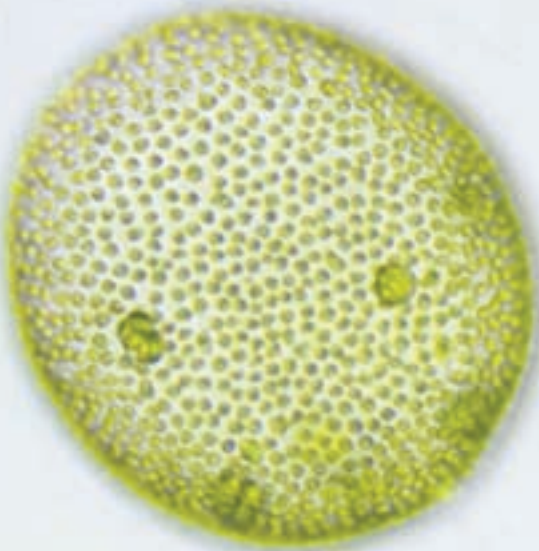
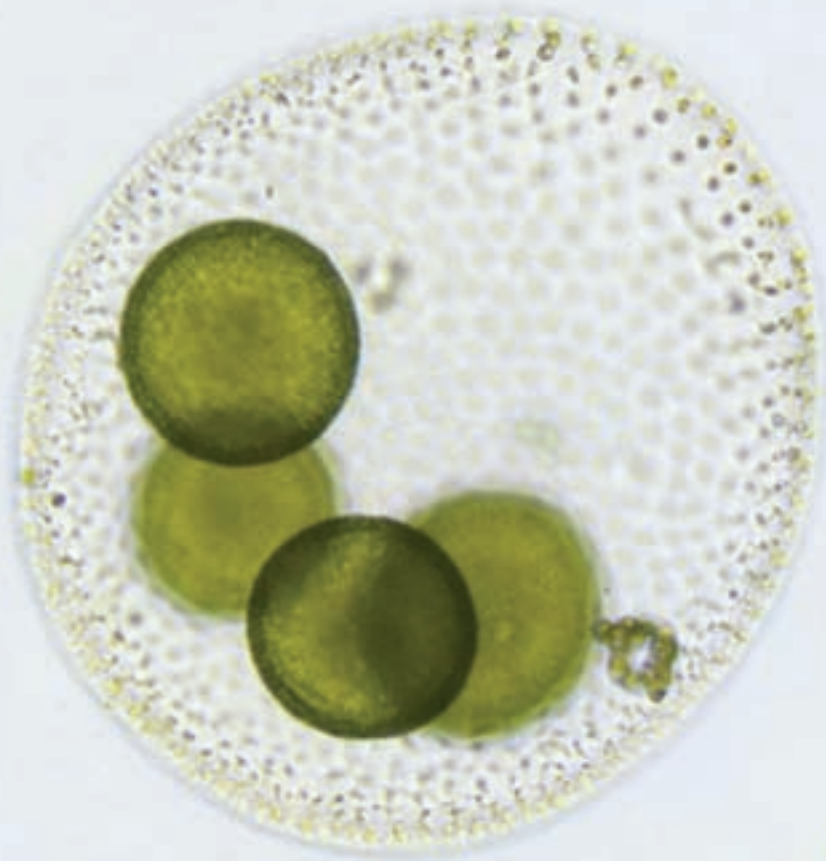


# 2011

FAKULTEIT **NATUURWETENSAPPE** JAARVERSLAG  
FACULTY OF **SCIENCE** ANNUAL REPORT



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY  
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2011



FAKULTEIT **NATUURWETENSKAPPE** JAARVERSLAG  
FACULTY OF **SCIENCE** ANNUAL REPORT

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'n Fotomikrograaf van die verskillende stadiums van ontwikkeling van die groen alg, *Volvox globator*

**Front page**

A photomicrograph of the various developmental stages of the green alga *Volvox globator*

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## Report by the **Dean**

We are a centre of excellence for postgraduate training in the natural, biological and mathematical sciences, and produce a significant number of master's and doctoral candidates each year. In addition, we focus strongly on the publication of our research outputs in international journals of high standing.

We make use of National Research Foundation (NRF) ratings as a guide to the recognition of our staff in their respective fields and as an important method of establishing quality assurance in relation to our research activities. In support of this the Faculty of Science will continuously look for opportunities to attract and retain the best scientists and students to ensure that we excel in relation to our core activities.

The acknowledgement granted to the Faculty of Science this year by achieving the 331st place for science outputs in the Quacquarelli Symonds (QS) World University Rankings, is a true feather in the cap for all the members of staff and students in our ranks.

It proves the still growing influence of our academics in South Africa and internationally and the quality of their research outputs. The substantial increase in publications and opportunities for contract research over the past three years does not only motivate our academics, but has a most definite influence on our coffers and permits the funding of extensive academic and research activities by our own ranks. The Faculty furthermore continuously endeavours to be allocated additional centres of excellence and chairs within the South African Research Chair Initiative (SARChI), which can support our research activities in the long term. We believe that this positive trend will help ensure the sustainability of our initiatives.

Thanks to support from the Central Analytical Facility, equipment to the value of R30 million was installed in our Faculty this year, including advanced research equipment to facilitate the dating of rocks by South African geologists and mining experts. The teaching laboratory in the Department of Physiological Sciences can furthermore boast advanced microscopes. In addition to the refurbishment of our Polymer Science Building at a cost of R25 million, a number of projects to improve postgraduate venues and laboratory space were completed successfully.

The introduction of two new positions for vice-deans points to the Faculty's continued commitment to strengthen both teaching and research in the sciences. The posts are filled by Prof. Ingrid Rewitzky, executive head of the Department of Mathematical Sciences (Mathematics, Applied Mathematics, Computer Science), and Prof. Terry Robinson, a former chairperson of the Department of Botany and Zoology, respectively.

Our outgoing vice-dean, Prof. Doug Rawlings, did exceptional work in the service of the Faculty. His pioneering work on biomining research and leadership in the scientific academy in South Africa was honoured appropriately when he was awarded the Havenga Prize for Life Sciences by the South African Academy for Science

and Art ("Suid-Afrikaanse Akademie vir Wetenskap en Kuns"). Our Dean, Prof. Eugene Cloete, was appointed to the board of the Council for Scientific and Industrial Research (CSIR).

A-rated scientist and invasion biologist Prof. Dave Richardson will receive the John FW Herschel Medal of the Royal Society of South Africa.

Among our emerging researchers, biotechnologist Dr Nokwanda Makunga received an award from the National Science and Technology Forum (NSTF). The chemical biologist Prof. Erick Strauss of the Department of Biochemistry received the Beckman-Coulter silver medal from the South African Society of Biochemistry and Molecular Biology (SASBMB), while computer scientist Prof. Konrad Scheffler of the Department of Mathematical Sciences was awarded the TWAS-AAS-Microsoft Award for young scientists in Africa.

The number of academics who have been rated by the National Research Foundation (NRF) increased from 84 to 92 this year. This includes the award of a P rating as a promising young scientist to ecological mathematician Dr Cang Hui of the DST-NRF Centre of Excellence for Invasion Biology (CIB) in the Department of Botany and Zoology. This rating acknowledges his ability to develop into a world leader in his field of research.

Our staff corps is showing clear signs of rejuvenation and diversification, with about 30% of our employees being under the age of 40. This has been made possible over the past three years through a policy of replacing professorships that become vacant as a result of retirement, with lecturers or senior lecturers in order to broaden the career options of emerging scientists at SU.

The expertise of our retired professors definitely plays a formative role in our mentorship programme for young scientists, and in this way the high-quality publications of academics who remain on as research fellows after retirement, are now set off.

The initiative through which we provide a financial reward to our PhD students who complete their studies within three years appears to be a definite incentive, since the average rate at which doctorates are completed has already dropped to 3,5 years. Our undergraduate through-put rates also show a good increase, thanks to active interventions such as the introduction of raised admission requirements, as well as our tutor and mentorship and extended degree programmes. Our efforts will be combined in 2012 through a dedicated First-year Science Academy, in which all undergraduate lecturers will be involved.



**Prof. Eugene Cloete**

*Dean: Faculty of Science*

Dean Prof. Eugene Cloete has been appointed as a **board member** of the Council of Scientific and Industrial Research.



Dekaan **prof. Eugene Cloete** is as raadslid van die Wetenskaplike Navorsings- en Nywerheidsraad aangestel.

## Verslag deur die **Dekaan**

Ons is 'n sentrum van voortreflikheid waar studente uitstekende nagraadse opleiding in die fisiese, biologiese en wiskundige wetenskappe kan bekom. 'n Groot aantal studente voltooi jaarliks hulle meestersgrade en doktorale studies hier. Boonop fokus ons ook op die publikasie van ons navorsingsuitsette in internasionale joernale van hoogstaande gehalte.

Ons gebruik die Nasionale Navorsingstigting (NNS) se evaluerings as riglyn om erkenning te gee aan ons personeel op hulle onderskeie vakgebiede, en dit bevestig ook die kwaliteit van ons navorsingsaktiwiteite. Ter ondersteuning hiervan is die Fakulteit Natuurwetenskappe voortdurend op die uitkyk vir geleenthede om die beste wetenskaplikes en studente te lok en te behou, sodat ons vir seker in ons hoofaktiwiteite kan uitblink.

Die erkenning wat vanjaar aan die Fakulteit Natuurwetenskappe verleen is met sy 33<sup>1</sup>ste posisie vir wetenskapsuitsette op die Quacquarelli Symonds (QS) World University Rankings, is 'n besliste pluimpie vir iedere personeelid en student in ons geleedere.

Dit bewys die steeds groeiende invloed van ons akademië in Suid-Afrikaanse en internasionale geleedere en die kwaliteit van hulle navorsingsuitsette. Die wesenlike styging in publikasies en kontraknavorsingsgeleenthede oor die afgelope drie jaar motiveer nie net ons akademië nie, maar het ook 'n besliste invloed op ons geldkoffers en laat die befondsing van uitgebreide akademiese en navorsingsaktiwiteite in eie geleedere toe. Daarby beywer die Fakulteit hom voortdurend vir die toekenning van bykomende sentrums van uitnemendheid en leerstoel binne die Suid-Afrikaanse Navorsingsleerstoeliniësiatief (SARChI), wat ons navorsingsaktiwiteite op die lang termyn kan ondersteun. Ons glo hierdie positiewe tendens sal die volhoubaarheid van ons iniësiatiewe help verseker.

Danksy ondersteuning van die Sentrale Analitiese Fasiliteit is R30 miljoen se toerusting vanjaar in ons Fakulteit geïnstalleer, waaronder gevorderde navorsingstoerusting wat die datering van gesteentes deur Suid-Afrikaanse geoloë en mynboukenners vergemaklik. Daarby spog die onderriglaboratorium in die Departement Fisiologiese Wetenskappe ook met gevorderde mikroskope. Benewens die herinrigting van ons Polimeerwetenskapgebou ter waarde van R25 miljoen, is talle projekte suksesvol afgehandel om nagraadse lokale en laboratoriumspasie te verbeter.

Die instelling van twee nuwe visedekaansposisies dui op die Fakulteit se voortgesette verbintenis om sowel onderrig as navorsing in die wetenskappe te versterk. Die poste word onderskeidelik gevul deur prof. Ingrid Rewitzky, uitvoerende hoof van die Departement Wiskundige Wetenskappe (Wiskunde, Toegepaste Wiskunde, Rekenaarwetenskap), en prof. Terry Robinson, 'n voormalige voorsitter van die Departement Plant- en Dierkunde.

Ons uittredende visedekaan, prof. Doug Rawlings, het uitsonderlike werk verrig in diens van die Fakulteit. Sy

baanbrekerswerk in biomynbounavorsing en leierskap in die wetenskapsakademie in Suid-Afrika is vanjaar op gepaste wyse deur die SA Akademie vir Wetenskap en Kuns erken met die Havengaprys vir Lewenswetenskappe. Ons Dekaan, prof. Eugene Cloete, is op sy beurt in die raad van die Wetenskaplike en Nywerheidsnavorsingsraad (WNNR) aangestel.

Die A-geëvalueerde indringerbioloog prof. Dave Richardson sal die John FW Herschel Medalje van die Royal Society van Suid-Afrika ontvang.

Onder ons ontlukende navorsers het biotegnoloog dr. Nokwanda Makunga 'n toekenning van die Nasionale Wetenskap- en Tegnologieforum (NSTF) ontvang. Chemiese bioloog prof. Erick Strauss van die Departement Biochemie die Beckman-Coulter-silwer medalje van die Suid-Afrikaanse Vereniging vir Biochemie en Molekulêre Biologie (SASBMB) ontvang, terwyl rekenaarwetenskaplike prof. Konrad Scheffler van die Departement Wiskundige Wetenskappe met die TWAS-AAS-Microsoft-prys vir jong wetenskaplikes in Afrika beloon is.

Die getal akademië wat deur die Nasionale Navorsingstigting (NNS) geëvalueer is, het vanjaar van 84 tot 92 gestyg. Dit sluit die toekenning van 'n P-gradering as 'n belowende jong wetenskaplike aan ekologiese wiskundige dr. Cang Hui van die DWT-NNS Sentrum van Uitnemendheid vir Indringerbiologie (SIB) in die Departement Plant- en Dierkunde in. Hierdeur word sy vermoë om tot 'n wêreldleier in sy navorsingsveld te ontwikkel, erken.

Ons personeelkorps toon besliste verjonging en diversifisering, met sowat 30% van ons werknemers wat onder 40 jaar oud is. Dit is oor die afgelope drie jaar moontlik gemaak deur 'n beleid om professorate wat weens aftrede vakant raak, liewer met dosente of senior lektors te vervang en om sodoende opkomende wetenskaplikes se loopbaanopsies aan die US te verbreed.

Die kundigheid van ons afgetrede professors speel beslis 'n vormende rol in ons mentorskapprogram vir jong wetenskaplikes, en daarby word die hoëgehalte-publikasies van akademië wat na hul aftrede aanbly as navorsingsgenote ook nou verreken.

Die iniësiatief waardeur ons PhD-studente wat hul studies binne drie jaar voltooi finansiëel beloon, blyk 'n besliste aansporing te wees, aangesien die gemiddelde koers waarteen doktorale grade afgehandel word reeds tot 3,5 jaar gedaal het. Ons voorgraadse deursektoerse toon ook 'n styging, danksy daadwerklike ingrepe soos die instelling van verhoogde toelatingsvereistes, asook ons tutor- en mentorskap- en verlengde graadprogramme. In 2012 word hierdie pogings saamgesnoer in die fakulteit se eie toegewese Eerstejaar-Wetenskapakademie, waarby alle voorgraadse dosente betrokke sal wees.



**Prof. Eugene Cloete**

*Dekaan: Fakulteit Natuurwetenskappe*

# 331

The SU Faculty of Science holds the 33<sup>1</sup>st place worldwide for science outputs in the **Quacquarelli Symonds (QS) World University Rankings**. Stellenbosch University is among the top 450 universities on this prestigious list.

Die US Fakulteit Natuurwetenskappe beklee die **33<sup>1</sup>ste posisie** vir wetenskapsuitsette op die wêreldwye **Quacquarelli Symonds (QS) World University Rankings**. Die Universiteit Stellenbosch as geheel tel onder die top 450 universiteite op hierdie toonaangewende lys.

## Our strategic objectives towards 2015

Our activities in the faculty are guided by a very specific set of objectives that were drawn up in alignment with the aims and purposes of Stellenbosch University.

### ► Undergraduate teaching

- Moderate growth in undergraduate student numbers
- Increased number of diverse undergraduate students
- Increased success rate of undergraduate students
- Decreased number of students that leave SU without qualification
- Improved language skills as well as information literacy skills of undergraduate students

### ► Postgraduate teaching

- Management of ratio of undergraduate: postgraduate student numbers to be 60:40
- Increased success rate of students
- Decreased number of students that leave SU without qualification
- Reduce the average timeframe of a postgraduate student to complete studies
- Increase the diversity profile of students

### ► Research

- Compete and collaborate with the best in the world
- Support highly relevant multidisciplinary research and postgraduate programmes
- Support of young researchers
- Increased success rate of postgraduate students
- Reduce the average timeframe of a postgraduate student
- Increase the diversity profile of students

### ► Community interaction

- To consolidate the current community interaction (CI) activities
- To develop a future strategy with regards to how SU and the Faculty of Science understand CI

### ► Human resources

- Increased focus on staff wellness, retention, career development
- Increase and accelerate the diversity profile of staff

Prof. Ingrid Rewitzky is the Faculty's new **vice-dean: teaching**. She also chairs the Department of Mathematical Sciences (including *Mathematics, Applied Mathematics, Computer Science*).



**Prof. Ingrid Rewitzky** is aangestel as die Fakulteit se nuwe vise-dekaan: onderrig. Sy lei ook die Departement Wiskundige Wetenskappe (ingesluit *Wiskunde, Toegepaste Wiskunde, Rekenaarwetenskap*).

## Ons strategiese doelwitte vir 2015

In ons werksaamhede fokus ons fakulteit op die bereiking van 'n bepaalde stel mikpunte, wat opgestel is in lyn met die kerndoelwitte van die Universiteit Stellenbosch.

### ► Voorgraadse onderrig

- Om die getal voorgraadse studente matig te laat toeneem
- Om die diversiteitsprofiel van voorgraadse studente uit te brei
- Om die sukseskoers van voorgraadse studente te verhoog
- Om die getal studente wat die US sonder 'n kwalifikasie verlaat, te verminder
- Om die taalvaardighede en inligting-geletterdheidsvaardighede van voorgraadse studente te verbeter

### ► Nagraadse onderrig

- Om die getal voorgraadse en nagraadse studente te bestuur sodat dit in 'n 60:40-verhouding sal wees
- Om die sukseskoers van studente te verhoog
- Om die getal studente wat die US sonder 'n kwalifikasie verlaat, te verminder
- Om die gemiddelde studietydperk van nagraadse studente te verkort
- Om die diversiteitsprofiel van studente uit te brei

### ► Navorsing

- Om mee te ding en saam te werk met die bestes ter wêreld
- Om hoogs relevante, multidisiplinêre navorsing en nagraadse programme te ondersteun
- Om jong navorsers te ondersteun
- Om die sukseskoers van nagraadse studente te verhoog
- Om die gemiddelde studietydperk van nagraadse studente te verkort
- Om die diversiteitsprofiel van studente te uit te brei

### ► Gemeenskapsinteraksie

- Om die huidige aktiwiteite rondom gemeenskapsinteraksie (GI) uit te bou
- Om 'n toekomsstrategie te ontwikkel ten opsigte van hoe die Universiteit Stellenbosch en die Fakulteit Natuurwetenskappe GI verstaan

### ► Menslike hulpbronne

- Om meer te fokus op die welwees van personeel, die behoud van personeel en beroepsontwikkeling
- Om die diversiteitsprofiel van personeel vinniger uit te bou

Prof. Terry Robinson, an evolutionary geneticist who has an A rating from the National Research Foundation, is the new **vice-dean: research** of the Faculty.

Evolusionêre genomikus, **prof. Terry Robinson** is aangestel as die Fakulteit se nuwe vise-dekaan: navorsing. Hy beskik oor 'n A-gradering van die Nasionale Navorsingstigting.







Ons strewre na

**uitnemendheid.** Die Fakulteit Natuurwetenskappe, haar agt departemente en verskeie navorsingsentrums en -institute wil 'n bydrae maak tot die samelewing deur onder meer te fokus op onderrig, navorsing en gemeenskapsinteraksie. Ons is daartoe verbind om die Universiteit Stellenbosch (US) binne Suid-Afrika, Afrika en die wêreldarena te posisioneer as 'n voortreflike, navorsingsgerigte akademiese instelling. Ons wil help om die US uit te bou tot 'n hoogs gerekende kennisvenoot wat help om die wetenskaplike, tegnologiese en intellektuele vermoë van ons land en ons kontinent te ontwikkel, tot voordeel van ons samelewing.

Strive towards **excellence.**

The Faculty of Science, its eight departments and various research centres and institutes contribute to excellence in society through targeted teaching activities, research work, community interaction and other endeavours. We are committed to positioning Stellenbosch University (SU) within South Africa, Africa and the world as a research-focused academic institution of excellence. We build on the reputation of SU as a knowledge partner of great respect that develops the scientific, technological and intellectual capacity of our country and our continent to the benefit of our society.

# Departement **Aardwetenskappe** Department of **Earth Sciences**

► **The following staff members have NRF ratings:**

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

► Personeel | **Staff**

► Doserend | **Academic**

- Prof JD Clemens (*uitvoerende hoof / executive head*)
- Prof IS Buick
- Dr CE Clarke
- Dr R Heyn
- Prof A Kisters
- Dr M Klausen
- Dr D Mikes
- Dr J Miller
- Prof A Roychoudhury
- Prof A Rozendaal
- Prof G Stevens

► Erenavorsingspersoneel | **Honorary research staff**

- Buitengewone prof W Verwoerd
- Buitengewone prof N Phillips
- Buitengewone medeprof D Frei
- Buitengewone senior lektor dr I Basson

► Ondersteuningspersoneel | **Support staff**

- L Conradie
- G Olivier
- F Timmey

## 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 highlights

Dr Martin Klausen co-authored a paper published in the highly prestigious journal *Nature Geoscience*, which has an impact factor of 10 392.

Most Department of Earth Sciences staff and research postgraduate students attended both national and international conferences during 2011.

Prof. John Clemens was a keynote speaker at the Hutton Symposium on the origin of granites (Spain). He also delivered a plenary lecture at the joint meeting of the German and Austrian Crystallographic and Mineralogical Societies (Austria). The latter was during a month-long research exchange visit to the University of Salzburg.

Dr Daniel Mikeš delivered a special lecture at the Inkaba ye Africa 8th Annual Workshop in Cape Town and two invited talks at the 1st Annual Shale Gas Conference of the Institute for International Research, held in Johannesburg.

Prof. Dirk Frei co-authored nine articles in international peer reviewed journals during 2011 and won a total of R6,6 million in funding for large equipment for the Central Analytical Facility (CAF) - R4 million from Stellenbosch University's ALE programme and R2,6 million from the National Research Foundation (NRF) and Research Infrastructure Support Programmes (RISP). Prof. Frei was also an invited speaker at a meeting on Sediment Provenance Studies in Hydrocarbon Exploration and Production, held by the Geological Society of London.

In February, Prof. Neil Phillips (Phillips Gold, Australia) again visited Stellenbosch University to teach a gold and analytical research thinking course to our honours students, and to discuss gold research opportunities with Prof. John Clemens and Prof. Gary Stevens. Prof. Phillips, an extraordinary professor in the department was appointed as the Sir Julius Wernher Memorial Lecturer at the Institute of Materials, Minerals and Mining (UK).

Prof. Alakendra Roychoudhury delivered invited lectures at the 3rd GEOTRACES Data-Model Synergy Workshop (Spain) and at the IGCP/SIDA workshop on mining and the environment in Africa (Zambia).

