, diskrete wiskunde en algoritmes. Hierdie toekenning is die hoogste eer wat 'n lid van die Suid-Afrikaanse wiskundige gemeenskap kan verwerf, en word slegs ongeveer elke tweede jaar toegeken.

Prof Helmut Prodinger het vir die derde keer die gesaghebbende Presidentstoekenning van die Nasionale Navorsingsinstituut (NNS) ontvang vir sy voortrefflike navorsing en wiskundige leierskap in die velde van kombinatorika en analise van algoritmes. 'n Trofee en sertifikaat is bykomend tot sy A-gradering by 'n toekenningsereemonie aan hom oorhandig.

Me Sonia Woudberg is vir haar uitsonderlike prestasies as belowende vroulike wetenskaplike navorser beloon. Sy was een van vyf ontvangers van die eerste L'Oreal en UNESCO se streeksgenootskapstoekennings vir vroue in die wetenskappe in Sub-Sahara Afrika. Die toekenning vorm deel van L'Oreal Korporatiewe Stigting se volgehoue belegging in die wetenskap. Me Woudberg se doktorale navorsingsveld is in vloeimodellering en simulasie.

Dr Bruce Bartlett het die TM Flett Nagraadse Prys in Suiwer Wiskunde ontvang vir die beste PhD tesis in Suiwer Wiskunde aan die Universiteit van Sheffield (VK) in 2008/2009.

Mnr Piet Crous, prof Johan de Villiers, dr Andrew Fransman en dr Karin Howell is by die Eerstejaarsakademie Prestige-aand as inspirerende dosente vereer. Die akademiese prestasies van die beste eerstejaarstudente is ook by hierdie geleentheid erken.

Die bydraes van personeel in navorsing en onderrig is deur die Universiteit Stellenbosch erken. Rektorstoekennings vir Uitnemende Navorsing het gegaan aan prof Helmut Prodinger, prof Florian Breuer, prof Stephan Wagner, prof André Weideman and prof Ingrid Rewitzky, terwyl Rektorstoekenning vir Uitnemende Onderrig deur prof Johan de Villiers and prof Lynette van Zijl ontvang is.

Me Rejoyce Gavhi het die een van die Rektor se Uitstygtoekennings ontvang. Dit erken haar deurstellingsvermoë en prestasies ondanks moeilike persoonlike omstandighede en gesondheidsprobleme. Me Gavhi het haarself deurgaans verbind tot haar studies en is vasberade om haar PhD in Wiskunde teen die einde van 2011 te voltooi - sy is 'n uitnemende voorbeeld vir ons almal.

Mnr Francois Singels, 'n voormalige MSc-student (Toegepaste Wiskunde) van dr Willie Brink het die John Todd Morrison Medalje ontvang. Dit word jaarliks deur die Universiteit

NARGA se elektroniese klaskamers brei uit



Die elektroniese lesingfasiliteite tot die beskikking van lektore en studente in die Fakulteite Natuurwetenskappe en AgriWetenskappe word voortdurend uitgebrei om onderrig en navorsing aan die Universiteit Stellenbosch te ondersteun.

Gedurende 2010 is die NARGA G elektroniese lesingsaal op die derde vloer van die Natuurwetenskappe Gebou in gebruik geneem. Die lokaal kan 88 studente akkommodeer.

Die vertrek, met sy spoggerige rooi muur, is die grootste fasiliteit van sy soort binne die kader van die Natuurwetenskappe Gebruiksareas, beter bekend as NARGA. Die ander vyf soortgelyke NARGA-lesingsale kan saam 224 studente akkommodeer.

"Die nuwe elektroniese lesingsaal is ingerig weens die toenemende vraag na lokale wat groot genoeg is om groot groepe studente met behulp van rekenaars te onderrig," vertel NARGA-bestuurder me Ilse de Kock.

Akademics van die Fakulteit Natuurwetenskappe gee onder meer klas in die elektroniese lesingsale wanneer hulle modules in Rekenaarvaardigheid, Biometrie, Fisika, Biologie, Voedselwetenskap, Genetika, Toegepaste Wiskunde en Rekenaarwetenskap aanbied.