## Research outputs

Articles in accredited journals	22
Editorial activities (books and journals)	3
Conference proceedings and other articles	5
PhD students graduated	4
MSc students graduated	5

Prof. Gary Stevens presented keynote lectures at the Hutton Symposium on the origin of granites (Spain) and at the 23rd Colloquium of African Geology in Johannesburg. In addition, students from his research group collectively made contributions to these two meetings.

## Academic affairs

In September the department was externally evaluated by a panel representing industry and academia. According to the evaluation report, the department is perceived to be one of the top two in the country and "on par with the best geosciences departments". It has carved for itself a firm niche among South African geosciences departments. This is embodied in its Centre for Crustal Petrology.

As predicted in the 2010 report, our postgraduate student population did grow, with 33 Honours, 27 MSc and 10 PhD students following our programmes. Because quite a few students successfully graduated, this represents only a small increase (6,4%) on 2010 student numbers. We expect the numbers to decrease slightly and to stabilise in 2012.

The department also hosted three postdoctoral research associates during the course of the year.

## 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) and a member of the Post-NOMAD drilling programme steering committee. He also chairs the Earth Sciences Ratings Panel of the National Research Foundation (NRF).

Prof. Alakendra Roychoudhury is an associate editor of *Applied Geochemistry*, a member of council for the International Association of Geochemistry (IAGC), a member of the Awards Committee of the IAGC and the Geochemical Society and a founder member of Africa Earth Observatory Network (AEON). In addition he is also a board member of the Marine Research Institute (MA-RE) at the University of Cape Town, a steering committee member of Africa Climate Change and Earth System Sciences (ACCESS),

**Prof. Neil Phillips**, an extraordinary professor in Earth Sciences, received the Sir Willis Connolly Memorial Medal from the Australasian Institute of Mining and Metallurgy (AIMM).

Prof. Neil Phillips, 'n buitengewone professor in Aardwetenskappe, het die **Sir Willis Connolly Gedenkmedalje** van die Australasiese Instituut vir Mynbou en Metallurgie (AIMM) ontvang.



## Navorsingsuitlette:

Artikels in geakkrediteerde tydskrifte	22
Redaksionele aktiwiteite (boeke en tydskrifte)	3
Konferensieverrigtinge en ander artikels	5
PhD-studente gegradueer	4
MSc-studente gegradueer	5

## Navorsingshoogtepunte

Dr. Martin Klausen was 'n mede-outeur van 'n artikel wat verskyn het in die gesaghebbende joernaal, *Nature Geoscience*. Hierdie publikasie het 'n impakfaktor van 10,392 het.

Die meeste van die Departement Aardwetenskappe se personeellede en nagraadse studente het beide nasionale en internasionale konferensies gedurende 2011 bygewoon.

Prof. John Clemens was 'n hoofspreeker by die Hutton Simposium oor die oorsprong van graniet (Spanje). Hy het ook 'n hoofrede gelewer tydens die gesamentlike vergadering van die Duitse en die Oostenrykse verenigings van kristalkunde en mineralogie (Oostenryk). Laasgenoemde was gedurende prof. Clemens se maandlange navorsingsuitruilbesoek aan die Universiteit van Salzburg.

Dr. Daniel Mikeš het 'n spesiale lesing gegee by die 8ste jaarlikse Inkaba ye Africa-werkswinkel (Kaapstad). Hy het ook as genooidespreker twee aanbiedings gedoen by die Instituut vir Internasionale Navorsing se eerste Skaliegaskonferensie in Johannesburg, wat voortaan ook jaarliks gehou sal word.

Prof. Dirk Frei was mede-outeur van nege artikels wat in internasionale portuurbeoordeelde vaktydskrifte gedurende 2011 verskyn het. Hy het 'n totaal van R6,6m in befondsing ontvang vir die aankoop van groot laboratoriumtoerusting vir die Sentrale Analitiese Fasiliteit (SAF). Hiervan was R4 miljoen afkomstig uit die Universiteit Stellenbosch se toerustingsprogram (ook bekend as ALE), en R2,6m vanaf die Nasionale Navorsingstigting (NNS) en die ondersteuningsprogram vir Navorsingsinfrastruktuur (ook bekend as RISP). Hy was 'n genooidespreker by 'n vergadering oor sedimentherkomsstudies in die eksplorasi en produksie van koolwaterstof. Dit is deur die Geologiese Vereniging van Londen gehou.

In Februarie het prof. Neil Phillips (Phillips Gold, Australië) weer eens die Universiteit Stellenbosch besoek om 'n kursus in goud en analitiese navorsingsdenke vir ons honneursstudente aan te bied. Hy het ook die geleentheid gebruik om goudnavorsingsgeleenthede met prof. Gary Stevens en prof. John Clemens te bespreek. Prof. Phillips, 'n buitengewone professor in die departement, het die Sir Julius Wernher gedenklesing by die Instituut van Materiale, Minerale en Mynwese (VK) aangebied.

## Navorsingsbelange

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

Prof. Alakendra Roychoudhury het twee gaslesings aangebied by die derde GEOTRACES Data-Model Synergy-werkswinkel (Spanje) en by die IGCP/SIDA-werkswinkel oor Afrika, mynbou en die omgewing (Zambië).

Prof. Gary Stevens het hooflesings by die Hutton Simposium oor die oorsprong van graniet (Spanje) aangebied, asook tydens die 23ste Kollokwium vir Afrika-geologie (ook bekend as die CAG) wat in Johannesburg gehou is. Daarbenewens het studente uit sy navorsingsgroep ook gesamentlik tien bydraes tot hierdie twee vergaderings gelewer.

## Akademiese sake

In September is die departement ekstern geëvalueer deur 'n paneel wat verteenwoordigend van die nywerheid en die akademie was. Volgens die evaluasieverslag word die departement as een van die twee beste departemente in die land beskou, en is dit "op gelyke voet met die beste geowetenskapdepartemente". Dit het vir homself naam gemaak onder Suid-Afrikaanse geowetenskapdepartemente. Die Sentrum vir Aardkorspetrologie is 'n bewys hiervan.

Soos wat in verlede jaar se verslag voorspel is, het ons nagraadse studentegetalle gegroei na 33 studente wat honneurs doen, 27 MSc-studente en 10 PhD-studente. Aangesien heelwat studente gegradueer het in hierdie tydperk, verteenwoordig hierdie syfers slegs 'n klein toename (6,4%) op 2010 se getalle. Ons verwag dat die getalle effens sal afneem en dan sal stabiliseer in 2012.

Die departement was ook gasheer vir drie nadoktorale genote.

## Diens aan die wetenskaplike gemeenskap

Prof. John Clemens is die medestigter en voorsitter van die Stollings- en Metamorfe Studiegroep (geaffilieer by die Geologiese Vereniging van Suid-Afrika), 'n bestuurskomiteelid van die Post-NOMAD-boorprogram en die voorsitter van die Nasionale Navorsingstigting (NNS) se Aardwetenskappe-graderingspaneel.

Prof. Alakendra Roychoudhury is 'n mederedakteur van *Applied Geochemistry*, 'n raadslid van die Internasionale Vereniging van Geochemie (IAGC), asook 'n lid van die merietetoekenningskomitee



The latest addition to the world-class rock dating facility of the **Inductively Coupled Plasma Mass Spectroscopy Laboratory** (ICP-MS) was unveiled. This Central Analytical Facility (CAF) lab is in the Chamber of Mines Building.

Die nuutste **wêreldklustoevoeging** tot die geochronologie-fasiliteit is bekendgestel. Die ICP-MS- (induktiefgekoppelde-plasmamassaspektroskopie-) laboratorium. Hierdie Sentrale Analitiese Fasiliteit (SAF) is in die Kamer van Mynwese Gebou.

of the International Geotraces Programme, and of the National Oceanographic Equipment and Planning Committee.

Prof. Gary Stevens is 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 (CAF) 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 board of *Lithos*.

Prof. Ian Buick is a member of the editorial boards of *Lithos* and *Gondwana Research*.

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

Through the efforts of Prof. Dirk Frei, a full range of in situ U-Pb age dating techniques (with very high spatial resolution) became available to the South African research community. Prof. Frei is also a permanent member of the European Science Foundation's Pool of Reviewers for research proposals.

### Awards to staff

Prof. Neil Phillips (Phillips Gold, Australia) received the Sir Willis Connolly Memorial Medal from the Australasian Institute of Mining and Metallurgy (AIMM). He was also honoured by the AIMM as their distinguished lecturer of 2011 and had to speak at several locations in Australia.

### Staff matters

Thankfully there were no changes in the full-time staffing in the Department of Earth Sciences. However, it is a pleasure to announce that we made one new extraordinary appointment during 2011. Dr Ian Basson, an independent geological consultant will assist us with industry liaison and also instruct our honours students in the use of some critically important mining software packages.

### 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. Staff also presented a lecture at the annual Maties Science Winter Week. Articles about Prof. Dirk Frei's work in, among others, *Kampusnuus*, *Africagoodnews* (Online Portal) and *Mining Weekly*, also contributed to community interaction.

## ► 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 (Wits)

### **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

#### **Brazil**

Federal University of Ouro Preto

#### **Canada**

McGill University  
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 Brest  
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



The number of  
**NRF rated scientists** in the Faculty of Science

Die getal  
**NNS-geëvalueerde navorsers** in die Fakulteit Natuurwetenskappe

van die IAGC en die vereniging vir Geochemie. Hy is ook 'n stigterslid van die Afrika Aarde Observasie Netwerk (AEON), 'n raadslid van die Mariene Navorsingsinstituut (MA-RE) aan die Universiteit van Kaapstad, 'n bestuurskomiteelid van die Afrikasentrum vir klimaatsverandering en aardsisteemwetenskap (ACCESS), van die Internasionale Geotrace-program en van die Nasionale Oseanografiese toerustings- en beplanningskomitee.

Prof. Gary Stevens is 'n komiteelid van die Wes-Kaapse streeksprogram vir die aankoop van duur toerusting vir universiteite (REEP). Hy is direkteur van die Sentrale Analitiese Fasiliteit (SAF) aan die US en lid van die redaksionele raad van *Lithos*. Hy lewer 'n belangrike bydrae as houer van die SARChI-leerstoel in Eksperimentele Petrologie in die Departement Aardwetenskappe, wat deur die Suid-Afrikaanse Navorsingsleerstoelinisiatief (SARChI) ondersteun word.

Prof. Ian Buick dien op die redaksionele rade van *Lithos* en *Gondwana Research*.

Dr. Jodie Miller is die voorsitter van die Wes-Kaapse tak van die Geologiese Vereniging van Suid-Afrika (GGSA).

Deur die inspanning en ywer van prof. Dirk Frei kon 'n volle reeks van in situ U-Pb ouderdomdateringstegnieke (met baie hoë ruimtelike resolusie) aan die Suid-Afrikaanse navorsingsgemeenskap beskikbaar gestel word. Prof. Frei is ook 'n permanente lid van die Europese Wetenskapstigting se groep beoordelaars van navorsingsvoorstelle.

## Toekennings aan personeel

Prof. Neil Phillips (Phillips Gold, Australië) het die Sir Willis Connolly Gedenkmedalje van die Australiese Instituut vir Mynbou en Metallurgie (AIMM) ontvang. Hy is ook deur die AIMM vereer as voortreflike dosent vir 2011 en het op verskeie plekke in Australië opgetree.

## Personeelsake

Dit is verblydend dat daar geen verandering in die voltydse personeelkorps van die Departement van Aardwetenskappe was nie. Een nuwe buitengewone aanstelling is wel gemaak. Dr. Ian Basson, 'n onafhanklike konsultant in geologie, sal help met die skakeling met die industrie en ook ons honneursstudente onderrig in die gebruik van uiters belangrike mynbousagtewarepakkette.

## Gemeenskapsinteraksie

Die Departement Aardwetenskappe se uitstalling van minerale en halfedelgesteentes by die jaarlikse US Opedag, het weer eens die oog van voornemende student gevang. 'n Lesing is ook as deel van die jaarlikse Maties Natuurwetenskappe Winterweek gegee. Artikels oor prof. Dirk Frei se navorsing, wat in *Kampusnuus*, *Africagoodnews* ('n aanlyn portaal) en *Mining Weekly* verskyn het, het ook tot gemeenskapsinteraksie bygedra.

## ► Samewerking

### SUID-AFRIKA

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

### 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

#### 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 Brest  
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

**94%** The percentage of faculty staff members who are **active in research**

**94%** Die persentasie van ons **fakulteit se personelede** wat betrokke is by navorsing

**Italy**

University of Padova

**Japan**

Shizuoka University

**The Netherlands**

Delft University of Technology  
Rijksuniversiteit of Groningen  
University of Utrecht

**Spain**

University of Grenada

**Sweden**

Linköping University

**Switzerland**

University of Lausanne

**United Kingdom**

Durham University  
Kingston University  
Leeds University  
Liverpool University  
University of Edinburgh  
Newcastle University

**United States of America**

Colorado School of Mines  
Lehigh University  
Princeton University  
Woods Hole Oceanographic Institute

► **Funding**

Anglo Base Metals  
AngloGold  
AngloPlatinum  
Australian Research Council  
BHPBilliton  
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)

Ms Naledi Pandor,  
South Africa's Minister of Science and Technology,  
attended the launch of the **Stellenbosch  
University Water Institute** on  
International Water Day.



**Me Naledi Pandor**, Suid-Afrika se  
Minister van Wetenskap en Tegnologie,  
was teenwoordig by die amptelike  
bekendstellingsfunksie van die Universiteit  
Stellenbosch Waterinstituut op  
Internasionale Waterdag.

**Japan**

Shizuoka Universiteit

**Kanada**

McGill Universiteit  
Universiteit van Ottawa

**Nederland**

Delft Universiteit van Tegnologie  
Rijksuniversiteit Groningen  
Universiteit van Utrecht

**Spanje**

Universiteit van Grenada

**Swede**

Linköping Universiteit

**Switserland**

Universiteit van Lausanne

**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  
Woods Hole Oseanografiese Instituut

**► Befondsing**

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

# 80

The number of postdoctoral fellows  
working in our departments in 2011

Die getal nadoktorale navorsers werksaam  
in ons departemente in 2011



Sterk **navorsingsetos**. Die Fakulteit Natuurwetenskappe se besondere navorsingsvermoë is in 2011 bevestig met die 331ste posisie vir wetenskapsuitsette wat ons op die Quacquarelli Symonds (QS) World University Rankings behaal het. Ons is bekend vir ons buitengewone sterk navorsingsetos en het oor die jare heen reeds groot sukses behaal met die daarstelling van hoogs relevante, multidissiplinêre nagraadse en navorsingsprogramme.



Strong **research ethos**. The research strength of the Faculty of Science was acknowledged by the 331st place we received for science outputs in the 2011 Quacquarelli Symonds (QS) World University Rankings. We are known for our exceptional research ethos, and our academics and scientists have been extremely successful over the years in creating highly relevant, multidisciplinary research and postgraduate programmes.

# Departement **Biochemie**

## Department of **Biochemistry**

### ▶ The following staff members have NRF ratings:

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

### ▶ Personeel | **Staff**

#### ▶ Doserend | **Academic**

- Prof P Swart (*voorsitter / chairperson*)
- 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
- AC Swart

#### ▶ Buitengewone professore | **Extraordinary professors**

- Prof WCA Gelderblom

#### ▶ Ondersteuningspersoneel | **Support Staff**

- W Maart (*sekretaresse / secretary*)
- 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

## 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 highlights

Prof. Dirk Bellstedt presented lectures at the 4th PVYWide Organization Meeting in May 2011 (Switzerland) and at the University of Neuchâtel (Switzerland) in June. Subsequently he also visited the Royal Botanical Garden Edinburgh (Scotland).

Prof. Ann Louw attended the European Molecular Biology Organization (EMBO) conference on Nuclear Receptors (Spain) and presented a poster on her work.

Prof. Johann Rohwer presented an invited lecture at the Society for Experimental Biology Annual Main Meeting (Scotland) in June 2011.

Prof. Marina Rautenbach received two multimillion rand grants from the National Equipment Programme of the National Research Foundation (NRF). These grants were used to purchase state of the art analytical equipment, now housed in the Central Analytical Facility. The first acquisition, also a first in South Africa, was a Chirascan Circular Dichroism Spectropolarimeter. This boasts with extended capabilities such as magnetic circular dichroism and fluorescence. With Dr Marietjie Stander as co-applicant, the second grant was awarded for a high resolution Waters Synapt Electrospray Mass Spectrometer linked to an ultra-performance liquid chromatograph. The pieces of equipment are not only making major contributions to the research in the Faculty of Science, but also in South Africa.

## Academic affairs

The Biochemistry department's postgraduate student numbers continue to show a steady increase from year to year and in 2011, a total of 17 Honours students, 34 MSc students and 24 PhD students were enrolled.

## Service to the scientific community

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

## Research outputs

Articles in accredited journals	25
Editorial activities (books and journals)	6
Books, conference proceedings, chapters in books	1
MSc students graduated in 2011	5
PhD students graduated in 2011	3

Molecular Biology (SASBMB). In turn, Dr Donita Africander served as the treasurer of the SASBMB.

## Awards to staff

Prof. Erick Strauss was awarded the 2010 Beckman-Coulter silver medal from the South African Society of Biochemistry and Molecular Biology (SASBMB). This medal is annually awarded to a young scientist (under 35 years) who has made outstanding research contributions to Biochemistry in Southern Africa. He received the award in 2011, and then presented the Beckman-Coulter/SASBMB silver medal lecture at the society's biannual national congress, held from 29 January to 1 February 2012, in the Drakensberg.

Three academic staff, Prof. Pieter Swart, Prof. Johann Rohwer and Prof. Dirk Bellstedt, were successful in their applications to the NRF for re-evaluation. Prof. Rohwer and Prof. Swart both received an improved B-rating.

## Staff matters

Prof. Amanda Swart was promoted from senior lecturer to associate professor with effect from 1 January 2011 and Prof. Johann Rohwer was promoted to full professor; also with effect from 1 January 2011.

Mr Ghalieb Damonse retired as first technical assistant.

## Community interaction

Prof. Marina Rautenbach gave three talks on proteins and amino acids in natural fertilisers to wine farmers in the Boland. The aim of these talks was to showcase the role of Biochemistry in agriculture. She also acts as consultant for several companies such as SABMiller, Rhodes Food Group, Diasorin and Eco-Fert.

Staff members and postgraduate students also participated in the annual Open Day of Stellenbosch University, as well as the Maties Science Winter Week.

Prof. Erick Strauss was awarded the 2010 **Beckman-Coulter silver medal** from the South African Society of Biochemistry and Molecular Biology (SASBMB).



### Prof. Erick Strauss

het die Beckman-Coulter silwermedalje vir 2010 van die Suid-Afrikaanse Vereniging van Biochemie en Molekulêre Biologie (SASBMB) ontvang.

## Navorsingsuitsette:

Artikels in geakkrediteerde tydskrifte	25
Redaksionele aktiwiteite (boeke en joernale)	6
Boeke, konferensieverrigtinge, hoofstukke in boeke	1
MSc-studente gegradueer in 2011	5
PhD-studente gegradueer in 2011	3

## Navorsingshoogtepunte

Prof. Dirk Bellstedt het in Mei 2011 lesings aangebied by die 4de PVYWide Organization Meeting (Switserland). In Junie het hy ook lesings by die Universiteit van Neuchâtel (Switserland) aangebied. Daarna het hy besoek afgelê by die Edinburgse Koninklike Botaniese Tuin (Skotland).

Prof. Ann Louw het die Europese Molekulêre Biologie Organisasie (EMBO) se konferensie oor Kernreseptore (Spanje) bygewoon en 'n plakkaat oor haar werk voorgedra.

Prof. Johann Rohwer was 'n genooide spreker tydens die Vereniging vir Eksperimentele Biologie se jaarlikse hoofvergadering wat in Junie 2011 in Skotland gehou is.

Prof. Marina Rautenbach het twee multimiljoenrand toekennings van die Nasionale Toerustingprogram van die Nasionale Navorsingstigting (NNS) ontvang. Dit is gebruik om eietydse analitiese toerusting aan te koop wat nou in die Sentrale Analitiese Fasiliteit (SAF) van die US gehuisves word. Die eerste instrumentkopie is 'n Chirascan Sirkulêre Dichroïsme Spektropolarimeter. Die instrument, die eerste van sy soort in Suid-Afrika, spog met uitgebreide funksies soos magnetiese sirkulêre dichroïsme en fluoressensie. Die tweede toekenning was vir 'n hoëresolusie Waters Synapt Elektrospoei Massaspektrometer, gekoppel aan 'n ultraverrigting vloeistofchromatograaf. Die aansoek hiervoor is gebring in samewerking met dr. Marietjie Stander van SAF. Die toerusting lewer nie net groot bydraes tot die navorsing in die Fakulteit Natuurwetenskappe nie, maar ook in Suid-Afrika.

## Akademie sake

Die Departement Biochemie se nagraadse studentegetalle neem van jaar tot jaar bestendig toe. In 2011 was 'n totaal van 17 Honneursstudente, 34 MSc-studente en 24 PhD-studente ingeskryf.

## Diens aan die wetenskaplike gemeenskap

Prof. Johann Rohwer was 'n lid van die internasionale kommissie wat standaarde vasstel vir die rapportering van ensiologiese data (STRENDA). Hy het ook gedien as mederedakteur van *BMC*

## Navorsingsbelange

Aartappelvirus sistematiek en deteksie; antibiotika en membraan aktiewe peptiede; biowerking van rooibos en *Sutherlandia frutescens*; ensieminhibitor-ontwikkeling; malariametabolisme en antimalariamiddelnavorsing; molekulêre plantsistematiek; meganistiese ensiologie; membraan-affiniteitsuiwering; natuurprodukte; rekenaarmatige en eksperimentele sisteembioëologie; steroïedhormoon-biosintese, steroïedreseptore en steroïedbindende proteïene; volstruispatologie en -entstofontwikkeling.

*Systems Biology* en was die sekretaris van die Suid-Afrikaanse Vereniging van Biochemie en Molekulêre Biologie (SASBMB). Op haar beurt was dr. Donita Africander die tesourier van SASBMB.

## Toekennings aan personeel

Prof. Erick Strauss het die Beckman-Coulter silwermedalje vir 2010 van die Suid-Afrikaanse Vereniging van Biochemie en Molekulêre Biologie (SASBMB) ontvang. Hierdie toekenning gaan jaarliks aan 'n jong wetenskaplike (onder 35 jaar) wat uitstaande navorsingsbydraes tot Biochemie in Suidelike Afrika maak. Prof. Strauss, wat die toekenning by 'n plegtigheid in 2011 ontvang het, het die Beckman-Coulter/SASBMB silwermedalje-lesing aangebied by die Vereniging se tweejaarlikse nasionale kongres, wat van 29 Januarie tot 1 Februarie 2012 in die Drakensberge gehou is.

Drie akademiese personeellede, prof. Pieter Swart, prof. Johann Rohwer en prof. Dirk Bellstedt, was suksesvol met hulle aansoek by die NNS om herevaluering. Prof. Rohwer en prof. Swart het albei 'n verbeterde B-gradering ontvang.

## Personeelsake

Prof. Amanda Swart is van senior lektor tot medeprofessor bevorder, met prof. Johann Rohwer wat tot volle professor bevorder is.

Mnr. Ghalieb Damonse wat as eerste tegniese assistent gewerk het, het afgetree.

## Gemeenskapsinteraksie

Prof. Marina Rautenbach het drie praatjies vir Bolandse wynboere aangebied om die rol van Biochemie in die landbou ten toon te stel. Die lesings het gehandel oor proteïene en aminosure in natuurlike bemestingstowwe. Sy dien ook as konsultant vir maatskappye soos SABMiller, Rhodes Food Group, Diasorin en Eco-Fert.

Daarbenewens het personeel en nagraadse studente ook deelgeneem aan die jaarlikse Opedag van die Universiteit Stellenbosch, asook die Maties Natuurwetenskappe Winterweek.

The number of students working towards their  
**PhD degrees in Biochemistry in 2011**

Die getal studente wat besig was met hul  
**doktorsgraad in Biochemie in 2011**

24

## ▶ Collaboration

**SOUTH AFRICA**

BBI Enzymes  
 Council for Industrial Science and Research (CSIR) Biosciences  
 Diasorin  
 Eco-Fert  
 Elsenburg Agricultural College  
 Grootfontein Agricultural Development Institute  
 Klein Karoo Group  
 Mohair South Africa  
 Post-Harvest & Wine Technology Division, Agricultural Research Council (ARC)  
 Infruitec-Nietvoorbij  
 Potatoes South Africa  
 Research Solutions  
 Rhodes Food Group  
 SABMiller  
 South African Sugarcane Research Institute  
 SurePure  
 University of Cape Town (UCT)  
 University of KwaZulu-Natal (UKZN)  
 University of the North West (UNW)  
 University of Pretoria (UP)  
 University of the Western Cape (UWC)  
 University of the Witwatersrand (Wits)

**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 Garden Edinburgh

**United States of America**

Medical College of Georgia  
 University of Wisconsin

## ▶ Funding

BBI Enzymes  
 Biopep Research Fund  
 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 and Innovation Platform (SHARP)  
 South African Malaria Initiative (SAMI)  
 South African Rooibos Council  
 SurePure  
 Stellenbosch University (SU)  
 Technology and Human Resources for Industry Programme (THRIP)  
 Water Research Commission (WRC)

The number of registered  
 doctoral students in our faculty

•  
•  
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•

191

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Die getal ingeskrewe doktrale  
 studente in ons fakulteit

## ► Samewerking

### **SUID-AFRIKA**

Aartappels Suid-Afrika  
Afdeling vir Na-oes & Wyntegnologie, Landbounavorsingsraad (LNR) Infruitec-  
Nietvoorbij  
BBI Enzymes  
Diasorin  
Eco-Fert  
Elsenburg Landboukollege  
Grootfontein Landbou-ontwikkelingsinstituut  
Klein-Karoo Groep  
Noordwes Universiteit  
Research Solutions  
Rhodes Food Group  
SABMiller  
Suid-Afrikaanse Suikerrietnavorsingsinstituut  
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 (Wits)  
Wetenskaplike Nywerheids- en Navorsingsraad (WNNR) Biowetenskappe

### **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**

Koninklike Botaniese Tuin Edinburgh  
Universiteit van Edinburgh

#### **Verenigde State van Amerika**

Mediese Kollege van Georgia  
Universiteit van Wisconsin

## ► Befondsing

Aartappels Suid-Afrika  
BBI Enzymes  
Bioep Navorsingsfonds  
Duits/Suid-Afrikaanse Bilaterale Fonds  
Ernst Oppenheimer Genootskap Trustfonds  
Hongaars/Suid-Afrikaanse Bilaterale Fonds  
Kankervereniging van Suid-Afrika (KANSAS)  
Klein-Karoo Groep  
Mediese Navorsingsraad (MNR)  
Nasionale Navorsingstigting (NNS)  
Program vir Tegnologie en Menslike Hulpbronne vir die Nywerheid (THRIP)  
Research Solutions  
Suid-Afrikaanse Platform vir Navorsing en Innovasie oor MIV/vigs  
Suid-Afrikaanse Malaria-inisiatief (SAMI)  
Suid-Afrikaanse Rooibosraad  
SurePure  
Sybokhaar Suid-Afrika  
Universiteit Stellenbosch (US)  
Waternavorsingskommissie (WNNK)

Average time (in years) that our students need to  
complete their doctoral degrees

Gemiddelde tydperk (in jare) wat ons studente  
neem om hul doktorsgrade te verwerf

# 3.57

Ons krag lê in **ons mense**. In ons midde is daar nie net uitstekende en inspirerende akademici en dosente nie, maar ook wêreldklas navorsers wat op hulle onderskeie vakgebiede nasionale en internasionale erkenning geniet. Ons sukses is in 'n groot mate te danke aan die sterk groep wetenskaplikes wat deur die Nasionale Navorsingstigting (NNS) geëvalueer is. Die aantal navorsers met NNS-evaluasies het tussen 2009 en 2011 van 84 tot 92 gestyg. Omdat ons ondersteuningspersoneel so 'n groot rol speel in die ondersteuning van ons navorsings- en akademiese aktiwiteite, sorg ons dat ons net die beste tegniese en administratiewe personeellede aanstel.

**Our people** are our most important asset. We have in our ranks not only excellent and inspirational academics and teachers, but also world-class researchers who enjoy national and international acclaim, each in his or her own field of expertise. Our achievements can to a large extent be attributed to the strong group of scientists in our midst who are rated by the National Research Foundation (NRF). The number of NRF rated scientists has increased steadily from 84 staff members in 2009, to 92 in 2011. Because our support staff provide the important extra pairs of hands needed to strengthen our research and academic activities, we recruit and train only the best technical and administrative officers and assistants.

# Departement **Chemie en Polimeerwetenskap**

## Department of **Chemistry and Polymer Science**

### ► 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*
- B – Prof Willem van Otterlo  
*organic synthesis and medicinal chemistry*
- 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 Peter Mallon  
*complex polymer materials and polymer nanocomposites*
- 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; asymmetric methodology*
- Y – Dr Andre de Villiers  
*separation science fundamentals and applications*
- Y – Dr Delia Haynes  
*crystal engineering of non-metal containing materials*

### ► Personeel | **Staff**

#### ► Doserend | **Academic**

- Prof KR Koch (*uitvoerende hoof / executive head*)
- 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
- Dr SC Pelly
- Prof WAL van Otterlo
- Prof AJ van Reenen
- Dr PFM Verhoeven

#### ► Buitengewone professore | **Extraordinary professors**

- Prof W Hiller
- Prof WM Mackenroth
- Prof PJF Sandra

#### ► Buitengewone navorser | **Extraordinary researcher**

- Dr JB McLeary

#### ► Emeritus professore | **Professors Emeritus**

- Emeritus prof BV Burger
- Emeritus prof HG Raubenheimer
- Emeritus prof R Sanderson
- Emeritus prof PS Steyn

#### ► Ondersteuningspersoneel | **Support Staff**

- JG Goldie (*departementele bestuurder / departmental manager*)
- WJ Adonis
- LD Bailey
- M Bickerstaff
- MMG Cooper
- D Davids
- MC de Jongh
- AE Fourie
- JD Groenewald
- Dr GW Harding
- Dr MJ Hurndall
- D Isaacs
- MC Johnson
- JE Joubert
- DJ Koen
- R Lawrence
- CW Maart
- MG Marupula
- SG May
- S Mohamed
- JS Motshweni
- J Smit
- PJ Steyn
- M Taylor
- A van Zaal
- U Wanza
- E Ward
- D Wenn
- GR Willemse



## 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 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 academic staff members and students contributed to national and international conferences.

Prof. Len Barbour was invited to lecture as part of the Distinguished Alumni Lecture Series at the University of Cape Town. His talk highlighted the historical development of crystal structure analysis and showcased how insights at the molecular level have led to the design of everyday materials. Prof. Barbour attended both the 3rd Asian Conference on Coordination Chemistry (India) and the 22nd Congress of the International Union of Crystallography (Spain) as keynote speaker, and was an invited lecturer at the 13th International Seminar on Inclusion Compounds (Poland).

Prof. Harald Pasch was an invited keynote lecturer at the 5th International Symposium on Separation and Characterization of Natural and Synthetic Polymers (The Netherlands), as well as an invited lecturer at the 15th International Symposium on Field- and Flow-based Separation (USA).

Associate Prof. Catherine Esterhuysen was invited to present oral lectures at the 22nd International Union of Crystallography Congress (IUCR), as well as at the IUCR 2011 satellite workshop (Spain).

Extraordinary Prof. Ben Burger gave an invited lecture at the Symposium on Chemical Signalling in Vertebrates (Berlin).

Dr Andre de Villiers was invited as lecturer to the 36th International Symposium on High-Performance Liquid Phase Separations and Related Techniques (Hungary).

Prof. Klaus Koch gave an invited lecture at Inorganic 2012, as part of the 40th South African Chemical Institute Convention which was held at the University of the Witwatersrand.

Dr Katharine de Villiers-Chen gave an oral presentation at the 15th International Conference on Biological Inorganic Chemistry (Canada).

## Research outputs

Articles in accredited journals	76
Conference proceedings	1
Chapters in books	2
MSc students graduated in 2011	12
PhD students graduated in 2011	10

Dr Margaret Blackie and Dr Delia Haynes gave oral presentations at the 40th SACI Convention, while Dr Marietjie Lutz received the award for the best conference contribution at the Stellenbosch University Conference on the Scholarship of Teaching and Learning.

Dr Willem Gerber, Dr Katharine de Villiers-Chen, Dr Alpheus Mautjana and Dr Steven Pelly attended a sponsored Afro-Asian Workshop on Advanced Topics in Chemistry (India).

Ms Carla Pringle obtained her MSc under supervision of Dr Eugene Smit on a novel bubble-electrospinning technique that could make the production of high volumes of nanofibres possible. This development led to a bouquet of patents being registered, and interest by investors in commercialisation via InnovUS of this technique, is being explored.

Associate Prof. Ed Jacobs presented papers at the regional Conference on Innovative Pedagogical Practices in Extended Curriculum Programmes. His paper was judged the best of 20 papers presented at the conference, for which he received a certificate and an award.

The department hosted several international visitors to the department who collaborated with staff members and presented seminars. They include Prof. Hubert Koller of the University Muenster (Germany), Prof. Jeremy Smith of the New Mexico State University (New Mexico), Prof. Donghui Zhang of Louisiana State University (USA), Prof. Karsten Meyer of the Friedrich-Alexander University Erlangen-Nuremberg (Germany), Prof. Helmut Schwartz of the Technical University of Berlin (Germany) and president of the Alexander von Humboldt Foundation, and Prof. Philippe Scholhammer of Université de Bretagne Occidentale (France).

## Service to the scientific community

Prof. Len Barbour, in his capacity as SARChI chair, was elected to serve on the international advisory board of the Information Seeking in Context (ISIC) Conferences Series. He was also involved in editorial activities as section editor of the book series *Supramolecular Chemistry - from Molecules to Nanomaterials* (Wiley) and as a member of the editorial advisory board of *CrystEngComm*.

"Making small organic molecules for a big world – a story of David versus Goliath?" was the title of the **inaugural lecture** presented by organic chemist Prof. Willem van Otterlo.

Organiese chemikus **prof. Willem van Otterlo** het op die vervaardiging van klein organiese molekules gefokus in sy professorale intrede.



**A story of David versus Goliath?**

## Navorsingsuitsette:

Artikels in geakkrediteerde tydskrifte	76
Konferensieverrigtinge	1
Hoofstukke in boeke	2
MSc-studente gegradueer in 2011	12
PhD-studente gegradueer in 2011	10

## Navorsingshoogtepunte

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

Verskeie akademiese personelede en studente het bydraes tot nasionale en internasionale konferensies gelewer.

Prof. Len Barbour is genooi om as spreker op te tree in die "Distinguished Alumni Lecture Series" by die Universiteit van Kaapstad. In sy lesing oor die historiese ontwikkeling van kristalstruktuuranalise, het hy aangetoon hoe nuwe insigte op molekulêre vlak gelei het tot die ontwerp van materiale vir alledaagse gebruik. Prof. Barbour het die 3de Asiese Konferensie oor Koördinasie Chemie (Indië) en die 22ste Kongres van die Internasionale Unie van Kristallografie (Spanje) as hoofspreker bygewoon. Hy was ook 'n genooide spreker by die 13de Internasionale Seminaar oor Insluitingskomplekse (Pole).

Prof. Harald Pasch is as hoofspreker na die 5de Internasionale Simposium oor die Skeiding en Karakterisering van Natuurlike en Sintetiese Polimere (Nederland) genooi, en het 'n gaslesing by die 15de Internasionale Simposium oor Veld- en Vloeigebaseerde Skeiding (VSA) gegee.

Medeprof. Catherine Esterhuysen is genooi om voordragte te lewer by die 22ste Kongres van die Internasionale Unie van Kristallografie (IUCR), asook by die IUCR se 2011 satellietwerkswinkel (Spanje).

Buitengewone prof. Ben Burger was 'n gasspreker by die Simposium oor Chemiese Kommunikasie in Gewerwelde Diere (Duitsland).

Dr. Andre de Villiers is as spreker na die 36ste Internasionale Simposium oor Hoëverrigting Vloeistoffase Skeidings en Verwante Tegnieke (Hongarye) genooi.

Prof. Klaus Koch is genooi om 'n lesing aan te bied by Inorganic 2012, as deel van die 40ste Konvensie van die Suid-Afrikaanse Chemiese Instituut wat by die Universiteit van die Witwatersrand gehou is.

Dr. Katharine de Villiers-Chen het 'n voordrag by die 15de Internasionale Konferensie oor Biologiese Anorganiese Chemie (Kanada) gelewer.

## Navorsingsbelange

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

Dr. Margaret Blackie en dr. Delia Haynes het voordragte gelewer by die 40ste SACI Konvensie, terwyl dr. Marietjie Lutz die toekenning vir die beste konferensiebydrae ontvang het na afloop van die Universiteit Stellenbosch se Konferensie oor die Akademieskap van Onderrig en Leer.

Dr. Willem Gerber, dr. Katharine de Villiers-Chen, dr. Alpheus Mautjana en dr. Steven Pelly het 'n geborgde Afro-Asiese Werkswinkel oor Gevorderde Onderwerpe in Chemie (Indië) bygewoon.

Me. Carla Pringle het haar MSc-graad onder leiding van dr. Eugene Smit voltooi, met 'n nuwe borrel-elektrospin tegniek wat die produksie van hoë volumes nanovesels moontlik kan maak, as onderwerp. Hierdie ontwikkeling het die registrasie van verskeie patente tot gevolg gehad en die moontlike betrokkenheid van beleggers in die kommersialisering van hierdie tegniek, word via InnovUS ontgin.

Medeprof. Ed Jacobs het lesings by die plaaslike Konferensie oor Innoverende Pedagogiese Praktjke in Verlengde Kurrikulum-programme aangebied. Sy lesing is aangewys as die beste een uit die twintig lesings wat aangebied is by die konferensie, en is met 'n sertifikaat en toekenning beloon.

Die departement was gasheer vir verskeie internasionale besoekers wat saam met personelede gewerk het en ook seminare in die departement aangebied het. Hulle sluit prof. Hubert Koller van die Muenster Universiteit (Duitsland), prof. Jeremy Smith van die New Mexico State Universiteit (New Mexico), prof. Donghui Zhang van die Louisiana State Universiteit (VSA), prof. Karsten Meyer van die Friedrich-Alexander Universiteit Erlangen-Nuremberg (Duitsland), prof. Helmut Schwartz van die Tegnieke Universiteit van Berlyn (Duitsland) en die president van die Alexander von Humboldt Stigting asook prof. Philippe Scholhammer van Université de Bretagne Occidentale (Frankryk), in.

## Diens aan die wetenskaplike gemeenskap

In sy hoedanigheid as houer van die SARChI Navorsingsleerstoel, is prof. Len Barbour tot die internasionale adviesraad van die ISIC



Polymer scientist Prof. Ed Jacobs received the award for the **best presentation** at the regional conference "Innovative Pedagogical Practices in Extended Curriculum Programmes".

**Polimeerwetenskaplike prof. Ed Jacobs** het die beste aanbieding gelewer by die streekkongres oor innoverende pedagogiese praktjke in verlengde kurrikulumprogramme.

Prof. Barbour served on the editorial board of the *New Journal of Chemistry* as well.

Dr Andre de Villiers was appointed chair of the Western Cape committee of the Chromatographic Society of South Africa (ChromSA), while Dr Margaret Blackie was elected on the management committees of both the Centre for Research in Engineering Education, and of the South African Chemistry Institute (SACI). Dr Gareth Arnott was also elected to serve on the South African Chemistry Institute (SACI) Western Cape committee, with Associate Prof. Peter Mallon as its chairperson. Prof. Mallon also served on the organising committee of the 11th UNESCO conference on Functional Polymeric Materials and Composites.

### Awards to staff and students

Several members of staff were honoured with Stellenbosch University Rector's Awards for Excellence. They are Prof. Klaus Koch, Prof. Selwyn Mapolie, Dr Delia Haynes, Dr Margaret Blackie, Dr Andre de Villiers, Dr Katharine de Villiers-Chen, Ms Deidre Davids, Mrs Erinda Cooper, Mr Eric Ward, Mr Deon Koen, and Mr Roger Lawrence.

Several students of the department were recipients of accolades. Mr Simon Herbert received the award for the best talk by a final year PhD student whilst doing research at Manchester University. Dr Katharine de Villiers-Chen was awarded the TWAS (the Academy of Sciences for the Developing World) regional prize for Young Scientists at the Afro-Asia Workshop on Advanced Topics in Chemistry.

Mr Hugo van Wyk and Mr James Odendal, both members of the Platinum Metals Group (PMG) Chemistry research group, received two of the five prizes awarded to students for poster presentations at the 40th South African Chemical Institute (SACI) Convention and the 3rd Federation of African Chemical Societies meeting held at University of the Witwatersrand.

Mr Isak Kotze obtained a 500 Euro bursary from the organising committee of Euromar 2011 to present a poster titled "Intermolecular self-assembly of  $[Pt^II(\text{phen})(L-S,O)]^+$  through cation- $\pi$  interactions, studied by high resolution  $^1H$ NMR and DOSY Spectroscopy" at the Euromar 2011 Magnetic Resonance Conference (Frankfurt).

Mr John Davis, the first PhD student to do a joint degree offered at Stellenbosch University and St Andrews University (Scotland), under supervision of Prof. Michael Bühl and Prof. Klaus Koch, presented results of his work at the ScotCHEM Computational Chemistry Symposium held at the University of Aberdeen (Scotland).

Other pleasing awards were made in 2011 to students who had excelled the previous year: James Moir medallist, Mr Sean Robinson, completed his MSc recently and received a full scholarship to continue with his PhD under supervision of Prof.

Paul Beer at the University of Oxford (UK) in 2012.

Ms Nicola Steyn, Ms Alet van der Westhuizen and Ms Leanne Britz received the Element Six (DST/NRF Centre of Excellence) award for the best BSc final year students in Chemistry with Polymer Science subjects. The SMM award for the best BSc (Hons) student in Chemistry was made to Ms Leandi van der Westhuizen.

### Staff matters

In 2011 several new staff appointments were made as part of our staff plan to strategically position the Department of Chemistry and Polymer Science to enable us to play a leading role in teaching and research on the African continent.

Dr Steven Pelly was appointed as senior lecturer in organic chemistry. Mr Malcolm Taylor and Ms Peta Steyn were appointed as senior technical officers in the department and Ms Debby Isaacs and Mrs Dolores Wenn were appointed as departmental assistants. Dr Catharine Esterhuysen was promoted to associate professor while Dr Tanya le Roex was promoted to senior lecturer.

Prof. Klaus Koch spent two months on research leave in Europe. Associate Prof. Catharine Esterhuysen spent six months at Marburg University (Germany) doing research in collaboration with Prof. Gernot Frenking.

The National Research Foundation (NRF) awarded higher research ratings to Prof. Willem van Otterlo (from Y to B3) and Associate Prof. Peter Mallon (from Y to C2), while Dr Andre de Villiers (Y1) received his first NRF rating.

Dr Marietjie Lutz, Dr Tanya le Roex and Dr Alpheus Mautjana became proud parents with the birth of their children.

In 2011 Prof. Ben Burger celebrated 50 years of employment at Stellenbosch University, teaching and doing research in the Department of Chemistry and Polymer Sciences. A fantastic achievement!

### Community interaction

The staff members of the Department of Chemistry and Polymer Sciences were once again actively involved in the Maties Science Winter Week for grade 11 learners and in the annual Stellenbosch University Open Day for prospective students.

AlchemUS, a new **society** for chemistry and polymer science students at Stellenbosch University, was launched.

**AlchemUS**, 'n nuwe vereniging vir studente wat chemie en polimeerwetenskap aan die Universiteit Stellenbosch studeer, is op die been gebring.



(Information Seeking in Context) konferensiereeks verkies. Hy was ook betrokke by redaksionele aktiwiteite as afdelingsredakteur van die reeks boeke *Supramolecular Chemistry - from Molecules to Nanomaterials* (Wiley), en as raadgewende redaksielid van *CrystEngComm*. Prof. Barbour het ook as redaksielid van die *New Journal of Chemistry* opgetree.

Dr. Andre de Villiers is as voorsitter van die Wes-Kaapse komitee van die Chromatografie Vereniging van Suid-Afrika (ChromSA) verkies, terwyl dr. Margaret Blackie as bestuurskomiteelid van die Sentrum vir Navorsing in Ingenieursonderrig en van die Suid-Afrikaanse Instituut vir Chemie (SACI) verkies is. Dr. Gareth Arnott is ook tot die Wes-Kaapse SACI-komitee verkies, met medeprof. Peter Mallon as voorsitter daarvan. Medeprof. Peter Mallon is op sy beurt tot voorsitter daarvan verkies. Hy was ook 'n lid van die reëlingskomitee van die 11de UNESCO Konferensie oor Funktionele Polimeriese Materiale en Samestellings.

### Toekennings aan personeel en studente

Verskeie personeellede is met Universiteit Stellenbosch Rektorstoekennings vir hulle voortrefflike werk vereer. Hulle is prof. Klaus Koch, prof. Selwyn Mapolie, dr. Delia Haynes, dr. Margaret Blackie, dr. Andre de Villiers, dr. Katharine de Villiers-Chen, me. Deidre Davids, mev. Erinda Cooper, mnr. Eric Ward, mnr. Deon Koen en mnr. Roger Lawrence.

Verskeie studente van die departement het ook toekennings ontvang. Mnr. Simon Herbert het die toekenning vir die beste voordrag deur 'n finalejaar PhD-student tydens sy studiebesoek aan Manchester ontvang. Dr. Katharine de Villiers-Chen het die Akademie van Wetenskappe vir die Ontwikkelende Wêreld (TWAS) se streeksprys vir Jong Wetenskaplikes by die Afro-Asiese Werkswinkel oor Gevorderde onderwerpe in Chemie ontvang.