"Weens die druk op ons laboratoriumfasiliteite gebruik al hoe meer dosente ons elektroniese lesingsale vir tutoriale," vertel me De Kock. "Danksy die nodige sagteware kan dosente byvoorbeeld verskeie fisika-eksperimente op die rekenaar demonstree, terwyl ander weer dit gebruik vir DNA-werk."

'n Soortgelyke fasiliteit spesifiek vir die behoeftes van Wiskundige Wetenskappe gemeenskap word in 2011 in die Natuurwetenskappe-gebou ingerig.

Physiological Sciences to try hand at podcasting



The Department of Physiological Sciences is turning to technology to help cope with classes that are bursting at their seams, and to enhance student learning.

Funding was received in 2010 for an initiative to use "enhanced podcasting" to make lectures available on the internet for further self-study. It will be tested during the second semester of 2011.

The audio of a lecture will be recorded along with the lecture slides, with the help of a computer and a data projector. These podcasts will then be placed on the internet so that students can access them from a designated website.

Since 2007, the Department of Physiological Sciences has experienced a rapid growth in its undergraduate student numbers. Lectures are typically given as part of the Human Life Sciences, Molecular Biology and Biotechnology and some Agrisciences programmes.

"When students regularly can't find seats in a crowded lecture hall, they are not motivated to come back again," says Dr Rob Smith, who along with Dr De Wet Strauss received a grant from the SU Centre for Teaching and Learning's FIRLT (Fund for Innovation and Research in Learning and Teaching) programme to drive the experiment. "We know that there's a link between the pass rate and students' attending classes, and therefore we want to provide an alternative option to students through the virtual attendance of classes."

"The increase in student numbers has necessitated a re-think in the way lectures are presented, because traditional techniques such as the use of a chalk board seem no longer to be sufficient," Dr Smith explains.

"As part of the project we will also investigate the attitudes of students and lecturers towards the podcasting of classes, to see if this in any way impacts on class attendance and student pass rates," he explains.

student in 2009. Mr Gideon Redelinghuys won the IBM prize for the best honours project in 2009. Mr Niel de Wet was the first recipient of the newly instituted Van der Walt Medal honouring the best undergraduate student in Computer Science. The medal is in memory of Prof Andries van der Walt, a much-loved and longstanding lecturer in Computer Science and Mathematics who died in 2008.

The top achievers in Applied Mathematics during 2009 were honoured during a book prize-giving ceremony sponsored by Cambridge University Press: Mr Ralph Rudd (best honours student), Ms Maryke Thom (best third year student), Mr Renier van Rooyen (best second year student) and Mr Gerdus Benade (best first year student).

The best students in mathematics courses during 2009 were awarded books at the GBB-Rubbi prize giving. The recipients were Mr Gerdus Benade and Mr Andries Mouton (best first year students); Mr Wilhelm Burger and Mr Stephan Burger (best first year engineering mathematics students); Mr Francois Kamper and Mr Jan Buys (best second year students) and Ms Maryke Thom and Ms Ronalda Benjamin (best third year students).

STAFF MATTERS

During the year the Ad Hominem promotion of several staff members were approved with effect from 1 January 2011. In Computer Science, Dr Steve Kroon was promoted to senior lecturer. In Mathematics, Prof Marcel Wild was promoted to professor, Dr Andrew Fransman to associate professor, and Dr Zurab Janelidze to senior lecturer.

Lecturer Dr Stefan van der Walt obtained his PhD in Electrical and Electronic Engineering in December 2010.

While maintaining a professorship and postgraduate commitment in Mathematics, Prof Barry Green was seconded by the university to the position of director of AIMS, the African Institute for Mathematical Sciences, from 1 April. Prof Ingrid Rewitzky was appointed as executive head of the Department.

In January we welcomed Mr Abraham Prins who accepted a three-year contract lectureship to teach the Alternative Access Mathematics module W176 for science and engineering students.

It was with great sadness that we learnt of the passing of Prof Prieur du Plessis who had been a professor in Applied Mathematics. He was a valued and trusted colleague, a respected researcher in the field of fluid modelling and simulation, an inspiring lecturer and a former head of the Department of Applied Mathematics. His contributions towards building this discipline at Stellenbosch University will remain for years to come.

COMMUNITY INTERACTION

Our active involvement in the activities of the African Institute for Mathematical Sciences (AIMS) highlights our determination, as a department, for increased involvement in the African context as well as stronger recognition of mathematical sciences in society. During 2010, staff members presented courses and supervised essays at AIMS as part of the postgraduate diploma in Mathematical Sciences, and co-organised an international conference titled "Diversity in Mathematics" and a Financial Mathematics Workshop.

For the 19th year, our department hosted the Stellenbosch Mathematics Camp in December as part of the training camps for talented young mathematicians participating in mathematics olympiad competitions.

Computer Science presented Project Umony Python courses to about 100 learners from 55 schools, ranging from Grade 4 to Grade 12. This weekend course was offered as part of Project Umony, a nationwide initiative to introduce and promote computer science and programming among South African learners.

A team of Stellenbosch University students proved their worth as computer scientists when they qualified for the world finals of the ACM International Collegiate Programming Contest. Referred to as "The Battle of the Brains," the ACM ICPC World Finals challenges the world's 100 top university teams to use open standard technology in designing software that solves a variety of real-world problems. It is an initiative of the Association of Computing Machinery, and is sponsored by IBM.

Stellenbosch aan die beste MSc student in Fisika of Toegepaste Wiskunde toegeken.

Rekenaarwetenskap het hul beste studente van 2009 vereer by 'n spesiale prysuitdeling. Mnr Morné Chamberlain het die Fakulteit Natuurwetenskappe Medalje vir die beste magisterstudent ontvang, en mnr Gideon Redelinghuys het die IBM-prys vir die beste honneursprojek gewen. Mnr Niel de Wet was die eerste ontvanger van die nuwe Van der Walt Medalje vir die beste voorgraadse student in Rekenaarwetenskap. Die toekenning is in die lewe geroep ter herinnering aan prof Andries van der Walt, 'n gewaardeerde kollega en 'n inspirerende dosent wat in Desember 2008 oorlede is.

Die toppresteerders in Toegepaste Wiskunde gedurende 2009 is gedurende 2010 met Cambridge University Press boekpryse. Die ontvangers was mnr Ralph Rudd (beste honneursstudent), me Maryke Thom (beste derdejaar student), mnr Renier van Rooyen (beste tweedejaar student), en mnr Gerdus Benade (beste eerstejaar student).

Die beste studente in die onderskeie Wiskunde modules gedurende 2009 het boeke by die GBB-Rubbi-prysuitdeling ontvang. Hulle was mnr Gerdus Benade en Andries Mouton (beste eerstejaars); mnr Wilhelm Burger en Stephan Burger (beste eerstejaar-ingenieurswiskundestudente); mnr Francois Kamper en Jan Buys (beste tweedejaars); en me Maryke Thom en me Ronalda Benjamin (beste derdejaarstudente).

PERSONEELSAKE

Gedurende die jaar is die Ad Hominem bevorderings van verskeie personeellede goedgekeur met ingang 1 Januarie 2011. By Rekenaarwetenskap is dr Steve Kroon bevorder tot senior lektor, en by Wiskunde is prof Marcel Wild tot professor, dr Andrew Fransman tot medeprofessor en dr Zurab Janelidze tot senior lektor bevorder.

Dr Stéfan van der Walt het sy PhD-graad in Elektriese en Elektroniese Ingenieurswese in Desember 2010 verwerf.

Prof Barry Green is deur die Universiteit Stellenbosch as direkteur van AIMS, die Afrika Instituut vir Wiskundige Wetenskappe, vanaf April 2010 gesekeunde. Hy behou steeds sy professoraat en sy nagraadse verpligtinge in Wiskunde. Prof Ingrid Rewitzky is aangestel as voorsitter van die Departement Wiskundige Wetenskappe (Wiskunde, Toegepaste Wiskunde, Rekenaarwetenskap).

In Januarie het ons mnr Abraham Prins verwelkom wat 'n driejaar kontrak aanvaar het as lektor om die Alternatiewe Toegang Wiskunde module W176 te doseer.

Dit was met groot leedwese dat ons verneem het van die heengaan van prof Prieur du Plessis, 'n professor in Toegepaste Wiskunde en 'n gewaardeerde en gerespekteerde kollega, vriend, en navorser in die veld van vloeimodellering en simulatie. Hy was 'n inspirerende dosent en 'n voormalige hoof van die voormalige Departement Toegepaste Wiskunde. Hy het 'n blywende bydrae tot die opbou van hierdie dissipline aan die Universiteit Stellenbosch gemaak.