Mnr. Hugo van Wyk en mnr. James Odendal, albei lede van die Platinummetalegroep (PMG) Navorsingsgroep, het twee van die vyf pryse ontvang wat toegeken is aan studente vir plakkaataanbiedings by die 40ste Suid-Afrikaanse Instituut vir Chemie (SACI) Konvensie en die 3de byeenkoms van die Federasie van Chemiese Verenigings in Afrika, wat by die Universiteit van die Witwatersrand gehou is.

Mnr. Isak Kotze het 'n beurs van 500 Euro van die reëlingskomitee van Euromar 2011 bekom om 'n plakkaataanbieding getiteld: "Intermolecular self-assembly of [Pt<sup>II</sup>(phen)(L-S,O)]<sup>+</sup> through cation- $\pi$  interactions, studied by high resolution <sup>1</sup>H NMR and DOSY Spectroscopy" by die Euromar 2011 Magnetiese Resonans Konferensie (Frankfurt) te doen.

Mnr. John Davis, die eerste PhD-student om 'n gesamentlike graad van die Universiteit Stellenbosch en die Universiteit van St Andrews (Skotland), onder leiding van prof. Michael Bühl en prof. Klaus Koch te doen, het resultate van sy navorsing by die ScotCHEM Simposium oor Berekeningschemie by die Universiteit

van Aberdeen (Skotland) aangebied.

Ander toekennings is ook in 2011 aan studente wat in die vorige jaar besonder goed presteer het, gemaak: die James Moir medaljewenner, mnr. Sean Robinson, het sy MSc onlangs voltooi en het 'n volle beurs ontvang om sy PhD-studies in 2012 onder leiding van prof. Paul Beer aan die Universiteit van Oxford (VK), voort te sit.

Me. Nicola Steyn, me. Alet van der Westhuizen en me. Leanne Britz het die Element Six-toekenning (DWT/NNS Sentrum vir Uitnemendheid) vir die beste finalejaar BSc-studente in Chemie met polimeerwetenskapvakke ontvang. Die SMM-prys vir die beste BSc(Hons)-student in Chemie is aan me. Leandi van der Westhuizen toegeken.

### Personeelsake

Verskeie nuwe aanstellings is in 2011 gemaak as deel van ons personeelplan om die Departement Chemie en Polimeerwetenskap te posisioneer om 'n leiersrol in Afrika op die gebied van onderrig en navorsing te kan speel. Dr. Steven Pelly is as senior lektor in organiese chemie aangestel. Mnr. Malcolm Taylor en me. Peta Steyn is as senior tegniese beamptes in die departement aangestel en me. Debby Isaacs en mev. Dolores Wenn is as departementele assistente aangestel.

Dr. Catharine Esterhuysen is tot medeprofessor bevorder, terwyl dr. Tanya le Roex bevorder is tot senior lektor.

Prof. Klause Koch was vir twee maande in Europa met navorsingsverlof. Medeprof. Catharine Esterhuysen het ses maande by die Marburg Universiteit (Duitsland) deurgebring waar sy in samewerking met prof. Gernot Frenking navorsing gedoen het.

Die Nasionale Navorsingstigting (NNS) het hoër navorsingsgraderings aan prof. Willem van Otterlo (van Y na B3) en aan medeprof. Peter Mallon (Y na C2) toegeken, terwyl dr. Andre de Villiers (Y1) sy eerste NNS-gradering ontvang het.

Dr. Marietjie Lutz, dr. Tanya le Roex en dr. Alpheus Mautjana het almal babas ryker geword.

Prof. Ben Burger het gedurende 2011, vyftig jaar van onderrig en navorsing in die Departement Chemie en Polimeerwetenskap aan die Universiteit Stellenbosch gevier. Dit is voorwaar 'n groot prestasie!

### Gemeenskapsinteraksie

Die personeellede van die Departement Chemie en Polimeerwetenskap was weer eens aktief betrokke by die Maties Natuurwetenskappe Winterweek vir graad 11-leerders asook by die jaarlikse Universiteit Stellenbosch Opedag vir voornemende studente.

Dr Katharine de Villiers-Chen was awarded the **Academy of Sciences for the Developing World (TWAS) regional prize for Young Scientists** at the Afro-Asia Workshop on Advanced Topics in Chemistry, held in India.

Organiese chemikus **dr. Katharine de Villiers-Chen** het die Akademie van Wetenskappe vir die Ontwikkelende Wêreld (TWAS) se streeksprys vir Jong Wetenskaplikes by die Afro-Asiese Werkswinkel oor Gevorderde Onderwerpe in Chemie, in Indië ontvang.



## ► 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 (Wits)  
 Walter Sisulu University

**INTERNATIONAL****Australia**

Monash University  
 University of Western Australia

**Austria**

Borealis  
 Mondi

**Belgium**

Ghent University  
 Katholieke University Leuven  
 Vrije University Brussel

**Canada**

University of Waterloo

**Czech Republic**

Technical University of Liberec

**Germany**

Bergische Universität GH Wuppertal  
 Deutsches Kunststoff-Institut (DKI)  
 Heraeus Holding GmbH  
 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  
 Leiden University  
 Utrecht University

**Poland**

Polish Academy of Sciences

**Sweden**

Chalmers Institute of Technology  
 Lund University  
 Swedish Royal Institute of Technology

**United Kingdom**

University of St Andrews, Scotland  
 Cardiff University  
 Durham University  
 University of Leeds  
 University of Cambridge

**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

## ► Funding

Anglo Platinum  
 BASF  
 BioPAD  
 Borealis  
 Deutsches Kunststoff-Institut (DKI)  
 Dutch Polymer Institute (DPI)  
 Eskom  
 Harmony Gold  
 Heraeus Holding GmbH  
 Ikusasa Chemicals  
 KVV  
 Mintek  
 Mondi  
 National Equipment Programme  
 National Research Foundation (NRF)  
 NRF Thuthuka  
 Plascon  
 South African Research Chairs Initiative (SARChI)  
 Sasol  
 Sastech  
 Technology and Human Resources for Industry Programme (THRIP)  
 Water Research Commission (WRC)

**Mr Sean Robinson**, who is working towards his PhD degree in inorganic chemistry, was the recipient of a James Moir Medal from the South African Chemical Institute (SACI).



Mnr. Sean Robinson, wat besig is met sy doktors studies in anorganiese chemie, het 'n **James Moir-medalje** van die Suid-Afrikaanse Instituut vir Chemie (SACI) ontvang.

## ► 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 die Witwatersrand (Wits)

Universiteit van Fort Hare

Universiteit van Johannesburg (UJ)

Universiteit van Kaapstad (UK)

Universiteit van KwaZulu-Natal (UKZN)

Universiteit van Pretoria (UP)

Universiteit van Suid-Afrika (UNISA)

Universiteit van Wes-Kaapland (UWK)

Walter Sisulu Universiteit

### **INTERNASIONAAL**

#### **Australië**

Universiteit van Monash

Universiteit van Wes-Australië

#### **België**

Katolieke Universiteit Leuven

Universiteit Gent

Vrije Universiteit Brussel

#### **Duitsland**

Bergische Universität GH Wuppertal

Deutsches Kunststoff Institut (DKI)

Heraeus Holding GmbH

Max Planck Institute for Colloids and Interfaces

Tegniese 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

Universiteit van Utrecht

#### **Oostenryk**

Borealis

Mondi

#### **Pole**

Poolse Akademie van Wetenskappe

### **Swede**

Chalmers Instituut van Tegnologie

Lund Universiteit

Sweedse Koninklike Instituut van Tegnologie

### **Tsjeggiese Republiek**

Tegniese Universiteit van Liberec

### **Verenigde Koninkryk**

Cardiff Universiteit

Durham Universiteit

Universiteit van Cambridge

Universiteit van Leeds

Universiteit van St Andrews, Skotland

### **Verenigde State van Amerika**

Cornell Universiteit

Universiteit van Kalifornië, Berkeley

Universiteit van Missouri-Kansas City

Universiteit van North Carolina

Universiteit van Southern Mississippi

Universiteit van Wisconsin-Madison

## ► Befondsing

Anglo Platinum

BASF

BioPAD

Borealis

Deutsches Kunststoff-Institut (DKI)

Eskom

Harmony Gold

Heraeus Holding GmbH

Ikusasa Chemicals

KWV

Mintek

Mondi

Nasionale Navorsingstigting (NNS)

Nasionale Toerustingprogram

Nederlandse Polimeer Instituut (DPI)

NNS Thuthuka

Plascon

Program vir Tegnologie en Menslike Hulpbronne vir die Nywerheid (THRIP)

Sasol

Sastech

Suid-Afrikaanse Navorsingsleerstoel Inisiatief (SARChI)

Watervorsingskommissie (WVK)



Animal pheromone expert Prof. Ben Burger celebrated **50 years** of employment at Stellenbosch University, teaching and doing research in the Department of Chemistry and Polymer Sciences.

Diere-feromoonkenner **prof. Ben Burger** het 50 jaar van onderrig en navorsing in die Departement Chemie en Polimeerwetenskap aan die Universiteit Stellenbosch gevier.

Ter ondersteuning van ons **voorgraadse studente**. Ons poog om eerstejaarstudente te behou en om die slaagsyfer van ons voorgraadse studente te verhoog. Projekte wat hierop gemik is, is suksesvol geïmplementeer soos onder meer ons uitgebreide mentorskapstelsel, en die instel van somer- en winterskole in spesifieke dissiplines. Ons toelatingsvereistes is verhoog, terwyl nuwe modules by ons graadprogramme gevoeg is om die taalvaardigheid, rekenaargeletterdheid en wetenskapkommunikasievaardighede van ons studente te slyp – alles tot hulle voordeel. Danksy hierdie inisiatiewe is die gemiddelde slaagsyfer van al ons voorgraadse student besig om te styg.

In support of our **undergraduate students**. We endeavour to increase the pass rate of our undergraduate students and to retain our first year students. Targeted projects have successfully been introduced, such as our extensive tutoring and mentoring system and the introduction of summer and winter schools in specific disciplines. Our admission requirements have been increased, while modules have been added to our programmes to help hone the language skills, computer literacy and science communication skills of our students – all to their benefit. Thanks to such initiatives, the average pass rate of all of our undergraduates is steadily rising.

# Departement **Fisika** Department of **Physics**

## ► 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*
- C – Prof Shaun Wyngaardt  
*nuclear physics*
- Y – Dr Paul Papka  
*nuclear physics*

## ► Personeel | **Staff**

### ► Doserend | **Academic**

- Prof EG Rohwer (*uitvoerende hoof / executive head*)
- Dr L Boonzaaier
- C Dreyer
- Prof HC Eggers
- Prof HB Geyer
- Dr 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
- JJ van Zyl
- Prof H Weigel
- Dr SM Wyngaardt

### ► Buitengewone professore | **Extraordinary professors**

- Dr A Avdeenkov
- Prof K Bharuth-Ram
- Dr LR Botha
- Prof AA Cowley
- Prof CA Dominguez
- Dr A du Plessis
- Prof A Forbes
- Prof WD Heiss
- Prof M Kastner

- Prof J Meng
- Prof R Newman
- Prof T Parker
- Dr I Snyman
- Prof H Stafast

### ► Emeritus professore | **Professors Emeritus**

- Prof PR de Kock
- Prof HM von Bergmann
- Prof PE Walters

### ► Ondersteuningspersoneel | **Support Staff**

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



## Research Interests

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

## Research Highlights

A novel electron bunch compressor design that has been successfully developed for the Laser Research Institute's (LRI) ultrafast electron diffraction apparatus, counts among the highlights of the research achievements of the Department of Physics. This design received considerable recognition in the international structural dynamics community. The development of a compressible super-continuum source using a photonic crystal fibre pumped by a femtosecond laser, can also be considered a breakthrough and was recognised as such by the photonics community. A number of scientists from the Stellenbosch University and iThemba LABS nuclear physics community, in collaboration with Chinese experts in nuclear structure, experimentally confirmed the existence of chiral doublet bands in the 80 mass region of the nuclear chart.

Prof. Shaun Wyngaardt received a C3 rating from the National Research Foundation (NRF).

The nuclear physics research group played host to a number of international scientists during 2011. These scientists include Prof. Berta Rubio of the University of Valencia (Spain), Prof. John Woods of the Georgia Institute of Technology (USA), Prof. Steven Yates of the University of Kentucky (USA), Prof. Fritz Donau of the von Helmholtz-Zentrum Dresden-Rossendorf (Germany), Prof. Fedor Simkovich of the University of Bratislava (Slovakia) and the Joint Institute for Nuclear Research (Russia), Prof. Andrey Denikin of Dubna University (Russia), Prof. Jie Meng of Beihang University and Peking University (China), Prof. Shuangquan Zhang and Mr Chuan Xu of Peking University (China), Prof. Zhigang Xiao of Tsinghua University (China), Prof. Shouyu Wang of Shandong University (China) and Prof. Sally Seidel of the University of New Mexico (USA), also visited the Department.

Prof. Shaun Wyngaardt, along with Mr Joram Ndayshimye and Mr Thifhelimbili Singo, both PhD students, and MSc student Mr Esra Khaleel, presented lectures at the International School for Subatomic Physics at Peking University (China). Mr JJ van Zyl presented the results of his PhD research in a presentation "Angular Distributions of the Analysing Power in the Excitation of Low Lying States of  $^{56}\text{Co}$ " at the 30th International Anniversary Workshop on Nuclear Theory (Bulgaria). PhD students Mr Fumolani Nemulodi and Mr Jaco Swartz attended the International

## Research outputs

Articles in accredited journals	84
Hons students graduated in 2011	7
MSc students graduated in 2011	13
PhD students graduated in 2011	8

School of Nuclear Physics on Clustering in Nuclei, in France. Mr Swartz also spent six weeks at the University of Birmingham to master R-matrix calculations which are used to describe the line shape of interfering excited states in atomic nuclei.

Dr Paul Papka gave an oral presentation at the International Workshop on Resonance Laser Separation of Nuclear Reaction Products (Russia). He also published a book at Elsevier on experimental techniques in nuclear clustering. This book is intended for PhD and postdoctoral students in nuclear clustering and more generally, in Nuclear Physics.

The Laser Research Institute (LRI) was host to a number of international laser scientists who participated in research activities. These include Prof. Paul van Loosdrecht and Prof. Petra Rudolph of the University of Groningen (the Netherlands), Prof. James Leger of the University of Minnesota (USA), Prof. Reinhart Poprawe of the Fraunhofer Institute for Lasertechnology (FILT) (Germany), Prof. Alexis Kudryashov of the Moscow State University (Russia), Prof. Thomas Feurer of the University of Bern (Germany) and Prof. Herbert Stafast of the University of Jena (Germany).

The ultrafast laser spectroscopy project of the Laser Research Institute succeeded in clarifying the ultrafast photochromism reactions in metal organic molecular systems. These results were published and PhD student Mr Gurthwin Bosman presented a paper "Ultrafast photochromism in electronically altered dithizonatophenylmercury(II) through femtosecond absorption spectroscopy" at FEMTO10, the Madrid Conference on Femtochemistry (Spain). A postdoctoral student, Mr Gunther Kassier, also presented a paper "Compression of 1 pC, 24 keV electron pulses for femtosecond electron diffraction using a laser triggered RF cavity" at the FEMTO10. PhD student Mr Egmont Rohwer presented a poster entitled "Investigation of fs-light-induced electron transfer in the interface of dye-sensitized zinc oxide nanoparticles" at the Tagung der Deutschen Bunsen-Gesellschaft (Germany).

The fibre laser project received wide recognition due to several publications and PhD student Mr Alex Heidt presented a paper on this topic, "Sub-two cycle pulse generation with all normal dispersion photonic crystal fiber and linear chirp compensation" at the European Conference on Lasers and Electro-Optics and the 12th European Quantum Electronics Conference (CLEO/Europe-

# nrv

The nuclear physics group acquired a **Nuclear Reaction Video (NRV) mirror server** which provides quick access to a large collection of data and computer programs.

Die **kernfisika navorsingsgroep** het 'n Nuclear Reaction Video spieëlbediener gekry wat vinnige toegang tot groot hoeveelhede data en rekenaarprogramme verleen.

## Navorsingsuitsette:

Artikels in geakkrediteerde tydskrifte	84
Hons studente gegradueer in 2011	7
MSc-studente gegradueer in 2011	13
PhD-studente gegradueer in 2011	8

## Navorsingshoogtepunte

Die suksesvolle ontwikkeling van 'n nuwe ontwerp vir 'n elektronbundelkompressor vir die Instituut vir Lasernavorsing se ultravinnige elektrondiffraksie-apparaat, is een van die navorsingshoogtepunte van die Departement Fisika. Hierdie ontwerp het wye erkenning van die internasionale gemeenskap op die gebied van strukturele dinamika ontvang. Die ontwikkeling van 'n saamdrukbare superkontinuumbron wat gebruik maak van fotoniese kristalvesels wat deur 'n femtosekonde laser gepomp word, kan as 'n deurbraak beskou word en dit word ook as sodanig deur die fotonika-gemeenskap erken. 'n Aantal wetenskaplikes van die kernfisikagemeenskap van Stellenbosch en iThemba LABS, in samewerking met Chinese kundiges in kernstruktuur, het die bestaan van chirale doebelbande in die 80 massa-gebied van die kernkaart eksperimenteel bevestig.

Dr. Shaun Wyngaardt het 'n C3-gradering van die Nasionale Navorsingstigting ontvang.

Die kernfisika navorsingsgroep was gedurende 2011 gasheer vir 'n aantal internasionale wetenskaplikes. Hulle sluit in prof. Berta Rubio van die Universiteit van Valencia (Spanje), prof. John Woods van die Georgia Instituut van Tegnologie (VSA), prof. Steven Yates van die Universiteit van Kentucky (VSA), prof. Fritz Donau van die von Helmholtz-Zentrum Dresden-Rossendorf (Duitsland), prof. Fedor Simkovich van die Universiteit van Bratislava (Slowakye) en die Gesamentlike Instituut vir Kernnavorsing (Rusland). Besoek is ook ontvang van prof. Andrey Denikin van Dubna Universiteit (Rusland), prof. Jie Meng van Beihang Universiteit en Peking Universiteit (China), prof. Shuangquan Zhang en mnr. Chuan Xu van Peking Universiteit (China), prof. Zhigang Xiao van Tsinghua Universiteit (China), prof. Shouyu Wang van Shandong Universiteit (China) en prof. Sally Seidel van die Universiteit van Nieu-Mexiko (VSA).

Dr. Shaun Wyngaardt, PhD-studente mnr. Joram Ndayshimye en mnr. Thifhelimbilu Singo, en MSc-student mnr. Esra Khaleel, het lesings aangebied by die Internasionale Skool vir Subatomiese Fisika van Peking Universiteit (China). Mnr. JJ van Zyl het die resultate van sy PhD-navorsing in 'n aanbieding getiteld "Angular Distributions of the Analysing Power in the Excitation of Low Lying States of  $^{56}\text{Co}$ " by die 30ste Internasionale Werkswinkel oor Kernfisiese teorie (Bulgarye) gelewer. PhD-studente mnr.

## Navorsingsbelange

Laserfisika (spektroskopie en ultravinnige wetenskap); kernfisika (reaksiekansvlak van protone met atoomkerne); teoretiese fisika (komplekse sisteme en gekondenseerde materie).

Fumolani Nemulodi, en Mnr. Jaco Swartz het die Internasionale Skool vir Kernfisika, wat gefokus het op groeperings in kerne, in Frankryk bygewoon. Jaco Swartz het ses weke by die Universiteit van Birmingham spandeer om R-matriksberekeninge te bemeester. Laasgenoemde word gebruik om die lynvorm van die interferensie van opgewekte toestande in atoomkerne te beskryf.

Dr. Paul Papka het 'n referaat gelewer by die Internasionale Werkswinkel oor Resonansie-laserskeiding van Stralingsprodukte (Rusland). Hy het ook 'n boek oor eksperimentele tegnieke in kerngroeperings gepubliseer by Elsevier. Hierdie boek is gemik op nadoktorale studente en PhD-studente in die studieveld van kerngroeperings en meer algemeen, in kernfisika.

Die Instituut vir Lasernavorsing (ILN) het gasheer gespeel vir 'n aantal internasionale laserwetenskaplikes wat aan navorsingsaktiwiteite deelgeneem het. Hulle sluit in prof. Paul van Loosdrecht en prof. Petra Rudolph van die Universiteit van Groningen (Nederland), prof. James Leger van die Universiteit van Minnesota (VSA), prof. Reinhart Poprawe van die Fraunhofer Instituut vir Lasertegnologie (FILT), (Duitsland), prof. Alexis Kudryashov van die Staatsuniversiteit van Moskou (Rusland), prof. Thomas Feuerer van die Universiteit van Bern (Duitsland) en prof. Herbert Stafast van die Universiteit van Jena (Duitsland).

Die ILN se ultravinnige laserspektroskopieprojek het daarin geslaag om die ultravinnige fotochromiese reaksies in metaalorganiese molekulêre stelsels te verduidelik. Hierdie resultate is gepubliseer en 'n PhD-student, mnr. Gurthwin Bosman, het die aanbieding "Ultrafast photochromism in electronically altered dithizonatophenylmercury(II) through femtosecond absorption spectroscopy" by FEMTO10, die Madrid Konferensie oor Femtochemie (Spanje) gelewer. 'n Postdoktorale student, mnr. Gunther Kassier, het ook 'n aanbieding: "Compression of 1pC, 24 keV electron pulses for femtosecond electron diffraction using a laser triggered RF cavity" by die FEMTO10 gedoen. PhD-student mnr. Egmont Rohwer het 'n plakkaataanbieding getiteld "Investigation of fs-light-induced electron transfer in the interface of dye-sensitized zinc oxide nanoparticles" by die Tagung der Deutschen Bunsen-Gesellschaft (Duitsland) gedoen.

Die vesellaserprojek het wyd erkenning ontvang as gevolg van verskeie publikasies en PhD-student mnr. Alexander Heidt het ook

Mr Christian Rohwer, currently a PhD student in theoretical physics, received the **Stellenbosch University Medal** as the best MSc student in the Faculty of Science.

**Mnr. Christian Rohwer**, wat tans werk aan sy PhD-graad in teoretiese fisika, het die Universiteit Stellenbosch Medalje as die beste MSc-student in die Fakulteit Natuurwetenskappe ontvang.



EQEC) 2011 (Germany). Dr Christene Steenkamp participated in the 4th IUPAP International Conference on Women in Physics (ICWIP) held in Stellenbosch and presented her paper, "Laser spectroscopy using a novel vacuum ultraviolet laser source". The LRI hosted a mobile LIDAR system, in collaboration with the Leibniz Institute for Tropospheric Research (Germany), for a period of six months for monitoring the atmosphere over Stellenbosch.

Various members of the Institute of Theoretical Physics (ITP) presented their work at international conferences and workshops. Prof. Herbert Weigel presented a plenary lecture entitled "Charged Cosmic Strings Stabilized by Fermion Fluctuations" at the Workshop on Quantum Field Theory under the Influence of External Conditions (Spain). Mr Michiel de Kock, a PhD student, gave an invited talk based on the first results regarding the application of Bayesian inference to femtoscopy at the Workshop on Particle Correlations and Femtoscopy (WPCF), Japan.

Other conference presentations also included Dr Lee Boonzaaier who presented a poster "Field theory formulation for dynamics of multivalent counterions in a dense polyelectrolyte solution: condensation and reversible crosslinking" at the 2nd International Symposium Frontiers in Polymer Science (France). Prof. Kristian Müller-Nedebock gave a talk on active gels and polymer topology at the Polymer Physics Group meeting (UK). He also presented a talk, together with PhD student Mr Christian Rohwer, on the same topic at the International Conference on Condensed Matter and Materials Physics (UK). The members of the ITP have been actively involved with various research activities at the National Institute for Theoretical Physics (NITheP) and in workshops presented by NITheP.

### Academic affairs

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.

Three PhD students at the Laser research Institute (LRI), Mr Egmont Rohwer, Mr Zephania Birech and Mr Nicolas Erasmus, each spent one to three month in research groups overseas, learning new skills and intensifying scientific collaborations. MSc students Mr David van der Westhuizen and Mr Charles Rigby travelled to the USA to represent the Stellenbosch Laser Student Chapter at the annual meetings of the International Society for Optics and Photonics (SPIE) and of the Optical Society of America (OSA) respectively.

### Staff matters

Prof. Tony Parker from Rutherford Appleton Laboratories (UK) was appointed as extraordinary professor in laser physics.

Prof. Erich Rohwer has been awarded an Erasmus Mundus visiting professorship through the OpSciTech programme at the Friedrich Schiller University (Germany) and he spent a three month sabbatical in Germany, Poland, the Netherlands and the UK.

### Awards to staff and students

Mr Christian Rohwer, currently a PhD student in theoretical physics, received the Stellenbosch University Medal as the best MSc student in the Faculty of Science. Mr Jake Bouma, an Honours student, was the Meiring Naudé medal winner and the John Todd Morrison Medal went to MSc student Mr Karl Möller.

Mr Wilfrid Ndebeka received the LAMP Poster Award at the International Society for Optics and Photonics (SPIE) Winter College on Optics in Imaging Science, held at the International Centre for Theoretical Physics (ICTP) in Italy. He also received the award for the best student presentation at CIOMP-OSA International Summer Session: Lasers and their Applications (China). At the annual South African Institute of Physics (SAIP) conference, which was held at UNISA in Pretoria, the postgraduate students of the Department of Physics again received several awards. The prize winners were Mr Jacobus Diener (exceptional oral presentation by a PhD student in the field of Theoretical Physics), Mr Egmont Rohwer and Ms Ilana Boshoff (the best poster by a PhD and MSc student in the field of Photonics respectively).

At the African Laser Centre (ALC) Student Workshop, Mr Zephania Birech received the award for the best PhD oral presentation and Mr Olufemi Olaoye the award for the best poster by an MSc student.

Mr Alexander Heidt was the first recipient of a joint PhD degree from the University of Stellenbosch and the Friedrich Schiller University in Jena, Germany. Subsequently he received the prestigious Marie Curie Fellowship from the European Commission to continue his research at the Optoelectronic Research Centre in Southampton (UK).

Postdoctoral fellow Dr Justin Mabiala accepted an offer to join the Texas A&M University as a postdoctoral fellow.

Stellenbosch University Rector's Awards were awarded to Ms Heleen Randall, Mr Stanley February, Prof. Erich Rohwer, Dr Paul Papka, Mr J.J. van Zyl, Dr Shaun Wyngaardt and Dr Christene Steenkamp.

### Service to the scientific community

Staff members of the Department of Physics were closely involved with several national councils and organisations, as well as with the organising of international conferences and schools.

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

Mr Zephania Birech and Mr Olufemi Olaoye received awards at the **African Laser Centre (ALC) Student Workshop.**

**Zephania Birech**



Mnr. Zephania Birech en mnr. Olufemi Olaoye het **toekennings** ontvang by die Afrika Laser Sentrum (ALC) se studentewerkswinkel.

**Olufemi Olaoye**

'n referaat getiteld "Sub-two cycle pulse generation with all normal dispersion photonic crystal fiber and linear chirp compensation" daaroor gelewer by die Europese Konferensie oor Lasers en Elektro-optika en die 12de Europese Kwantumelektronika-konferensie (CLEO/Europe-EQEC) 2011 (Duitsland).

Dr. Christene Steenkamp was deel van die 4de IUPAP Internasionale Konferensie oor Vroue in Fisika (ICWIP) wat in Stellenbosch aangebied is. Sy het 'n referaat gelewer getiteld "Laser spectroscopy using a novel vacuum ultraviolet laser source".

Die ILN het in samewerking met die Leibniz Instituut vir Troposferiese Navorsing (Duitsland), 'n mobiele LIDAR-sisteem vir 'n tydperk van ses maande gehuisves om die atmosfeer bokant Stellenbosch te monitor.

Verskeie lede van die Instituut vir Teoretiese Fisika (ITF) het hulle werk by internasionale konferensies en werksinkels voorgedra. Prof. Herbert Weigel het 'n hooflesing getiteld "Charged Cosmic Strings Stabilized by Fermion Fluctuations" by die werksinkel oor Kwantumveldteorie onder die Invloed van Eksterne Toestande (Spanje) gegee. Mnr. Michiel de Kock, 'n PhD-student, was 'n genooide spreker by die Werksinkel oor Partikel Korrelasies en Femtoskopie (WPCF), (Japan) waar hy gepraat het oor die eerste resultate van die toepassing van Bayes se afleiding op femtoskopie.

Ander konferensievoordragte het ook die plakkaataanbieding van dr. Lee Boonzaaij ingesluit, getiteld "Field theory formulation for dynamics of multivalent counterions in a dense polyelectrolyte solution: condensation and reversible crosslinking". Hy het dit by die 2de Internasionale Simposium van Baanbrekers in Polimeerwetenskap (Frankryk) voorgedra. Prof. Kristian Müller-Nedebock het 'n praatjie oor aktiewe jels en polimeertopologie by die vergadering van die Polimeerfisikagroep (VK) gelewer. Hy het ook 'n voordrag, tesame met PhD-student Christian Rohwer, oor dieselfde onderwerp gelewer by die Konferensie oor Gekondenseerde Materie en Materiale Fisika (VK).

Die lede van die ITP was ook aktief betrokke by verskeie navorsingsaktiwiteite en werksinkels van die Nasionale Instituut vir Teoretiese Fisika (NITheP).

## Akademiese Sake

Die kernfisikanavorsingsgroep het toegang verkry tot die Nuclear Reaction Video (NRV) spieëlbediener wat navorsers oor die wêreld heen vinnige toegang tot groot hoeveelhede data en rekenaarprogramme gee wat deur alle navorsingsgemeenskappe in kernfisika gebruik word.

Drie PhD-studente by die Instituut vir Lasernavorsing (ILN), mnr. Egmont Rohwer, mnr. Zephania Birech en mnr. Nicolas Erasmus het elk een tot drie maande as deel van navorsingsgroepe in die buiteland spandeer waar hulle nuwe vaardighede aangeleer het en wetenskaplike samewerking bevorder het. MSc-studente mnr. David van der Westhuizen en mnr. Charles Rigby is na die VSA as

verteenwoordigers van die Stellenbosch Laser-studente afdeling by die jaarlikse vergaderings van onderskeidelik die Internasionale Vereniging van Optika en Fotonika (SPIE), en die Optiese Vereniging van Amerika (OSA).

## Personeelsake

Prof. Tony Parker van Rutherford Appleton Laboratories (VK) is aangestel as buitengewone professor in laserfisika.

Prof. Erich Rohwer het 'n Erasmus Mundus-gasprofessoraat deur die OpSciTech-program by die Friedrich Schiller Universiteit (Duitsland) ontvang. Hy was met sabbatsverlof vir drie maande in Duitsland, Pole, Nederland en die Verenigde Koninkryk.

## Toekennings aan personeel en studente

Mnr. Chris Rohwer, tans 'n PhD-student in teoretiese fisika, het die Universiteit Stellenbosch-medalje as die beste MSc-student in die Fakulteit Natuurwetenskappe ontvang. Honneursstudent mnr. Jake Bouma het die Meiring Naudé-medalje ontvang, terwyl die John Todd Morrison-medalje toegeken is aan MSc-student, mnr. Karl Möller.

Mnr. Wilfrid Ndebeka het die LAMP Plakkaat-toekenning ontvang by die Internasionale Vereniging van Optika en Fotonika (SPIE) se Winterkollege oor Optika in Beeldwetenskap, wat gehou is by die Internasionale Sentrum vir Teoretiese Fisika (ICTP) in Italië. Hy het ook die toekenning vir die beste aanbieding deur 'n student ontvang by CIOMP-OSA se Internasionale Somerbyeenkoms oor Lasers en die aanwending en gebruik van Lasers (China).

By die jaarlikse konferensie van die Suid-Afrikaanse Instituut van Fisika (SAIF) wat by Unisa in Pretoria gehou is, het die Departement van Fisika se nagraadse studente weer verskeie toekennings ontvang. Die prysweners was mnr. Jacobus Diener (uitsonderlike mondelinge aanbieding deur 'n PhD-student in die teoretiese fisika), mnr. Egmont Rohwer en me. Ilana Boshoff (onderskeidelik vir die beste plakkaat deur 'n PhD-student en MSc-student in die fotonika).

By die Afrika Laser Sentrum (ALC) se studentewerksinkel het mnr. Zephania Birech die toekenning vir die beste PhD-mondelinge aanbieding ontvang en mnr. Olufemi Olaoye het die toekenning vir die beste plakkaat deur 'n MSc-student ontvang.

Dr. Alexander Heidt was die eerste ontvanger van 'n gesamentlike PhD-graad van die Universiteit Stellenbosch en die Friedrich Schiller Universiteit in Jena, Duitsland. Daarna het hy die gesogte Marie Curie navorsingsbeurs van die Europese Kommissie ontvang om sy navorsing by die Opto-elektroniese Navorsingsentrum in Southampton (UK) voort te sit.

Nadoktorale genoot dr. Justin Mabila het 'n aanbod aanvaar om by die Texas A&M Universiteit aan te sluit as 'n nadoktorale genoot.



**The number of institutions** from 16 countries that were represented at the 4th African Laser Centre Student Workshop.

**Die getal instellings** van 16 lande wat verteenwoordig is by die 4de Afrika Lasersentrum Werksinkel vir Studente.

Prof. Frederik Scholtz and Mr Gurthwin Bosman (student representative) served on the board of the South African Institute of Physics (SAIP). Prof. Frederik Scholtz is also chair of the SAIP Theoretical Physics specialist group, while Prof. Erich Rohwer is chair of the SAIP Photonics specialist group.

Prof. Erich 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).

The LRI was the host to the 4th African Laser Centre (ALC) Student Workshop which was organised by Prof. Piet Walters. The workshop was attended by 59 students and researchers who represented 20 institutions from 16 countries. The guest speakers were Prof. Andrea Galtarossa of the University of Padua (Italy), Dr James Uhomobhi of the University of Ulster (Ireland) and Prof. Mourad Zghal of the Université of Carthage (Tunisia).

The nuclear physics group co-hosted the "Tastes of Nuclear Physics" workshop, together with the nuclear physics groups at UCT and UWC. They also hosted a series of lectures at Stellenbosch University entitled "A short story on nuclear structure models" presented by Prof. Fritz Donau of the Von Helmholtz-Zentrum Dresden-Rossendorf (Germany). Dr Shaun Wyngaardt and Prof. Jie Meng co-organised the China South Africa joint Symposium on Nuclear Physics (China), supported by the National Research Foundation of South Africa and the National Science Foundation in China.

Dr Paul Papka is chairman of the Physics Advisory Committee for the Separated Sector Cyclotron Facility at iThemba LABS, as well as a member of the Physics Advisory Committee of their Materials Research Department.

The Department of Physics once again presented their annual, one week introductory course on inductively coupled plasmas (ICP), as well as a number of workshops for local and national scientists, attended by more than 100 attendees.

### Community interaction

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 Maties Science Winter Week, the Stellenbosch University Open Day 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 Laser Research Institute and the Institute for Theoretical Physics, visited schools in the West Coast region during an outreach tour of one week. Financial support was granted by OSA, the International Society for Optics and Photonics (SPIE), NITheP and Stellenbosch University.

Dr Christene Steenkamp participated in two "Undergraduate Interventions" with the aim to motivate learners to participate in

science. These events were funded by the South African Agency for Science and Technology Advancement (SASTA) and organised by iThemba LABS.

Laser physics student **Mr Wilfrid Ndebeka** received awards at the International Society for Optics and Photonics (SPIE) Winter College on Optics in Imaging Science, as well as at the CIOMP-OSA International Summer Session: Lasers and their Applications.

Laserfisikastudent mnr. Wilfrid Ndebeka het **toekennings** by die Internasionale Vereniging van Optika en Fotonika (SPIE) se Winterkollege oor Optika in Beeldwetenskap, asook by CIOMP-OSA se Internasionale Somerbyeenkoms oor Lasers en die Aanwending en Gebruik van Lasers ontvang.



Universiteit Stellenbosch Rektorstoekennings is ontvang deur me. Heleen Randall, mnr. Stanley Februarie, prof. Erich Rohwer; dr. Paul Papka, mnr. J.J. van Zyl, dr. Shaun Wyngaardt en dr. Christene Steenkamp.

## Diens aan die wetenskaplike gemeenskap

Personeel van die Departement Fisika was ten nouste betrokke by verskeie nasionale rade en organisasies, sowel as met die organiserings van 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 die Stellenbosse Instituut vir Gevorderde Navorsing (STIAS) is.

Prof. Frederik Scholtz en mnr. Gurthwin Bosman (studente-vertegenwoordiger) het op die raad van die Suid-Afrikaanse Instituut van Fisika (SAIF) gedien. Prof. Frederik Scholtz is ook die voorsitter van die SAIF se Teoretiese Fisika-spesialisgroep, terwyl prof. Erich Rohwer die voorsitter van die dienoreenkomstige fotonika-spesialisgroep is.

Prof. Rohwer is ook 'n lid van die bestuurskomitee van die Fotonika Inisiatief van Suid-Afrika (PISA), terwyl prof. Hubertus von Bergmann 'n direkteur van die Afrika Lasersentrum (ALS) is.

Die INL was die gasheer vir die 4de Afrika Laser Sentrum (ALC) se studentewerkswinkel wat deur prof. Piet Walters georganiseer is. Ongeveer 59 studente en navorsers wat 20 instellings uit 16 lande verteenwoordig het, het die werkswinkel bygewoon. Die gassprekers was prof. Andrea Galtarossa van die Universiteit van Padua (Italië), dr. James Uhomobhi van die Universiteit van Ulster (Ierland) en prof. Mourad Zghal van die Universiteit van Kartago (Tunisië).

Die Kernfisika-groep, wat tesame met die Kernfisika-groepe van die UK en UWK, die mede aanbieder van die werkswinkel getiteld "Tastes of Nuclear Physics". Hulle was ook gasheer vir 'n reeks lesings wat by die Universiteit Stellenbosch aangebied is deur prof. Fritz Donau van die von Helmholtz-Zentrum Dresden-Rossendorf (Duitsland) en wat gehandel het oor kernstruktuurmodelle. Dr. Shaun Wyngaardt en prof. Jie Meng was medeorganiseerders van die gesamentlike Suid-Afrika China Simposium oor Kernfisika (China), wat deur die Nasionale Navorsingstigting van Suid-Afrika en die Nasionale Wetenskapstigting van China ondersteun is.

Dr. Paul Papka is voorsitter van die Fisika Advieskomitee vir die Oopsektorsiklotron Fasiliteit by iThemba LABS, sowel as 'n lid van die Fisika Advieskomitee van hulle Departement Materiaalnavorsing. Die Departement Fisika het weer eens hulle jaarlikse, weeklange inleidende kursus oor induktiefgekoppelde plasma (IGP) aangebied, asook 'n aantal korter werksinkels vir plaaslike en nasionale wetenskaplikes wat deur meer as 100 deelnemers bygewoon is.

## Gemeenskapsinteraksie

Die departementele uitreikkomitee was baie aktief. Personeel en nagraadse studente was deel van die Standard Bank/Maties Wiskunde- en Wetenskapweek, die Maties Natuurwetenskappe Winterweek, die jaarlikse Universiteit Stellenbosch Opedag en die Eskom Ekspo vir Jong Wetenskaplikes, wat almal in Stellenbosch plaasgevind het.

Nagraadse studente van die Stellenbosch Studente afdeling van die Optiese Vereniging van Amerika (OSA), wat deel uitmaak van die Instituut vir Lasernavorsing en die Instituut vir Teoretiese Fisika, het skole in die Weskusarea besoek tydens 'n weeklange uitreiktoer. Finansiële ondersteuning hiervoor is verleen deur OSA, die Internasionale Vereniging vir Optika en Fotonika (SPIE), NITheP en die Universiteit Stellenbosch.

Dr. Steenkamp het deelgeneem aan twee voorgraadse aanbiedings wat daarop gemik was om leerders aan te moedig om deel te word van die wetenskappe. Hierdie geleentheid is deur die Suid-Afrikaanse Agentskap vir die Bevordering van Wetenskap en Tegnologie (SASTA) befonds en deur iThemba LABS georganiseer.

.....  
**601**  
.....

**The number of postgraduate students**  
in the Faculty of Science

**Die getal nagraadse studente**  
in die Fakulteit Natuurwetenskappe

## ► Collaboration

**South Africa**

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

**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 by the international extraordinary professors that have been appointed in the Department.

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 Ahmedabad, in the UK at Bristol University and with Syracuse University in the USA.

## ► Funding

CSIR Department Peace Safety and Security (DPSS)  
 CSIR National Laser Centre (NLC)  
 Deutsche Akademische Austausch Dienst (DAAD)  
 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)

Laser physicist Dr Alexander Heidt is the first recipient of a **joint PhD degree** from the University of Stellenbosch and the Friedrich Schiller University in Germany.

Laserfikus **dr. Alexander Heidt** is die eerste student om 'n gesamentlike PhD-graad van die Universiteit Stellenbosch en die Friedrich Schiller Universiteit in Duitsland te ontvang.



## ► Samewerking

### **SUID-AFRIKA**

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

### **AFRIKA**

Afrika Laser Sentrum (ALS)  
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 wat weerspieël word deur die internasionale buitengewone professore wat in die Departement aangestel is.

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

## ► Befondsing

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

Chemistry student Mr John Davis is the first PhD student in chemistry to do **a joint degree** offered at Stellenbosch University and St Andrews University (Scotland).

Chemiestudent **mr. John Davis** is die eerste doktorsale student in chemie om 'n gesamentlike graad van die Universiteit Stellenbosch en die Universiteit van St Andrews (Skotland) te doen.





**Fasiliteite** tot voordeel van ons studente en personeel. Die lesingsale, kantoorruimtes en navorsingslaboratoriums van die Fakulteit Natuurwetenskappe is regoor die kampus van die Universiteit Stellenbosch versprei. Heelwat projekte is gedurende 2011 in samewerking met die US Fasiliteitsbestuurspan aangepak om die instandhouding en verbetering van hierdie ruimtes te verseker. Die laboratoriumspasie vir ons eerstejaar chemiестudente, asook 'n gedeelte van die nagraadse laboratoriums van die Departement Biochemie is onder meer opgradeer. 'n Skoon Laboratorium ("Clean Laboratory") is in die Departement Aardwetenskappe ingerig. Ons fakulteitsbestuurspan werk saam met die US Fasiliteitsbestuur om die voorgenome skuif van die personeel en studente in Wiskundige Wetenskappe na die Bedryfsielkundegebou moontlik te maak.

**Facilities** to the benefit of our students and staff. The lecture halls, office areas and research laboratories of the Faculty of Science are scattered all over the Stellenbosch University campus. During 2011 various projects were driven in collaboration with the Facilities Management team to ensure the maintenance, renovation and improvement of our buildings. The laboratories for our first year chemistry students, as well as the postgraduate laboratories of the Department of Biochemistry were upgraded. The Department of Earth Sciences received a newly furnished Clean Laboratory. Our faculty management team is working closely with the SU Facilities Management to facilitate the planned move of the staff and students in Mathematical Sciences to the current Industrial Psychology building.

# Departement **Fisiologiese Wetenskappe** Department of **Physiological Sciences**

► **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*

► Personeel | **Staff**

► Doserend | **Academic**

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

► Ondersteuningspersoneel | **Support staff**

- Dr A Krygsman
- Dr T Nell
- GA Simon

## 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; multidisciplinary stress biology; cancer and modes of cell death; exercise science.

## Research highlights

Several staff members of the Department of Physiological Sciences attended international conferences during 2011.

Prof. Faadiel Essop attended the annual Experimental Biology meeting in Washington DC (USA) where he presented a poster on the cardioprotective effects of oleanolic acid. Dr Carine Smith attended the biannual congress of the International Society of Exercise and Immunology (ISEI) in July in the UK.

Prof. Kathy Myburgh secured a large international research contract to investigate a polyphenol anti-oxidant for its properties to improve athletic performance and to reduce inflammatory and muscle damage responses to multiple maximal races.

Prof. Anna-Mart Engelbrecht attended the International Cell Death Society conference (Brazil) where she presented a talk on the role of MKP-1 in autophagy and apoptosis during ischemia/reperfusion injury in the heart. Dr Theo Nell visited Egypt to attend the AORTIC conference where he presented a poster on lycopene and prostate cancer.

## Academic affairs

The Exercise Laboratory was refurbished. Two state-of-the-art Velotron cycle ergometers were purchased that allow for elite cyclists to be precisely monitored during laboratory designed time trials.

## Service to the scientific community

Prof. Faadiel Essop was appointed to the editorial board of the *American Journal of Physiology Heart & Circulatory Physiology*, and continued his services as a member of the editorial board of the *Open Obesity Journal*. He was also elected as a member of the International Committee of the American Physiological Society.

Prof. Kathy Myburgh was promoted to the position of Section Editor for the international journal *BMC Physiology* and continued her service on the editorial boards of *Medicine and Science in Sports and Exercise*, the *International Journal of Sport Physiology and Performance* and the *Journal of Sport Science & Coaching*.

Dr Rob Smith is a working committee member of the Pre-clinical

## Research outputs

Articles in accredited journals	14
MSc students graduated in 2011	2
MPhil students graduated in 2011	1
PhD students graduated in 2011	1

Drug Development Platform of the National department of Science and Technology, as well as a member of the subcommittee to the advisory committee for Genetically Modified Organisms (Department of Agriculture).

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 recognised by the University. Prof. Faadiel Essop, Dr De Wet Strauss and Mrs Catrina Martins received SU Rector's Performance Awards. Prof. Kathy Myburgh received the Award for Research Excellence in Physiology from the Physiological Society of Southern Africa.