GEMEENSKAPSINTERAKSIE

Ons aktiewe betrokkenheid in die aktiwiteite van die Afrika Instituut vir Wiskundige Wetenskappe (AIMS) beklemtoon ons vasberadenheid as departement om toenemend betrokke te wees in die Afrika konteks sowel as om sterker erkenning te verkry vir wiskundige wetenskappe in die gemeenskap. Gedurende 2010 het personeellede kursusse aangebied en leiding geneem met AIMS projekte as deel van die nagraadse diploma in Wiskundige Wetenskappe en het ook help organiseer aan 'n internasionale konferensie getiteld "Diversity in Mathematics" en 'n werkwinkel oor wiskundige finansies.

Die Stellenbosch Wiskundekamp is in Desember vir die 19de keer deur die Afdeling Wiskunde aangebied. Dit is een van die jaarlikse opleidingskampe vir talentvolle Suid-Afrikaanse skoliere wat aan wiskunde-olimpiades deelneem.

Rekenaarwetenskap het die Projek Umonya-Python kursusse aangebied vir omtrent 100 leerders tussen Graad 4 en Graad 12, afkomstig van 55 skole. Hierdie naweekkursus is aangebied as deel van Projek Umonya, 'n landwye inisiatief om rekenaar-wetenskap en programmering aan Suid-Afrikaanse leerders bekend te stel.

'n Span studente van die Universiteit Stellenbosch het hulle waarde as rekenaarwetenskaplikes bewys toe hulle gekwalifiseer het vir die wêreldfinale van die *ACM International Collegiate Programming Contest*. Die kompetisie daag die wêreld se beste 100 universiteit-spanne uit om sagteware te ontwerp wat verskeie probleme uit werklike situasies oplos. Die kompetisie is 'n inisiatief van die *Association of Computing Machinery*, en word geborg deur IBM.

Fisiologiese Wetenskappe gaan podsending probeer

Die Departement Fisiologiese Wetenskappe gaan tegnologie inspan om die kwessie van oorvol klasse te hanteer en studente se leerwerk te vergemaklik.

Fondse is in 2010 beskikbaar gestel vir 'n inisiatief om verbeterde podsending, of potgooie, te gebruik om lesings op die internet beskikbaar te stel vir verdere selfstudie. Dié podsending gaan in die tweede semester van 2011 getoets word.

Die klankopname van 'n lesing sal gemaak word saam met lesingskyfies, met behulp van 'n rekenaar en 'n data-projektor. Hierdie podsending gaan dan op die internet gelaai word sodat studente via 'n bepaalde webwerf toegang daartoe sal kan verkry.

Die Departement Fisiologiese Wetenskappe het sedert 2007 'n groot toename in voorgraadse studentegetalle ervaar. Lesings word gewoonlik gegee as deel van die programme in Menslike Lewenswetenskappe en Molekulêre Biologie en Biotegnologie, asook sekere Agriwetenskapprogramme.

"Wanneer studente gedurig sukkel om sitplek in oorvol lesingsale te kry voel hulle nie gemotiveerd om terug te keer nie," sê dr Rob Smith, wat saam met dr De Wet Strauss 'n toekenning van die Fonds vir Innovasie en Navorsing oor Leer en Onderrig (FINLO) van die SU se Sentrum vir Leer en Onderrig ontvang het om die eksperiment te kan uitvoer. "Ons weet daar is 'n verband tussen studente se slaagsyfer en hul klasbywoning, en daarom wil ons deur virtuele klasbywoning 'n alternatief aan studente bied."

"Die toename in studentegetalle het ons genoodsaak om die manier waarop ons lesings aanbied te heroorweeg, aangesien tradisionele tegnieke soos die gebruik van skryfborde alleen nie meer doeltreffend is nie," verduidelik dr Smith.

"As deel van die projek gaan ons ook studente en dosente se houding jeens die podsending van lesings ondersoek om vas te stel of podsending enigsins 'n impak op klasbywoning en studenteslaagsyfers sal hê," verduidelik hy.

FUNDING

Bureau for Industrial Mathematics at Stellenbosch University (BIMUS)
 Canadian International Development Agency (CIDA)
 Centre for Experimental Mathematics at Stellenbosch University
 DST-NRF Centre of Excellence for Epidemiological Modelling and Analyses (SACEMA)
 International Control of Neglected Zoonoses (ICONZ)
 Natural Resources Institute (NRI) University of Greenwich
 National Research Foundation (NRF) Bilateral cooperation: Hungary
 NRF (KIC grants, Blue Skies grant, Focus Area, incentive funding)
 NRF Mobility grant: Czech Republic
 Stellenbosch University (SU)
 Telkom - NSN
 UNAIDS
 World Health Organisation (WHO)

COLLABORATION

SOUTH AFRICA

African Institute for Mathematical Sciences (AIMS)
 Council for Scientific and Industrial Research (CSIR)
 Denel
 Gensec Asset Management
 iThemba Labs
 Nelson Mandela Metropolitan University
 Reutech Radar Systems
 Rheinmetall Denel Munition
 SASOL
 South African Centre for Epidemiological Modelling and Analyses (SACEMA) (interacts with staff & students) at University of KwaZulu- Natal (UKZN), University of the Witwatersrand, University of the Western Cape (UWC), University of Cape Town (UCT), North West, University (NWU), University of Limpopo, University of Fort Hare, Nelson Mandela Metropolitan University (NMMU), University of Pretoria (UP), University of Zululand, University of Venda
 University of Cape Town
 University of the Free State
 University of KwaZulu-Natal
 University of the Witwatersrand

AFRICA

College of Agriculture (Botswana)
 National University of Science and Technology (Zimbabwe)
 Makerere University (Uganda)
 Members of the Department are involved in various African initiatives such as the AIMS programme, editorial journal activities and external evaluation, and SACEMA student support at the National University of Science and Technology (Zimbabwe)
 Universite d'Antananariva (Madagascar)
 University of Botswana (Botswana)

INTERNATIONAL

Austria

Graz University of Technology
 Vienna University of Technology

Belgium

Free University Brussels
 Gent University
 Université catholique de Louvain

Bulgaria

Bulgarian Academy of Sciences

Canada

McMaster University

China

Beijing Institute of Technology

Czech Republic

Brno University of Technology

France

Université du Littoral

Germany

Kassel University
 Max-Planck Institute
 Tübingen University
 University of Bremen

Hungary

Alfred Renyi Institute of Mathematics, Hungarian Academy of Sciences
 University of Aveiro
 University of Coimbra
 University of Miskolc

Italy

Università Degli Studi di Siena

Poland

National Institute for Telecommunications

SAMEWERKING

SUID-AFRIKA

Afrika Instituut vir Wiskundige Wetenskappe (AIMS)
Denel
Gensec Batebestuur
iThemba Labs
Nelson Mandela Metropolitan Universiteit
Reutech Radar Systems
Rheinmetall Denel Munition
Suid-Afrikaanse Sentrum van Uitnemendheid vir Epidemiologiese Modelling en Analise (SACEMA)
(samesamewerking met personeel en studente) by Universiteit van KwaZulu-Natal (UKZN), Universiteit van die Witwatersrand, Universiteit van Wes-Kaapland (UWK), Universiteit Kaapstad (UK), Noordwes Universiteit (NWU), Universiteit van Limpopo, Universiteit van Fort Hare, Nelson Mandela Metropolitaanse Universiteit (NMMU), Universiteit van Pretoria (UP), Universiteit van Zululand, Universiteit van Venda)

SASOL
Universiteit Kaapstad
Universiteit van KwaZulu-Natal
Universiteit van die Vrystaat
Universiteit van die Witwatersrand
Wetenskaplike en Nywerheidsnavorsingsraad (WNNR)

AFRIKA

Botswana Landboukollege (Botswana)
Nasionale Universiteit van Wetenskap en Tegnologie (Zimbabwe)
Makerere Universiteit (Uganda)
Lede van die Departement is betrokke by verskeie Afrika-inisiatiewe soos die AIMS-program, redaksionele tydskrifaktiwiteite en eksterne evaluering, asook SACEMA studente-ondersteuning by die Nasionale Universiteit van Wetenskap en Tegnologie (Zimbabwe)
Universiteit van Antananariva (Madagaskar)
Universiteit van Botswana (Botswana)