Our postgraduate students also excelled at national meetings. Ms Rudo Mapanga was awarded a first prize for her poster at the annual meeting of the Society for Endocrinology, Metabolism and Diabetes of South Africa (SEMDSA). At the same meeting, Ms Clare Springhorn was awarded a first prize for her oral presentation.

Ms Balindiwe Sishi was the runner-up in the prestigious Wyndham Student Presentation competition at the annual congress of the Physiology Society of Southern Africa and the winner of the Basic Science section at the Annual South African Heart Association's Conference.

## Staff matters

Prof. Faadiel Essop was promoted to full professor since the beginning of 2011. He also delivered his inaugural lecture.

## Community interaction

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

The Department was also well represented at the annual Eskom Expo for young scientists in Stellenbosch, with staff acting as judges



In his inaugural lecture, physiologist Prof. Faadiel Essop focused on how to combat **metabolic syndrome** by means of a healthy lifestyle.

Fisioloog, **prof. Faadiel Essop**, se intreerede het gefokus op sy navorsing oor hoe om metabooliese sindroom te bekamp met 'n gesonde lewenstyl.

## Navorsingsuitsette:

Artikels in geakkrediteerde tydskrifte	14
MSc-studente gegradueer in 2011	2
MPhil-studente gegradueer in 2011	1
PhD-studente gegradueer in 2011	1

## Navorsingshoogtepunte

Verskeie personeellede van die Departement Fisiologiese Wetenskappe het gedurende 2011 internasionale konferensies bygewoon.

Prof. Faadiel Essop het die jaarlikse Kongres vir Eksperimentele Biologie in Washington DC (VSA) bygewoon waar hy 'n plakkaatvoordrag gelewer het oor die beskermende effek van oleanoliese suur op die hart. Dr. Carine Smith het die halfjaarlikse kongres van die Internasionale Vereniging van Oefening en Immunologie (ISEI) in Julie in die VK bygewoon.

Prof. Kathy Myburgh het 'n groot internasionale navorsingskontrak gekry om 'n studie oor polifenool-antioksidante te doen. Sy poog om vas te stel of dit eienskappe besit om sportprestasie te verbeter. Prof. Myburgh sal ook kyk of polifenool-antioksidante die inflammatoriese reaksie en spierskade kan verminder wat voorkom ná opeenvolgende wedlope wat gepaard gaan met maksimale inspanning.

Prof. Anna-Mart Engelbrecht het die Internasionale Seldood Vereniging se kongres (Brasilië) bygewoon, waar sy 'n voordrag gelewer het oor die rol van MKP-1 in outofagositose en apoptose gedurende iskemie of 'n reperfusiebesering van die hart.

Dr. Theo Nell het Egipte besoek om die AORTIC konferensie by te woon waar hy 'n plakkaatvoordrag gelewer het oor likopeen en prostaatkanker.

## Akademiese sake

Die Oefeningslaboratorium is opgeknep. Twee Velotron ergometerfietse is aangekoop om topfietsryers deeglik te monitor tydens tydtoetse wat onder laboratoriumgemanipuleerde toestande afgele word.

## Diens aan die wetenskaplike gemeenskap

Prof. Faadiel Essop is as redaksielid van die *American Journal of Physiology Heart & Circulatory Physiology* aangestel en dien steeds op die redaksie van die *Open Obesity Journal*. Hy is ook genomineer as lid van die internasionale komitee van die Amerikaanse Vereniging van Fisiologie.

## Navorsingsbelange

Metaboliese sindroom, diabetes en hartsiektes (miokardiale iskemie, diabetiese kardiomiopatie); metaboliese sindroom en MIV/Vigs; spierfisiologie en -biologie; skeletspieratrofie en -hipertrofie; satelliet selle en mioblaste; hartmetabolisme, hipoksie en iskemie; multidisiplinêre stresbiologie; kanker en meganismes van seldood; oefenwetenskap.

Prof. Kathy Myburgh is bevorder tot afdelingsredakteur van die internasionale vaktydskrif *BMC Physiology*, en dien verder as redaksielid van *Medicine and Science in Sports and Exercise*, die *International Journal of Sport Physiology and Performance* en die *Journal of Sport Science & Coaching*.

Dr. Rob Smith is 'n lid van die nasionale Departement van Wetenskap en Tegnologie se voorbereidingskomitee vir die Platvorm vir Prekliniese Geneesmiddelontwikkelings. Hy is ook 'n lid van 'n subkomitee van die advieskomitee vir Geneties Gemanipuleerde Organismes (Departement van Landbou).

Prof. Anna-Mart Engelbrecht sit haar dienste voort as redaksielid van die *International Journal of Biomedical Sciences*.

## Toekennings aan personeel en studente

Die Universiteit Stellenbosch het verskeie personeellede vir hulle uitstekende werk vereer. Prof. Faadiel Essop, dr. De Wet Strauss en me. Catrina Martins het US Rektorstoekennings ontvang.

Prof. Kathy Myburgh het die toekening vir uitnemendheid op die gebied van navorsing in Fisiologie van die Fisiologie Vereniging van Suider-Afrika ontvang.

Ons nagraadse studente het ook by nasionale byeenkomste uitgeblink. Me. Rudo Mapanga het 'n eerste plek verwerf met haar plakkaataanbieding by die jaarlikse vergadering van die Vereniging vir Endokrinologie, Metabolisme en Diabetes van Suid-Afrika (SEMDSA). By dieselfde geleentheid het me. Clare Springhorn 'n eerste plek behaal vir haar mondelinge voordrag.

Me. Balindiwe Sishi was die naaswenner in die gesogte Wyndham Studentevoordragkompetisie by die jaarlikse kongres van die Fisiologie Vereniging van Suider-Afrika. Sy was ook die wenner in die Basiese Wetenskappe-afdeling tydens die jaarlikse Suid-Afrikaanse Hartstigtinkonferensie.

## Personeelsake

Prof. Faadiel Essop is met ingang 2011 tot vol professor bevorder. Hy het ook sy intreerede gelewer.



Exercise physiologist Prof. Kathy Myburgh received the **Award for Research Excellence in Physiology** from the Physiological Society of Southern Africa.

Oefeningfisioloog **prof. Kathy Myburgh** het die toekening vir uitnemendheid op die gebied van navorsing van die Fisiologie Vereniging van Suider-Afrika ontvang.

in the biological and medical divisions. Most of the staff members of the department were involved with the annual Stellenbosch University Open Day.

The department arranged a hands-on winter week with the theme "Physiology is Cool" for high school learners from previously disadvantaged schools. Dr De Wet Strauss still annually presents refresher courses in Biology for teachers.

## ► Collaboration

### **SOUTH AFRICA**

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

### **AFRICA**

Kenyatta University (Kenya)  
University of Botswana (Gaborone)

### **INTERNATIONAL**

#### **Australia**

Griffith University

#### **Canada**

Carleton University

#### **France**

University of La Réunion

#### **Greece**

University of Thessaly (Trikala)

#### **Hungary**

Biological Research Centre

#### **Norway**

University of Bergen

#### **United States of America**

University of Maryland  
University of North Carolina  
Pepperdine University

## ► Funding

Cancer Association of South Africa (CANSAs)  
European Union (HEAIDS)  
Medical Research Council (MRC)  
National Research Foundation (NRF)  
Nestlé Nutrition Institute Africa (NNIA)  
Norwegian Programme for Development, Research and Education (NUFU)  
PepsiCo International  
Stellenbosch University (SU)  
US National Institutes of Health (NIH)



### **Die Oefeningslaboratorium is opgeknip.**

**2** Two state-of-the-art Velotron cycle ergometers were purchased to monitor the performance of elite cyclists under time trial conditions.

**2**

Velotron ergometerfietse is aangekoop waarmee topfietsryers se prestasies in tydtoetse gemonitor kan word.

### **The Exercise Laboratory was refurbished.**

## Gemeenskapsinteraksie

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

Die departement was goed verteenwoordig by die jaarlikse Eskom Ekspo vir Jong Wetenskaplikes in Stellenbosch, met verskeie personeellede wat as beoordelaars in die biologiese en mediese afdelings opgetree het. Daarby was 'n groot aantal departementslede ook by die jaarlikse Universiteit Stellenbosch Opedag betrokke. Die departement het 'n interaktiewe winterweek met die tema "Fisiologie is cool" vir hoërskoolleerders van voorheen benadeelde skole aangebied.

Dr. De Wet Strauss het weer sy jaarlikse opknappingskursusse vir Biologie-onderwysers aangebied.

## ► Samewerking

### SUID AFRIKA

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

### AFRIKA

Kenyatta Universiteit (Kenia)  
Universiteit van Botswana (Gaborone)

### INTERNASIONAAL

#### Australië

Griffith Universiteit

#### Frankryk

Universiteit van La Réunion

#### Griekeland

Universiteit van Thessalië

#### Hongarye

Biologiese Navorsingsentrum

#### Kanada

Carleton Universiteit

#### Noorweë

Universiteit van Bergen

#### Verenigde State van Amerika

Universiteit van Maryland  
Universiteit van North Carolina  
Pepperdine Universiteit

## ► Befondsing

Europese Unie (HEAIDS)  
Kankervereniging van Suid-Afrika (KANSAs)  
Mediese Navorsingsraad (MNR)  
Nasionale Gesondheidsinstituut van die Verenigde State (NIH)  
Nasionale Navorsingstigting (NNS)  
Nestlé Voedingsinstituut Afrika (NNIA)  
Noorweegse Program vir Ontwikkeling, Navorsing en Onderrig (NUFU)  
PepsiCo Internasionaal  
Universiteit Stellenbosch (US)



# 6

### Six high school learners

took part in the first interactive winter week which was hosted by the Department of Physiological Sciences.

### Ses hoërskoolleerders

van plaaslike skole het aan die Departement Fisiologiese Wetenskappe se eerste interaktiewe winterweek deelgeneem.

A grayscale microscopic image of various bacteria, including rod-shaped and spiral-shaped organisms, scattered across the page. The background is a light gray, and the bacteria are shown in various orientations and sizes, some appearing as individual cells and others as small clusters.

Ter ondersteuning van **nagraadse studente**. Die Fakulteit Natuurwetenskappe belê heelwat tyd en energie in ons nagraadse studente, want ons glo dat 'n sterk kennisbasis nodig is om innovasie en navorsing in Suid-Afrika en op die kontinent te dryf. Daarby maak ons nagraadse studente ook 'n beduidende bydrae tot ons navorsingsuitsette in velerlei velde. Die getal nagraadse studente wat aan hulle meestersgraadstudies of doktorale studies in een van ons agt departemente of navorsingsentrums werk, het tussen 2008 tot 2011 van 451 tot 601 studente gestyg. Ons finansiële aansporingskema motiveer ons doktorale studente om hul studies binne drie jaar te voltooi, en het daartoe bygedra dat dit nou gemiddeld 3,8 jaar vir ons studente neem om hul PhD-grade te verwerf.

In support of **postgraduate students**. The Faculty of Science invests a lot of time and energy in our postgraduate students, because we believe that a strong knowledge base is required to drive innovation and research in South Africa, as well as on the continent. In addition, our postgraduate students contribute significantly to our research outputs in various fields of study. The amount of postgraduate students who are doing their masters or doctoral studies in one of our eight departments or research centres, have increased from 451 to 601 students between 2008 and 2011. Our financial incentive scheme also motivates our doctoral students to finish their studies within three years and has contributed to the fact that it takes our students currently 3,8 years on average to obtain their PhD degrees.

# Departement **Mikrobiologie** Department of **Microbiology**

## ▶ The following staff members have NRF ratings:

- A – Prof Doug Rawlings  
*molecular biology of biomining bacteria and their plasmids*
- B – Prof Alf Botha  
*yeast and fungal ecology*
- B – Prof Eugene Cloete  
*water biotechnology*
- 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  
*fungal bioprocessing*
- C – Prof Karin Jacobs  
*microbial ecology*
- Y – Dr Heinrich Volschenk  
*bioprospecting for enzymes and expression of foreign proteins in yeast*

## ▶ Personeel | **Staff**

### ▶ Doserend | **Academic**

- Prof DE Rawlings (*voorsitter/chairperson*)
- Prof M Bloom
- Prof A Botha
- Prof TE Cloete (*dekaan/dean*)
- Prof LMT Dicks
- Prof K Jacobs
- T Jansen
- Dr W Kahn
- Prof WH van Zyl
- Dr H Volschenk

### ▶ Buitengewone professore | **Extraordinary professors**

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

### ▶ Ondersteuningspersoneel | **Support staff**

- JM Cilliers
- L J Daniels
- M Gey van Pittius
- MH Koopman
- J Lynch
- R Robyn
- M Stuurman
- T van der Merwe
- L van der Westhuizen
- W Wentzel



## Research Interests

Bioprocessing of agricultural products; bioprospecting for enzymes including plant polysaccharide hydrolytic enzymes; genetic manipulation of yeasts for polysaccharide utilisation; 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; characterisation 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 and their biological, chemical and physical environment; taxonomy of ascomycetes; development of probiotic lactic acid bacteria for humans and animals; antibiotic resistance of waterborne pathogens; monitoring and optimisation of domestic rainwater tanks.

## Research highlights

During the course of the year we were privileged to celebrate the 50th anniversary of the establishment of the Department of Microbiology at Stellenbosch University. We are committed towards our goal of achieving excellent research outputs and of providing our students with outstanding academic skills. During this special year we could celebrate various academic highlights.

Prof. Doug Rawlings was the honorary speaker at the 19th International Symposium on Biohydrometallurgy in China.

Prof. Leon Dicks wrote seven chapters of the book *The Lactic Acid Bacteria* by Blackwell Publishing, a chapter of the book *Prokaryotic Antimicrobial Peptides*, published by Springer (New York) and a chapter of *Game Meat Hygiene in Focus*, published by Wageningen Academic Publishers. Ten of his research papers have also been published in ISI-rated journals. He presented seven papers at the 10th Lactic Acid Bacteria Conference (the Netherlands) and was an invited guest speaker at the International Union of Microbiological Societies (IUMS) conference in Japan. Dr Kaloyan Petrov from the University of Sofia, Bulgaria, spent his postdoctoral year in the SU Department of Microbiology under the watchful eye of Prof. Leon Dicks.

Prof. Kikuji Itoh of the University of Tokyo, Prof. Kenji Sonomoto of Kyushu University and Prof. Sanae Okada of Tokyo University of Agriculture (Japan), visited Prof. Leon Dicks as part of a research collaboration project between the Japanese Science and Technology Agency (JST) and the National Research Foundation (NRF).

## Research outputs

Articles in accredited journals	28
Books, conference proceedings, chapters in books	4
Patents & Technological developments	6
MSc students graduated in 2011	3

## 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 distinguished by its high number of post-graduate students, 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 board of the *International Biodeterioration and Biodegradation*, *Transactions of the Royal Society of South Africa* and *Mobile Genetic Elements*.

Prof. Leon Dicks was elected as a member of the Academy of Science of South Africa (ASSAf). He also serves on the editorial boards of six research journals: the *International Journal of Food Science*; the *Journal of Applied Microbiology*; *Letters in Applied Microbiology*; *Probiotics and Antimicrobial Proteins*; *Beneficial Microbes*; *Bioscience of Microbiota, Food and Health*, and is editor in chief of the *South African Journal of Enology and Viticulture*.

Prof. Karin Jacobs serves as the vice-president of the African Mycological Association and is a member of the editorial board of *Mycology*.

Prof. Emile van Zyl participated as biofuels expert in an African Union Workshop (Ethiopia) towards developing a Sustainable Bioenergy Policy Framework for Africa.

50  
YEARS

The **Department of Microbiology** celebrated its 50th anniversary at Stellenbosch University.

Die Departement Mikrobiologie het **sy 50ste bestaansjaar** aan die Universiteit Stellenbosch gevier.

### Navorsingsuitsette:

Artikels in geakkrediteerde tydskrifte	28
Boeke, konferensieverrigtinge, hoofstukke in boeke	4
Patente & Tegnologiese ontwikkelinge	6
MSc-studente gradueer in 2011	3

### Navorsingshoogtepunte

Ons is dankbaar dat die Departement Mikrobiologie gedurende 2011 sy 50ste bestaansjaar aan die Universiteit Stellenbosch kon vier. Ons streef steeds daarna om navorsing van uitstaande gehalte te genereer en om uitstekende akademiese vaardighede aan ons studente oor te dra. Gedurende hierdie spesiale jaar het ons verskeie akademiese hoogtepunte beleef.

Prof. Doug Rawlings was die erespreeker by die 19de Internasionale Simposium oor Biohidrometallurgie in China.

Prof. Leon Dicks het sewe hoofstukke geskryf van die boek *The Lactic Acid Bacteria*, wat deur Blackwell Publishing gepubliseer is. Daarby het hy een hoofstuk geskryf van *Prokaryotic Antimicrobial Peptides*, wat deur Springer (New York) uitgegee is, en een hoofstuk in *Game Meat Hygiene in Focus*, uitgegee deur Wagenin Academic Publishers. Tien van sy navorsingsartikels is ook in ISI-geakkrediteerde joernale gepubliseer. Hy het sewe aanbiedings by die 10de Konferensie oor Melksuurbakterieë (Nederland) gedoen en is as gasspreker genooi na die konferensie van die Internasionale Unie vir Mikrobiologiese Verenigings (Japan).

Dr. Kaloyan Petrov van die Universiteit van Sofia (Bulgarye) het sy nadoktorale jaar in die Departement Mikrobiologie spandeer onder die wakende oog van prof. Leon Dicks.

Prof. Kikuji Itoh van die Universiteit van Tokio, prof. Kenji Sonomoto van Kyushu Universiteit en prof. Sanae Okada van die Tokio Universiteit van Agriwetenskappe (Japan), het as deel van die Japannese Agentskap vir Wetenskap en Tegnologie (JST) en die Nasionale Navorsingstigting (NNS) se samewerkingsooreenkoms by prof. Leon Dicks besoek afgelê.

### Navorsingsbelange

Bioprosessering van landbouprodukte; bioprospektering van onder andere hidrolitiese ensieme vir die afbraak van plantpolisakkariede; genetiese manipulasie van giste vir omskakeling van plantmateriaal na bio-etanol en produksie van ensieme/farmaseutiese proteïene teen mens-virusse in giste en fungi; mikrobiologie van bio-ontginning van ertse; taksonomie van melksuurbakterieë; karakterisering van antimikrobiese peptiede (o.a. bakteriosiene) geproduseer deur melksuurbakterieë en hul industriële toepassing; ontwikkeling van probiotiese melksuurbakterieë vir mense en diere; taksonomie van askomisete; fungusgemeenskappe van fynbosgrond; biologie van grondfungi, spesifiek *Penicillium* en *Mucor*; die interaksies van giste met hulle biologiese, chemiese en fisiese omgewings; antibiotika-weerstandbiedendheid van waterpatogene; monitering en optimering van huishoudelike reënwaterenteke.

### Akademiese sake

Personeel van die Departement Mikrobiologie beskou voorgraadse klasgee as 'n baie belangrike komponent van hulle werk. Sonder uitsondering het elkeen van hulle besonderse goeie terugvoer van 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 aantal akademiese personelede.

### Diens aan die wetenskaplike gemeenskap

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

Prof. Leon Dicks is verkies tot lid van die Akademie van Wetenskap van Suid-Afrika (ASSAf). Hy dien ook op die redaksies van ses navorsingsjoernale: die *International Journal of Food Science*; die *Journal of Applied Microbiology*; *Letters in Applied Microbiology*; *Probiotics and Antimicrobial Proteins*; *Beneficial Microbes*; *Bioscience of Microbiota, Food and Health*, en hy is hoofredakteur van die *South African Journal of Enology and Viticulture*.

Prof. Karin Jacobs dien as vise-president van die Afrika Mikologie Vereniging en is 'n redaksielid van *Mycology*.

Prof. Emile van Zyl het as bio-brandstofkenner deelgeneem aan 'n Afrika Unie Werkswinkel in Ethiopië, wat ten doel gehad het om 'n beleidsraamwerk vir Afrika te ontwikkel met betrekking tot volhoubare bio-energie.

Biomining expert Prof. Doug Rawlings received the **Havenga Prize for Life Sciences** from the South African Academy of Science and Art and the gold medal from the South African Society for Microbiology.



Biomynboukundige **prof. Doug Rawlings** het die Havenga-prys vir Lewenswetenskappe ontvang van die Suid-Afrikaanse Akademie vir Wetenskap en Kuns, asook die goue medalje van die Suid-Afrikaanse Vereniging vir Mikrobiologie.

Dr Heinrich Volschenk is a council member of the South African Society for Microbiology (SASM) and played a prominent role in the huge success of the SASM Congress which was held in Cape Town.

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

### Awards to staff and students

Prof. Emile van Zyl was runner-up for the 2011 Energy Award from the South African National Energy Association (SANEA). Prof. van Zyl was subsequently invited to deliver a SANEA address in Cape Town, entitled: "Sustainable Biofuel Production in Southern Africa: Opportunities & Challenges".

Mr Cobus Visagie received the John and Petakin Mildenhall award for outstanding young researchers in the field of Plant Pathology at the Southern African Society for Plant Pathology (SASPP) Congress.

Ms Kathryn Wirth was awarded as the best undergraduate student in Microbiology by the South African Society for Microbiology (SASM).

Prof. Doug Rawlings received the Havenga Prize for Life Sciences from the South African Academy of Science and Culture and the gold medal from the South African Society for Microbiology (SASM) for his lifelong contribution to Microbiology.

### Staff matters

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

### Community interaction

A gala dinner was held on 5 November 2011 at the Stellenbosch Institute for Advanced Studies (STIAS) to celebrate the 50th anniversary of the establishment of the department of Microbiology. This function was attended by approximately 150 current members and postgraduate alumni of the department. Prof. Andreas van Wyk, former SU rector, Prof. Fritz Hahne, the former dean of the Faculty of Science and Prof. Eugene Cloete, our current dean, were special guests at this celebration.

Three short speeches were given in person and one was read out on behalf of all four of the previous departmental chairpersons, as well as on behalf of the current chairperson. The evening provided a wonderful networking opportunity for alumni and staff members.

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

The Department of Microbiology took part in the annual Stellenbosch University Open Day, as well as in the Maties Science Winter Week. Practical training sessions in molecular biology techniques were also held for learners from local schools.

Postgraduate students and staff members assisted high school learners who participated in the Eskom Expo for Young Scientists, with technical guidance.

Members of the Department of Microbiology continued to donate monthly supplies to Cotlands Somerset West.



The title of microbiologist Prof. Alf Botha's **inaugural lecture** was "The intimate relationship between man and yeast: It's complicated..."

Mikrobioloog **prof. Alf Botha** het in sy intreedende gefokus op die gekompliseerde verhouding tussen die mens en giste.

Dr. Heinrich Volschenk is steeds 'n raadslid van die Suid-Afrikaanse Vereniging vir Mikrobiologie (SAVM) en hy het 'n groot bydrae gelewer tot die sukses van die SAVM-kongres wat in Kaapstad gehou is.

Prof. Alf Botha dien op die Nasionale Navorsingsstigting (NNS) se evalueeringspaneel van wetenskaplikes in die veld van mikrobiologie en plantpatologie.

### Toekennings aan personeel en studente

Prof. Emile van Zyl was die naaswenner van die Suid-Afrikaanse Nasionale Energie Vereniging (SANEA) se 2011 Energie-toekenning. Prof. Van Zyl is gevolglik genooi om 'n SANEA-rede in Kaapstad te lewer, getiteld: "Sustainable Biofuel Production in Southern Africa: Opportunities & Challenges".

Mnr. Cobus Visagie was die ontvanger van die John en Petakin Mildenhall-toekenning vir uitstaande jong navorsers in die veld van plantpatologie. Hy het die toekenning by die kongres van die Suid-Afrikaanse Vereniging vir Plantpatologie (SAVP) ontvang.

Me. Kathryn Wirth is deur die Suid-Afrikaanse Vereniging vir Mikrobiologie aangewys as die beste voorgraadse student in mikrobiologie.

Prof. Doug Rawlings het die Havenga-prys vir Lewenswetenskappe ontvang van die Suid-Afrikaanse Akademie vir Wetenskap en Kuns, asook die goue medalje van die Suid-Afrikaanse Vereniging vir Mikrobiologie vir sy lewenslange bydrae tot mikrobiologie.

### Personeelsake

Prof. Daan Toerien is as buitengewone professor aangestel wat ook sal dien op die raad van die Universiteit Stellenbosch Waterinstituut.

### Gemeenskapsinteraksie

A galadinee is op 5 November 2011 by die Stellenbosse Instituut vir Gevorderde Navorsing (STIAS) gehou om die 50ste bestaansjaar van die Departement Mikrobiologie te vier. Hierdie funksie is deur ongeveer 150 nagraadse alumni en huidige lede van die departement bygewoon. Prof. Andreas van Wyk, voormalige rektor aan die US, prof. Fritz Hahne, die voormalige dekaan van die Fakulteit Natuurwetenskappe, en ons huidige dekaan prof. Eugene Cloete was onder die eregaste by hierdie geleentheid.

Drie kort toesprake is gelewer. Een is voorgelees namens al vier vorige departementele voorsitters, asook die huidige voorsitter. Hierdie aand was 'n goeie netwerkgeleentheid vir oudstudente en personeellede.

Akademie personeel neem gereeld aan openbare lesings en radio- en televisieonderhoude deel, en skryf artikels vir koerante

en populêre tydskrifte om die nuutste ontwikkelinge in die veld van mikrobiologie uit te lig.

Die Departement Mikrobiologie was betrokke by die jaarlikse Universiteit Stellenbosch Opedag, asook by die Maties Natuurwetenskappe Winterweek. Praktiese opleidingsessies in molekulêre biologie-tegnieke is ook vir leerders van plaaslike skole aangebied.

Nagraadse studente en personeellede het ook hoërskoolleerders bygestaan wat aan die Eskom Ekspo vir Jong Wetenskaplikes deelgeneem het.

Lede van die Departement Mikrobiologie maak steeds maandelikse skenkings vir voorrade aan Cotlands Somerset-Wes.

Lactic acid bacteria expert Prof. Leon Dicks was elected as a **member** of the **Academy of Science of South Africa** (ASSAf)

Melksuurbakterie-kenner **prof. Leon Dicks** is verkies tot lid van die Akademie van Wetenskap van Suid-Afrika (ASSAf).



## ► 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)  
Polytechnic of Namibia (PON)  
Rhodes University  
University of the Western Cape (UWC)  
Water Research Commission (WRC)

**INTERNATIONAL****Chile**

Andrés Bello University

**Germany**

Karlsruhe Institute of Technology (KIT)

**Finland**

University of Turku

**France**

Muséum National d'Histoire Naturelle

**Italy**

Padova University  
University of Verona

**Japan**

Kyushu University  
Tokyo University of Agriculture  
The University of Tokyo

**Netherland**

Centraal Bureau voor Schimmelcultures (CBS)

**Sweden**

Umeå University

**United States of America**

Dartmouth College  
Rutgers The State University of New Jersey

**Wales**

Bangor University

## ► Funding

Cipla Medpro  
Department of Science and Technology (DST)  
Mascoma Corporation  
National Research Foundation (NRF)  
Polytechnic of Namibia (PON)  
RAPS GmbH & Co  
Sloan Trust  
South African National Energy Research Institute (SANERI)  
Technology and Human Resources for Industry Programme (THRIP)  
Technology Innovation Agency (TIA)  
Water Research Commission (WRC)



Mr Cobus Visagie received the **John and Petakin Mildenhall Award** at the Southern African Society for Plant Pathology Congress.

**Mnr. Cobus Visagie** het die John en Petakin Mildenhall-toekenning by die kongres van die Suid-Afrikaanse Vereniging vir Plantpatologie ontvang.

## ► Samewerking

### **SUID-AFRIKA**

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

### **INTERNASIONAAL**

#### **Chili**

Andrés Bello Universiteit

#### **Duitsland**

Karlsruhe Instituut van Tegnologie (KIT)

#### **Frankryk**

Muséum National d'Histoire Naturelle

#### **Italië**

Padova Universiteit  
Universiteit van Verona

#### **Japan**

Kyushu Universiteit  
Tokio Universiteit van Landbou  
Universiteit van Tokio

#### **Nederland**

Centraal Bureau voor Schimmelcultures (CBS)

#### **Swede**

Umeå Universiteit

#### **Verenigde State van Amerika**

Dartmouth Kollege  
Rutgers, die Staatsuniversiteit van New Jersey

#### **Wallis**

Bangor Universiteit

## ► Befondsing

Agentskap vir Tegnologiese Innovasie  
Cipla Medpro  
Departement van Wetenskap en Tegnologie (DWT)  
Mascoma Corporation  
Nasionale Navorsingstigting (NNS)  
Polytechnic van Namibië (PON)  
Program vir Tegnologie en Menslike Hulpbronne vir die Nywerheid (THRIP)  
RAPS GmbH & Co  
Sloan Trust  
Suid-Afrikaanse Nasionale Instituut vir Energieneavorsing (SANERI)  
Waternavorsingskommissie (WVK)

Me Kathryn Wirth was named as the **best undergraduate student** in Microbiology by the South African Society for Microbiology.

**Me Kathryn Wirth** is deur die Suid-Afrikaanse Vereniging vir Mikrobiologie aangewys as die beste voorgraadse student in mikrobiologie.





Kollig op **nadoktorale genote**. Die insette van ons nadoktorale genote is van onskatbare waarde en versterk ons navorsingswerk. Hulle bring 'n kosmopolitiese benadering na ons navorsingspanne wat help om ons studente aan internasionale navorsingstendense bloot te stel. Oor die afgelope drie jaar het die Fakulteit Natuurwetenskappe ongeveer 70 nadoktorale genote gehuisves en ons sal graag hierdie getalle oor die volgende paar jaar wil uitbrei. Ons het in 2011, 80 nadoktorale navorsers in die Fakulteit gehad waarvan 23 Suid-Afrikaners was, 11 uit die res van Afrika afkomstig was en 48 genote uit die res van die wêreld.

Focus on **postdoctoral fellows**. The efforts of our postdoctoral fellows are invaluable in strengthening our research endeavours. In many cases they add a cosmopolitan flavour to our research teams and help to expose our local students to international trends in research. Over the past three years the Faculty of Science has been home to an average of 70 postdoctoral fellows and we would like to extend this figure even further in the next few years. In 2011, 23 of our 80 postdoctoral researchers were from South Africa, 11 from the rest of Africa and 48 fellows from the rest of the world.

# Departement **Plant- en Dierkunde** Department of **Botany and Zoology**

## ► 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 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 – 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 Sophie Reinecke  
*stress ecology*
- C – Dr Alexander Valentine  
*molecular physiology of host-microbe interactions of legumes in phosphorus deficient soils*
- C – Prof 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 invertebrata*
- Y – Dr Susana Clusella-Trullas  
*thermal adaptation of ectotherms and implications for climate change*
- Y – Dr Sophie Von der Heyden  
*marine molecular ecology and conservation*
- Y – Dr Allan Ellis  
*evolutionary ecology of plants and insects*
- Y – Dr Anton Pauw  
*evolutionary ecology of plants and their pollinators*
- Y – Dr Victor Rambau  
*cytogenetics, phylogeography*
- Y – Dr Carol Simon  
*marine invertebrate reproduction and polychaete worm taxonomy*
- Y – Dr Nokwanda Makunga  
*medicinal plant biotechnology*
- P – Dr Cang Hui  
*ecological modelling and mathematical ecology*

## ► Personeel | **Staff**

### ► Doserend | **Academic**

- Prof CA Matthee (*uitvoerende hoof / executive head*)
- 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 TR 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 / director*)
- Dr S Clusella-Trullas
- Dr C Hui
- Dr JJ Le Roux
- Prof DM Richardson

## ► Buitengewone professore | **Extraordinary professors**

- Prof S Barrett
- Prof AM Bauer
- Prof KJ Gaston
- Prof MA McGeogh
- Prof L Mumba

## ► Ondersteuningspersoneel | **Support staff**

- L Willems (*eerste sekretaresse / first secretary*)
- JL Basson
- A Fransman
- F Gordon
- RM Honing
- S Johnson
- DJD Julies
- A Kleinert
- R Robertson
- MP Sauerman
- M Siebritz
- JN Smith
- N Solomons
- RC Thompson
- JP Williams
- H Witbooi

## ► **Centre of Excellence for Invasion Biology**

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



## 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 highlights

Academics associated with the Department of Botany and Zoology succeeded to increase the number of papers published in ISI accredited journals with 13% compared to the figures for 2010. The department and associated staff take pride in the fact that more than 30% of these research contributions were published in the top 20% of field specific ISI journals. Members of the Department of Botany and Zoology received more than 10 million Rand in the form of research funding.

Three academic staff members received ratings from the National Research Foundation (NRF) for the first time. They are Dr Allan Ellis, Dr Susana Clusella-Trullas and Dr Sophie von der Heyden. Prof. Sophié Reinecke retained her rating as C1. Eighty five percent of the academic staff now have NRF ratings (A = 3; B = 1; C = 8; P = 1; Y = 9).

As a result of the active research programmes of the department and the CIB, 33 new students registered for postgraduate degrees in Botany or Zoology (14 honours; 16 MSc and three PhD). We also attracted many prominent national and international visitors and provided an academic home to 17 postdoctoral fellows from six nationalities.

Through these active collaborations we hosted visits from Dr Adam West, Dr Tali Hoffman, Dr Jasper Slingsby, Prof. Michael Cramer, Prof. Nicola Illing and Prof. Peter Ryan from the University of Cape Town, Prof. Mark Gibbons from the University of the Western Cape, Prof. Valerie Corfield from the Tygerberg campus of Stellenbosch University (SU) and Dr Andrew Knight from Conservation Ecology at SU. Further afield we hosted Dr Steve Goodman from the Field Museum of Natural History (USA), Dr Claire Spottiswoode from Cambridge University (UK), Dr Erika Maass from the University of Namibia (Namibia), Dr Marcos Perez-

## Research outputs

Articles in accredited journals	157
Editorial activities (books and journals)	43
Books, conference proceedings, chapters in books	21
Book Reviews, articles in specialist journals	5
MSc students graduated in 2011	8
PhD students graduated in 2011	9

Losada of the University of Porto (Portugal), Dr Tamara Heartsill from the International Institute of Tropical Forestry (Puerto Rico), Dr Sergio Floeter from Universidade Federal de Santa Catarina (Brazil), Prof. Jane Molofsky from University of Vermont (USA), Prof. Bethany Bradley from the University of Massachusetts (USA), Prof. David Ackerly and Prof. Todd Dawson from the University of California (Berkeley) (USA), Prof. Andrea Cocucci and Dr Alicia Sersic from the University of Cordoba (Argentina) and Prof. Neil Cumberlidge from Northern Michigan State University (USA).

Academic staff of the department and the CIB attended and presented research at several national and international conferences. International contributions include Dr Victor Rambau who attended the 6th European Congress on Mammalogy (France), Prof. Dave Richardson and Dr Jaco le Roux who attended the 11th International Conference on the Ecology and Management of Alien Plant Invasions (Hungary), Prof. Dave Richardson who attended the annual conference of the Ecological Society of America (Texas) and the conference on Ecological Novelty (Switzerland), Prof. Conrad Matthee who attended the 7th International Conference of Ticks and Tick-borne Pathogens (Spain) and the Deutsche Forschungsgemeinschaft (DFG) meeting (Namibia), Prof. Bettine Jansen van Vuuren and Prof. Steven Chown who attended the 3rd International sub-Antarctic forum meeting (Tasmania) and Prof. Terry Robinson who attended the 18th International Chromosome Conference at the University of Manchester (UK). Dr Sophie von der Heyden travelled to Scotland to attend the World Congress of Marine Biodiversity, while Dr Cang Hui went to China to attend the World Congress of the International Association for Landscape Ecology (IALE). Dr Sophie von der Heyden and Dr Carol Simon attended the 14th South African Marine Science Symposium and the 46th Estuarine and Coastal Sciences Association International Conference at Rhodes

Invasion biologist Prof. Dave Richardson received the prestigious **John FW Herschel Medal** of the Royal Society of South Africa.



Indringerbioloog **prof. Dave Richardson** is die ontvanger van die John FW Herschel-medalje van die Royal Society van Suid-Afrika.

## Navorsingsuitsette:

Artikels in geakkrediteerde tydskrifte	157
Redaksionele aktiwiteite (boeke en joernale)	43
Boeke, konferensieverrigtinge, hoofstukke in boeke	21
Boekresensies, artikels in spesialis tydskrifte	5
MSc-studente gegradueer in 2011	8
PhD-studente gegradueer in 2011	9

## Navorsingshoogtepunte

Akademici van die Departement Plant- en Dierkunde het weereens daarin geslaag om die aantal artikels wat in ISI-geakkrediteerde joernale gepubliseer is te verhoog. Dit het met 13% gestyg vergeleke met 2010. Die Departement en navorsingsgenote is trots daarop dat meer as 30% van die navorsingsbydraes gepubliseer is in die top 20% van vakspesifieke ISI-joernale. Personeel van die departement Plant- en Dierkunde het meer as 10 miljoen rand in die vorm van navorsingsfondse ontvang.

Drie akademiese personelede het vanjaar vir die eerste keer akkreditasie van die Nasionale Navorsingstigting (NNS) ontvang, naamlik dr. Allan Ellis, dr. Susana Clusella-Trullas en dr. Sophie von der Heyden. Prof. Sophié Reinecke het haar CI-evaluering behou. Vyf-en-tagtig persent van die akademiese personeel is nou by die NNS geakkrediteer (A=3; B=1, C=8; P=1; Y=9).

As gevolg van die aktiewe navorsingsprogram van die departement en die SIB het 33 nuwe nagraadse studente geregistreer vir grade in Plant- en Dierkunde (14 honneurs, 16 MSc en 3 PhD). Ons het ook heelwat hoogaangeskrewe nasionale en internasionale besoekers gelok en is ook die akademiese tuiste vir 17 nadoktorale genote van ses nasionaliteite.

As gevolg van aktiewe interaksie en samewerking, is vele besoekende wetenskaplikes na die departement gelok. Hulle was onder meer dr. Adam West, dr. Tali Hoffman en dr. Jasper Slingsby, asook prof. Michael Cramer, prof. Nicola Illing en prof. Peter Ryan van die Universiteit van Kaapstad, prof. Mark Gibbons van die Universiteit van Wes-Kaapland, prof. Valerie Corfield van die Tygerberg-kampus van die Universiteit Stellenbosch (US) en dr. Andrew Knight van Bewaringsekologie aan die US. Internasionale gaste wat ons besoek het sluit in dr. Steve Goodman van die Field Museum of Natural History (VSA), dr. Claire Spottiswoode van

## Navorsingsbelange

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

Cambridge Universiteit (VK), dr. Erika Mass van die Universiteit van Namibië (Namibië), dr. Marcos Perez-Losado van die Universiteit van Porto (Portugal), dr. Tamara Heartsill van die Internasionale Instituut vir Tropiese Bosbou (Puerto Rico), dr. Sergio Floeter van Universidade Federal de Santa Catarina (Brasilië), prof. Jane Molofsky van die Universiteit van Vermont (VSA), prof. Bethany Bradley van die Universiteit van Massachusetts (VSA), prof. David Ackerly en prof. Todd Dawson van die Universiteit van Kalifornië (Berkeley) (VSA), prof. Andrea Cocucci en dr. Alicia Sersic van die Universiteit van Cordoba (Argentinië) en prof. Neil Cumberlidge van die Noord-Michigan Staatsuniversiteit (VSA).

Akademiese personeel van die departement en die Sentrum vir Indringerbiologie (SIB) het verskeie nasionale en internasionale kongresse bygewoon. Dr. Victor Rambau het die 6de Europese Kongres vir Soogdierkunde (Frankryk) bygewoon, prof. Dave Richardson en dr. Jaco le Roux het die 11de Internasionale Konferensie vir Ekologie en die Bestuur van Indringerplante (Hongarye) bygewoon en prof. Dave Richardson het die jaarlikse konferensie van die Ekologiese Vereniging (Texas) asook die "Ecological Novelty"-kongres (Switserland) bygewoon. Prof. Conrad Matthee was by die 7de Internasionale Konferensie oor Bosluis en Bosluisdraende Patogene (Spanje) en by die Deutsche Forschungsgemeinschaft-vergadering (DFG) in Namibië. Prof. Bettine Jansen van Vuuren en prof. Steven Chown het die 3de Internasionale sub-Antarktiese Forum se vergadering (Tasmanië) besoek en prof. Terry Robinson het die 18de Internasionale Chromosoom Konferensie (VK) bygewoon. Dr. Sophie von der Heyden het na Skotland gereis om die Wêreld Mariene Biodiversiteitskongres by te woon terwyl dr. Cang Hui op sy beurt na China is om die Wêreldkongres van die Internasionale Vereniging vir Landskapekologie by te woon. Dr. Sophie von der Heyden en dr. Carol Simon het die 14de Suid-Afrikaanse Mariene



Dr. Nokwanda Makunga received the **TW Kambule Award** from the National Science and Technology Forum (NSTF).

**Dr. Nowkanda Makunga** het die TW Kambule-toekenning van die Nasionale Wetenskap- en Tegnologieforum (NSTF) ontvang.

University (SA), Dr Alex Valentine visited the Noble Foundation in the USA, and Dr Jaco le Roux visited the L'Institut de recherche pour le développement in France.

The A-rated scientist, Prof. Terry Robinson, received acclaim for his contribution in compiling the most comprehensive family tree for mammals as yet, as published in the leading academic journal, *Science*.

The Department of Botany and Zoology, together with the SU Department of Conservation Ecology and Entomology, co-hosted the joint conference of the Zoological Society of Southern Africa (ZSSA), and the Parasitological Society of Southern Africa (PARSA). Several of our staff and postgraduate students presented talks at the event, which took place in Stellenbosch. The conference included presentations by 11 invited speakers dealing with topics ranging from why babesiosis is so virulent, to physiological approaches to predicting climate change impacts in small endotherms. Four keynote addresses were delivered. This included the presentation by the recipient of the ZSSA gold medal, Prof. Sue Nicolson, who presented a talk entitled "Food from flowers: the birds and the bees". The conference organisers were also honoured to welcome Prof. Bruce Patterson, MacArthur Curator of Mammals at the Field Museum of Natural History (USA), Prof. Adam Wilkens, a Life Member of Clare Hall, University of Cambridge (UK) and Prof. Felicia Keesing, an associate professor of Biology from Bard College (USA), as keynote speakers to the conference.

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 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 was provided by Prof. Niel le Roux, Dr Juri van den Heever, Dr Marnel Mouton, Dr Sjirk Geerts and Dr Kenneth Oberlander; Mr Marinus de Jager, Mr Hannibal Musarurwa, Mr Christoff Truter, Mr Edward Archer, Mr Bernard Coetzee, Ms Janine Colling and Ms Natasha Mothapo.

During 2011 the Biodiversity and Ecology programme was revised and the newly designed, approved programme will be instituted during 2012 and 2013. In 2012 this new programme increased the number of undergraduate modules on offer from eighteen to twenty, and two new modules will be introduced during 2013. The changed programme will allow undergraduate students more exposure to the field of biodiversity and ecology. The content of the undergraduate programme is specifically designed to provide a

solid platform for postgraduate studies in Botany and Zoology with emphasis on Biodiversity, Evolution and Ecology. The new second year modules for 2012 include Statistics and Scientific Methods, Principles of Ecology, Diversity and Function of Invertebrates, Principles of Evolution, Vertebrate Life and Diversity of Plant Form and Function.

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 11 dedicated senior postgraduate students in the form of formal tutorial classes. The same tutors are also available for regular consultations with each of the students. This programme, co-ordinated by Prof. Theresa Wossler, proves to be very successful. Despite the larger class sizes, the pass rate of first year students in most courses, increased significantly since the introduction of this programme.

Thirty-one postgraduate students successfully completed their degrees in the department (14 Honours, eight MSc and nine PhD). At present there are 44 Masters and 31 PhD students registered in the Department. Fifteen MSc and three PhD students successfully presented project proposals during 2011. These proposals were evaluated and approved by the academic committees of the department.

### Service to the scientific community

Several staff members acted as external examiners for courses, or served on advisory panels to various conservation and government bodies.

The staff members of the Department of Botany and Zoology who acted as external examiners (with the universities in brackets) included: Dr Allan Ellis (University of Cape Town), Dr Nokwanda Makunga (University of the Free State, University of Kwazulu-Natal and the University of the Western Cape), Prof. Le Fras Mouton (University of the Free State), Prof. Theresa Wossler (Rhodes University and the University of Cape Town), Prof. Hannes van Wyk (University of the Western Cape, University of Cape Town and the University of Johannesburg), and Dr Alex Flemming (University of Cape Town).

Prof. Michael Cherry served as a panel member of the National Research Foundation (NRF) for the allocation of grants in Zoology and Ecology and he served as a trustee for the Kalahari Research Trust. Dr Allan Ellis served on the scientific committee for the 32nd Congress of the International Organisation for Succulent Plant Study. Dr Carol Simon acted as a consultant for an abalone farm, served as representative on the international Polychaete Association and she served on the Council of the Zoological Society of Southern Africa (ZSSA).

Dr Nokwanda Makunga was elected as president of the South African Association of Botanists (SAAB), she delivered motivational

Zoologist Prof. Savel Daniels received the **Oppenheimer and Fulbright Scholarships** to do research at Harvard University.



Dierkundige **prof. Savel Daniels** het Oppenheimer- en Fulbrightbeurse ontvang om aan Harvard Universiteit navorsing te doen.

Wetenskapsimposium en die 46ste Internasionale Konferensie van die Vereniging vir Riviermondings- en Kuswetenskappe by Rhodes Universiteit (SA) bygewoon. Dr. Alex Valentine het die Noble Foundation (VSA) besoek en dr. Jaco le Roux die L'Institut de recherche pour le développement (Frankryk).