INTERNASIONAAL

België

Free University Brussels
Gent Universiteit
Université catholique de Louvain

Bulgarye

Bulgaarse Akademie vir Wetenskap

China

Beijing Instituut van Tegnologie

Duitsland

Kassel Universiteit
Max-Planck Instituut
Tübingen Universiteit
Universiteit van Bremen

Frankryk

Université du Littoral

Hongarye

Hungarian Academy of Sciences
Universiteit van Aveiro
Universiteit van Coimbra
Universiteit van Miskolc

Italië

Università Degli Studi di Siena

Kanada

McMaster Universiteit

Pole

Nasionale Instituut vir Telekommunikasie
Universiteit van Aveiro
Universiteit van Coimbra
Universiteit van Warsaw

Puerto Rico

Universiteit van Puerto Rico

BEFONDSING

Buro vir Industriële Wiskunde aan die Universiteit Stellenbosch (BIWUS)
Canadian International Development Agency (CIDA)
DWT-NNS Sentrum van Uitnemendheid vir Epidemiologiese Modelling en Analise (SACEMA)
International Control of Neglected Zoonoses (ICONZ)
Nasionale Navorsingstigting (NNS)
Natural Resources Institute (NRI), Greenwich Universiteit
NNS Bilaterale samesamewerking: Hongarye
NNS (KIC toekennings, Blue Skies toekenning, Fokusarea, Aansporingsbefondsing)
NNS Mobiliteitstoekenning: Tsjeggiese Republiek
Sentrum vir Eksperimentele Wiskunde aan die Universiteit Stellenbosch
Universiteit Stellenbosch (US) (Strategiese Fonds, Subkomitee B, Fakulteit Natuurwetenskappe, Program vir belowende jong navorsers)
Telkom - NSN
UNAIDS
Wêreldgesondheidsorganisasie (WGO)

Workshop's technicians support research work

Researchers and postgraduate students at the Institute for Laser Research in the Department of Physics have achieved a number of successes over the past few years, and in the process received a number of awards and further funding.

The Mechanical Workshop of the Faculty of Science is housed in the Merensky Building. Behind the scenes, workshop manager Mr Boel Botha and his team – Mr David Prins and Mr John Burns – play a valuable role in helping to make these achievements possible through their knowledgeable eyes and their dexterity.

It is their task to build the necessary equipment that a laser physicist might require, according to the required specifications. In some cases they adapt prefabricated instruments that have been purchased elsewhere according to the researcher's unique specifications. In other cases the apparatus is built up piece by piece, from the smallest part that has to be turned to a casing that has to be spray-painted or a wooden box that has to be sanded.

The Workshop has a rich history. On a plane that enjoys pride of place on a workbench one can read the name of the University's predecessor, Victoria College, as well as the date 1910 in an elegant script. Mr Botha has discovered a letter indicating that the Workshop was operational in 1935 already. An old lathe, which originally would have been operated by foot and later was electrified, is said to have been delivered on campus in the days when the Railways still made use of horse-drawn carts.

"Since there has been a university at Stellenbosch, there has been someone to help build apparatus," Mr Botha believes.



The Workshop staff members are also very skilled at blowing new life into apparatus that has fallen into disrepair.



In this regard they work together with the technical support team of the Department of Physics. Laboratory manager Mr Johan Germishuizen and senior technical officer Mr Gerhard Louwrens are kept very busy with the electronics and automation of equipment that is outdated in terms of safety standards, so that it can be used once again in the student training programmes in laser physics. "One obviously cannot use 1980s technology in 2011," explains Mr Louwrens.

Of course, it is not only Stellenbosch laser physicists who benefit from the expertise of the Mechanical Workshop. Just as in the case of Mr Eric Ward, the glassblower of the Faculty of Science who is based in the Department of Chemistry and Polymer Science, they are at the disposal of all researchers – from biochemists, botanists and zoologists to students in polymer sciences and chemistry.

University of Aveiro
University of Coimbra
University of Warsaw

Puerto Rico
University of Puerto Rico

Romania
University of Bucharest

Serbia
University of Kragujevac

Switzerland
ETH-Zürich

Taiwan
Academia Sinica

United Kingdom
Imperial College
Oxford University
Trinity College, Dublin
University of Leeds

United States of America
Harvard University
NASA Ames Research Centre
University Colorado-Boulder
University of Manitoba
University of South Carolina
University of Texas A&M

Oostenryk

Graz Universiteit van Tegnologie
Weense Universiteit van Tegnologie

Romenië

Universiteit van Bucharest

Serwië

Universiteit van Kragujevac

Switserland

ETH-Zürich

Tsjeggiese Republiek

Brno Universiteit van Tegnologie

Taiwan

Academia Sinica

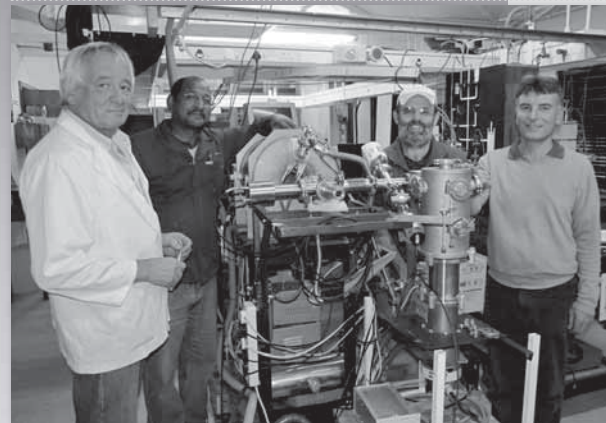
Verenigde Koninkryk

Imperial College
Oxford Universiteit
Trinity College, Dublin
Universiteit van Leeds

Verenigde State van Amerika

Harvard Universiteit
NASA Ames Navorsingsentrum
Universiteit van Colorado-Boulder
Universiteit van Manitoba
Universiteit van Suid-Carolina
Universiteit van Texas A&M

**Werkswinkel se tegnisi
ondersteun navorsingswerk**



Die Instituut vir Lasernavorsing in die Departement Fisika het oor die afgelope paar jaar talle suksesse behaal. Agter die skerms in die Fakulteit Natuurwetenskappe se Meganiese Werkswinkel in die Merenskygebou help werkswinkelbestuurder mnr Boel Botha en sy span van mnrre David Prins en John Burns se kennesoë en raakvat om hierdie prestasies moontlik te maak.

Hulle bou die nodige toerusting wat 'n laserfisikus wil gebruik, volgens die spesifikasies wat verskaf word. Soms pas hulle voorafvervaardigde instrumente wat elders aangekoop is, volgens die navorsers se eiesoortige vereistes aan. Ander kere weer word apparaat stuk-vir-stuk opgebou, vanaf die kleinste onderdeel wat uitgedraai moet word tot by 'n omhulsel se spuitverf of 'n houtkissie se afskuur.

Die werkswinkel het 'n ryke geskiedenis. Op 'n houtskaaf, wat 'n ereplek op 'n werkbank geniet, pryk die naam van die US se voorganger, Victoria College, asook die datum 1910 in 'n sierlike handskrif. 'n Brief dui aan dat die werkswinkel reeds in 1935 bedryf is. 'n Ou draaibank, wat oorspronklik met die voet getrap moes word en later geëlektrifiseer is, is glo op kampus afgelewer toe die Spoorweë nog perdekarre gebruik het.

"Vandat hier 'n universiteit op Stellenbosch is, was daar al iemand wat gehelp het om apparaat te bou," glo mnr Botha.

Die personeel is bedrewe daarin om nuwe lewe te blaas in apparaat wat in onbruik verval het. Hulle werk hierin onder meer saam met die tegniese ondersteuningspan van die Departement Fisika. Laboratoriumbestuurder mnr Johan Germishuizen en senior tegniese beampte Gerhard Louwrens bly veral besig met die elektronika en outomatisering van verouderde toerusting volgens veiligheidsstandaarde, sodat dit weer vir studenteopleiding gebruik kan word.

"Mens kan mos nie meer met 1980's tegnologie in 2011 werk nie," verduidelik mnr Louwrens.

Dis natuurlik nie net Stellenbosse laserfisici wat by die Meganiese Werkswinkel se vernuf baat nie. Hulle is - net soos in die geval van mnr Eric Ward, die Fakulteit Natuurwetenskappe se glasblaser wat in die Departement Chemie en Polimeerwetenskap gebaseer is - tot die beskikking van alle navorsers - van biochemici en plant- en dierkundiges tot studente in polimeerwetenskappe of chemie.

Aardwetenskappe | Earth Sciences

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