Die A-gegradeerde navorser, prof. Terry Robinson, het lof ontvang vir sy bydrae met die opstel van die mees omvattende familie-stamboom vir soogdiere tot op hede, soos gepubliseer in die akademiese vaktydskrif, *Science*.

Die Departement Plant- en Dierkunde, tesame met die US Departement Bewarings-entomologie en Entomologie het die gesamentlike kongres van die Dierkundige Vereniging van Suider-Afrika (DVSA) en die Parasitologiese Vereniging van Suider-Afrika (PARSA) aangebied. Hierdie geleentheid is by die Universiteit Stellenbosch aangebied en verskeie van ons personeel en nagraadse studente het voordragte gelewer. Die kongres het voordragte van die 11 genooide gassprekers ingesluit wat gehandel het oor onderwerpe wat gewissel het van die hewige impak van babesiose, tot die fisiologiese benaderings in die voorspelling van die impak van klimaatsverandering in klein warmbloediges. Vier hoofvoordragte is gelewer. Dit het 'n voordrag deur prof. Sue Nicholson, die ontvanger van die DVSA goue medalje, ingesluit en was getiteld "Voedsel vanaf blomme: die voëls en die bye". Die kongresorganiseerders was ook bevoorreg om prof. Bruce Patterson, MacArthur Kurator van Soogdiere by die Field Museum van Natuurgeskiedenis (VSA), prof. Adam Wilkens, lewenslange Lid van Clare Hall, Cambridge Universiteit (VK) en prof. Felicia Keesing, medeprofessor in Biologie aan Bard Kollege (VSA), as gassprekers te verwelkom.

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 sake

Op voorgraadse vlak is die Departement van Plant- en Dierkunde verantwoordelik vir die onderrig van 18 modules in 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 prof. Niel le Roux, dr. Juri van den Heever, dr. Marnel Mouton, dr. Sijrk Geerts, dr. Kenneth Oberlander, mnr. Marinus de Jager, mnr. Hannibal Musarurwa, mnr. Christoff Truter, mnr. Edward Archer, mnr. Bernard Coetzee en me Janine Colling en me Natasha Mothapo.

Gedurende 2011 is die Biodiversiteits- en Ekologieprogram hersien en die goedgekeurde nuutontwerpte program sal gedurende 2012 en 2013 in werking gestel word. In 2012 het die nuwe program die aantal voorgraadse modules wat aangebied word van 18 na

20 verhoog en twee nuwe modules sal ook gedurende 2013 geïmplementeer word. Die veranderde program sal voorgraadse studente meer blootstel aan die velde van biodiversiteit en ekologie. Die inhoud van die voorgraadse program is spesifiek daarop gemik om 'n stewige basis te lê by studente wat hulle sal toerus vir nagraadse studies in Plant- en Dierkunde, met die klem veral op Biodiversiteit, Evolusie en Ekologie. Die nuwe modules op tweedejaarsvlak vir 2012 sluit Statistiek en Wetenskaplike Praktijk, Beginsels van Ekologie, Diversiteit en die funksie van Invertebrate, Beginsels van Evolusie, Vertebratalewe en die Diversiteit van Plantvorm en -funksie in.

Die departement het sy program van interaktiewe tutoriale onderrig vir kleiner groepe eerstejaarstudente wat oor verskillende vaardigheidsvlakke beskik, voortgesit. Hierdie addisionele onderrig deur 11 toegewyde senior nagraadse studente, vind een maal per week plaas in die vorm van formele klasse. Dieselfde tutors is ook beskikbaar vir gereelde konsultasies met elk van die studente. Hierdie tutorprogram word gekoördineer deur prof. Theresa Wossler en blyk uiters suksesvol te wees. Ten spyte van groter klasgroottes het die eerstejaarslaagsyfer in die meeste van die kursusse toegeneem sedert die instelling hiervan.

Een-en-dertig nagraadse studente het hulle graadstudies suksesvol voltooi. Daarvan was 14 honneursstudente, ag MSc-studente en nege PhD-studente. Daar is tans 44 MSc-studente en 31 PhD-studente aan die Departement geregistreer. Vyftien meestersgraadstudente en drie doktorsale studente het hulle projekvoorstelle suksesvol voorgedra. Hierdie voordragte is deur die departement se akademiese komitees geëvalueer en goedgekeur.

### Diens aan die wetenskaplike gemeenskap

Verskeie personeellede het as eksterne eksaminatore vir kursusse opgetree, of het op raadgevende panele vir verskeie bewaringsorganisasies en regeringsinstansies gediens.

Die personeellede van die Departement Plant- en Dierkunde wat as eksterne eksaminatore opgetree het (met die universiteite in hakies), sluit in: dr. Allan Ellis (Universiteit van Kaapstad), dr. Nokwanda Makunga (Universiteit van die Vrystaat, Universiteit van Kwazulu-Natal, Universiteit van Wes-Kaapland), prof. Le Fras Mouton (Universiteit van die Vrystaat), prof. Theresa Wossler (Rhodes Universiteit en die Universiteit van Kaapstad), prof. Hannes van Wyk (Universiteit van Kaapstad, Universiteit van Johannesburg en Universiteit van Wes-Kaapland), dr. Alex Flemming (Universiteit van Kaapstad).

Prof. Michael Cherry het as 'n paneellid vir die Nasionale Navorsingstigting (NNS) opgetree in die toekenning van subsidies in Dierkunde en Ekologie en hy het as trustee van die Kalahari Navorsingstrust opgetree. Dr. Allan Ellis het op die Wetenskapskomitee vir die 32ste Kongres van die Internasionale Organisasie vir Vetplantstudies gediens. Dr. Carol Simon het as

# 30%

Percentage of **research contributions** by the Department that were published in the top **20%** of field specific ISI journals

- Persentasie van **navorsingsbydraes** deur die Departement Plant- en Dierkunde wat in die top **20%** van vakspesifieke ISI-joernale verskyn het

talks for students and learners as part of the National Science and Technology Forum (NSTF) roadshows and also served on the scientific committee of the Medical Research Council's Research Day. Dr Alex Valentine was on the advisory board of the JS Marais Park, while Prof. Le Fras Mouton and Dr Juri van den Heever were frequently interviewed as part of the RSG Afrikaans radio programme "Hoe verklaar jy dit?" Prof. Terry Robinson served as an assessor at the NRF, was a board member of the International Cytogenetic and Genome Society and served as an executive board member of the World Lagomorph Society. Prof. Theresa Wossler was an active member of the Helderberg Advisory Committee.

Prof. Hannes van Wyk was a member of the Water Research Commission steering committee and of the Junior Captain Scott panel of the South African Academy for Science and Arts (Suid-Afrikaanse Akademie vir Wetenskap en Kuns), as well as a member of the Amphibian Expert Panel of the Organisation for Economic Co-operation and Development (OECD). Prof. Conrad Matthee was a member of the Riverine Rabbit working group steering committee of the Endangered Wildlife Trust. Dr Jaco le Roux was a member of the organising committee of EMAP110, while Dr Sophie von der Heyden organised the India-Brazil-South Africa (IBSA) workshop on Indian and Atlantic Ocean Reef Fish Ecology and Evolution (Stellenbosch). Dr Anton Pauw served as a trustee for the Wildflower Conservation Trust, Prof. Leanne Dreyer acted as a scientific consultant to the Dictionary of the Afrikaans Language (WAT), and Prof. Savel Daniels served on the National Research Foundation (NRF) postdoctoral panel.

Staff members of the department were also actively involved in editorial activities for several prestigious journals. These include: Prof. Michael Cherry (*Behaviour Processes, Folia Zoologica, Emu* and editor-in-chief for the *South African Journal of Science*), Dr Allan Ellis (associate editor of *Botanical Journal of the Linnaean Society*), Dr Nokwanda Makunga (associate editor of the *South African Journal of Botany*), Dr Alex Valentine (*Soil Biology and Biochemistry*), Prof. Le Fras Mouton (*African Zoology and African Journal of Herpetology*), Prof. Terry Robinson (*Chromosome Research, Cytogenetics and Genome Research and Heredity*), Prof. Theresa Wossler (*African Entomology*), Prof. Conrad Matthee (*Integrative and Comparative Biology, African Journal of Marine Science and Koedoe*), Dr Cang Hui (*Biological Invasions, Applied Mathematical and Computational Sciences, The Open Zoology Journal and The Scientific World Journal*), Dr Jaco le Roux (associate editor of *Biological Invasions*), and Dr Anton Pauw (subject editor for *South African Journal of Botany*).

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, the Global Biodiversity Information Facility, the Lagomorph Specialist Group, the 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 South African Academy for Science and Art, and the South Africa Reptile Conservation Assessment (SARCA).

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

### Awards to staff and students

Several of our academic staff were honoured for their work. Dr Bruce Anderson received an Oppenheimer Scholarship to do research in Japan and Prof. Savel Daniels received Oppenheimer and Fulbright Scholarships to do research at Harvard University.

Dr Nokwanda Makunga received the 2011 TW Kambule Award of the National Science and Technology Forum (NSTF) for being a distinguished young black female researcher over the last two to five years. Prof. Savel Daniels was also a nominee for this research award, but in the male category.

Invasion biologist Prof. Dave Richardson, received the prestigious John FW Hershel Medal from the Royal Society of South Africa.

Prof. Conrad Matthee received the award for the best presentation at the 7th International Conference of Ticks and Tick-borne Pathogens (Spain).

Our students, in collaboration with their supervisors, also performed very well at conferences and received awards for their outstanding work. Mr Bernard Coetzee (supervisor: Prof. Steven Chown) won the ZSSA conference organisers' award, while Ms Candice Lyons (supervisor: Prof. Steven Chown) won the award for the best student presenter at the same conference. Ms Nina du Toit (supervisors: Prof. Conrad Matthee, Prof. Sonja Matthee and Prof. Bettine Jansen van Vuuren) received the award for the best overall presentation at the Parasitological Society of Southern Africa (PARSA) conference. Mr Marinus de Jager (supervisor: Dr Allan Ellis) won the award for the best presentation by a PhD student at the conference of the South African Society for Systematic Biology (SASSB) and received the second prize for a

Dr Bruce Anderson did research in Japan thanks to an  
**Oppenheimer Scholarship.**

Plantkundige **dr. Bruce Anderson** het 'n Oppenheimerbeurs ontvang om in Japan navorsing te doen.



**Oppenheimer-  
beurs**

konsultant by 'n oesterplaas opgetree, sy was 'n verteenwoordiger by die Internasionale Vereniging vir Borselwurms en dien op die raad van die Dierkundige Vereniging van Suider-Afrika (DVSA).

Dr. Nokwanda Makunga was die verkose president van die Suid-Afrikaanse Vereniging van Botaniste (SAAB), sy het motiveringspraatjies vir skoliere en studente gehou as deel van die Nasionale Wetenskap- en Tegnologieforum se bekendstellingstoere en sy was 'n lid van die Mediese Navorsingsraad se navorsingskomitee. Dr. Alex Valentine het op die advieskomitee vir die Jan S. Marais Natuurtuin gedien, terwyl daar gereeld onderhoude gevoer is met prof. Le Fras Mouton en dr. Juri van den Heever as deel van die RSG radioprogram, "Hoe verklaar u dit?" Prof. Terry Robinson het as assessor vir die Nasionale Navorsingstigting (NNS) opgetree, hy was 'n raadslid vir die Internasionale Sitogenetika- en Genoomvereniging en hy was 'n lid van die uitvoerende komitee van die Wêreld Lagomorf Vereniging. Prof. Theresa Wossler was 'n aktiewe lid van die Helderberg Advieskomitee.

Prof. Hannes van Wyk het gedien op die bestuurskomitee van die Waternavorsingskommissie, asook op die paneel vir die Junior Kaptein Scott-medalje van die Suid-Afrikaanse Akademie vir Wetenskap en Kuns. Hy was ook 'n lid van die Amfibië-spesialisgroep van die Organisasie vir Ekonomiese Samewerking en Ontwikkeling (OECD). Prof. Conrad Matthee was 'n lid van die Trust vir Bedreigde Natuurlewe (EWT) se Oewerkonynstudiegroep se bestuurskomitee. Dr. Jaco le Roux was 'n lid van die organiseringskomitee van EMAP110, terwyl dr. Sophie von der Heyden die organiseerder was van die Indië-Brasilië-Suid-Afrika-Werkwinkel oor die ekologie en evolusie van vis wat op rotsbanke van die Indiese en Atlantiese Oseaan hou. (Stellenbosch). Dr. Anton Pauw het as trustee opgetree vir die Veldblombewaringstrust. Prof. Leanne Dreyer het as wetenskapskonsultant vir die Woordeboek van die Afrikaanse Taal (WAT) opgetree en prof. Savel Daniels het as lid van die Nasionale Navorsingstigting se nadoktorale keuringspaneel gedien.

Departementele personeel was ook op redaksionele vlak aktief betrokke by verskeie gesaghebbende vaktydskrifte. Hulle sluit in: prof. Michael Cherry (*Behavioural Processes, Folia Zoologica* en *Emu* en hoofredakteur van die *South African Journal of Science*), dr. Allan Ellis (mederedakteur van die *Botanical Journal of the Linnaen Society*), dr. Nokwanda Makunga (mederedakteur van die *South African Journal of Botany*), dr. Alex Valentine (*Soil Biology and Biochemistry*), prof. Le Fras Mouton (*African Zoology* en die *African Journal of Herpetology*), prof. Terry Robinson (*Chromosome Research, Cytogenetics and Genome Research and Heredity*), prof. Theresa Wossler (*African Entomology*), prof. Conrad Matthee (*Integrative and Comparative Biology, Koedoe* en die *African Journal of Marine Science*), dr. Cang Hui (*Biological Invasions, Applied Mathematical and Computational Sciences, The Open Zoology Journal* en *The Scientific World Journal*), dr. Jaco le Roux (mederedakteur van *Biological Invasions*), en dr. Anton Pauw (onderwerpredakteur vir *South African Journal of Botany*)

'n Hele aantal personeellede is deel van verskeie 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 Landbou Navorsingsraad (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 Biodiversiteitsfokusgroep, die Suid Afrikaanse Vereniging vir Sistematiese Biologie, die Inligtingsfasiliteit vir Globale Biodiversiteit, die Lagomorf Spesialisgroep, die Onderstepoort Veeartsenydiens Navorsingsinstituut, die Kalahari Navorsingstrust, die Oewerkonynstudiegroep se bestuurskomitee, die Waternavorsingsraad se bestuurskomitee, die Junior Kaptein Scott-paneel van die Suid-Afrikaanse Akademie vir Wetenskap en Kuns, die Suid-Afrikaanse Reptielbewaring Asseseringsprojek (SARCA) en die Suid-Afrikaanse Nasionale Biodiversiteitsinstituut (SANBI).

Sommige van die internasionale diensorganisasies waarby ons akademië betrokke is, is die Australiese Antarktiese Afdeling, die Nederlandse Organisasie voor Wetenschappelijke Onderzoek (NWO) Nederland, die *National Geographic* vereniging se komitee oor Navorsing en Eksplorasie (VSA), die Internasionale Unie vir Natuurbewaring (IUCN), die Amfibië-spesialisgroep van die Europese Unie se Organisasie vir Ekonomiese Samewerking en Ontwikkeling, die Verenigde Koninkryk se Nasionale Ongewingsnavorsingsraad en die Nederlandse Instituut vir Ekologiese Navorsing.

## Toekennings aan personeel en studente

Verskeie akademiese personeellede het eerbewyse vir hulle werk ontvang. Dr. Bruce Anderson het 'n Oppenheimerbeurs ontvang om in Japan navorsing te gaan doen en prof. Savel Daniel het 'n Oppenheimerbeurs, sowel as 'n Fulbrightbeurs ontvang wat hom in staat stel om aan Harvard Universiteit navorsing te gaan doen

Dr. Nokwanda Makunga was die ontvanger van die TW Kambule-toekenning, as uitsonderlike jong, swart, vroulike navorser oor die afgelope twee tot vyf jaar by die 2011 toekenningsgeleentheid van die Nasionale Wetenskap- en Tegnologieforum (NSTF). Prof. Savel Daniels was ook genomineer vir hierdie toekenning, maar in die kategorie vir manlike navorsers

Indringerbioloog prof. Dave Richardson het die gesogte John FW Herschel Medalje van die Koninklike Vereniging van Suid-Afrika ontvang.

Prof. Conrad Matthee het die toekenning vir die beste aanbieding by die sewende Internasionale kongres oor bosluise en bosluisdraende patogene (Spanje) ontvang.

The undergraduate **Biodiversity and Ecology programme**

was revised and redesigned in 2011.

# revised

Die voorgraadse **Biodiversiteits- en Ekologieprogram** is in 2011 hersien en herontwerp.

student presentation at the Arid Zone Ecology Forum. Ms Minette Karsten (supervisor Prof. Bettine Jansen van Vuuren) was the runner-up in the MSc students' talk session at the SASSB, while Ms Aldi Pieterse (supervisor: Dr Sue Jackson) won the award for the best oral presentation at the Aquaculture Association of South Africa Conference.

### Staff matters

Marine ecologist Dr Tammy Robinson and molecular invasion biologist Dr Jaco le Roux were appointed as lecturers. We had to bid farewell to Prof. Bettine Jansen van Vuuren who took up a position at the University of Johannesburg.

Prof. Sophié Reinecke, who was appointed as researcher since 1994 and also served as Executive Head of the Department (2007-2009), retired at the end of 2011 after 18 years of service to Stellenbosch University.

### Community interaction

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

The CIB limbovane project continues to be very successful in using ants as the theme to teach biodiversity to teachers and high school learners.

## ► Collaboration

### **SOUTH AFRICA**

Agricultural Research Council, Infruitec-Nietvoorbij (ARC)  
Agricultural Research Council, Pretoria (ARC)  
CapeNature  
Cape Peninsula University of Technology (CPUT)  
Council for Scientific and Industrial Research (CSIR)  
Department of Environmental Affairs (DEA)  
Department of Agriculture, Forestry and Fisheries (DAFF)  
DST-NRF Centre of Excellence in Tree Health Biotechnology  
Endangered Wildlife Trust (EWT)  
Environmentek (CSIR)  
Forestry and Agricultural Biotechnology Institute (FABI)  
Iziko South African Museum  
Medical Research Council (MRC)  
Nelson Mandela Metropolitan University (NMMU)  
Northwest University (NWU)  
Perishable Products Export Control Board (PPECB)  
Plant Protection Research Institute  
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 Pretoria, Faculty of Veterinary Science  
University of the Free State (UFS)  
University of the Western Cape (UWC)  
University of Venda (UV)  
Working for Water Programme (WfW)

### **INTERNATIONAL**

#### **Argentina**

University of Cordoba

#### **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)  
James Cook University  
Kings Park and Botanic Garden  
Macquarie University  
University of Adelaide  
University of Melbourne  
University of Queensland  
University of Sydney  
University of Western Australia

#### **Belgium**

Flanders Institute for Biotechnology

#### **Brazil**

Universidade Federal de Santa Catarina

#### **Canada**

Simon Fraser University  
University of Toronto

# 9

**The number of students** who received their PhDs in either Zoology or Botany in 2011



Die getal studente wat hul **PhD's** in **Plant- of Dierkunde** in 2011 ontvang het

Ons studente, in samewerking met hulle studieleiers, het hulle uitstekend van hulle taak gekwyd by konferensies en verskeie toekennings vir hulle werk ontvang. Mnr. Bernard Coetzee (studieleier: prof. Steven Chown) het die kongresorganiseerders se toekening ontvang by die kongres van die Dierkundige Vereniging van Suid-Afrika (DVSA), met me. Candice Lyons (studieleier: prof. Steven Chown) wat met die toekening as die beste PhD-aanbieder beloon is. Me. Nina du Toit (studieleiers: prof. Conrad Matthee, prof. Sonja Matthee en prof. Bettine Jansen van Vuuren) het die toekening gekry vir die algehele beste voordrag by die Parasitologiese Vereniging van Suid-Afrika (PARSA) se konferensie. Mnr. Marinus de Jager (studieleier: dr. Allan Ellis) het die prys vir die beste voordrag deur 'n PhD-student gewen by die Suid-Afrikaanse Vereniging vir Sistematiese Biologiese konferensie, asook die tweede prys vir 'n studentevordrag by die Ariede Sone Ekologiese Forum. Me. Minette Karsten (studieleier: prof. Bettine Jansen van Vuuren) het die prys vir die naasbeste aanbidding deur 'n MSc-student by die kongres van die Suid-Afrikaanse Vereniging vir Sistematiese Biologie (SASSB) ontvang. Me. Aldi Pieterse (studieleier: dr. Sue Jackson) het die prys gewen vir die beste mondelinge voordrag gelewer by die konferensie van die AkwakultuurVereniging van Suid-Afrika.

### Personeelsake

Dr. Tammy Robinson, 'n mariene ekoloog, en dr. Jaco le Roux, 'n molekulêre indringerbioloog, is as lektors aangestel. Ons moes prof. Bettine Jansen van Vuuren, wat 'n pos by die Universiteit van Johannesburg aanvaar het, groet.

Prof. Sophié Reinecke wat sedert 1994 as navorser aangestel was en ook as uitvoerende hoof van die departement gedien het (2007-2009), het aan die einde van 2011 na 18 jaar diens aan die Universiteit Stellenbosch, afgetree.

### Gemeenskapsinteraksie

'n Aantal akademiese personeellede was betrokke tydens die Maties 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 (SIB) se limbovane-projek is steeds baie suksesvol besig om met miere as tema, biodiversiteit aan onderwysers en hoërskoolleerders bekend te stel.

## ► Samewerking

### SUID-AFRIKA

Beheerraad vir die Uitvoer van Bederfbare Produkte (PPECB)  
CapeNature  
Departement van Landbou, Bosbou en Seevisserie  
Departement van Omgewingsake  
DWT-NNS Sentrum van Uitnemendheid in Boomgesondheid Biotegnologie  
Environmentek (WNNR)  
Instituut vir Bosbou- en Landboubiotegnologie (FABI)  
Iziko Suid-Afrikaanse Museum  
Kaapse Skiereiland Universiteit van Tegnologie (KSUT)  
Landbounavorsingsraad, Infruitec-Nietvoorbij (LNR)  
Landbounavorsingsraad, Pretoria (LNR)  
Mediese Navorsingsraad (MNR)  
Nelson Mandela Metropolitaanse Universiteit (NMMU)  
Noordwes Universiteit (NWU)  
Plantbeskermings- en Navorsingsinstituut  
Rhodes Universiteit  
Sasol Tegnologie  
Suid-Afrikaanse Instituut vir Akwatiese Biodiversiteit (SAIAB)  
Suid-Afrikaanse Nasionale Instituut vir Biodiversiteit (SANBI)  
Suid-Afrikaanse Nasionale Parke (SANParke)  
Trust vir Bedreigde Natuurlewe (EWT)  
Universiteit van die Vrystaat (UVS)  
Universiteit van Kaapstad (UK)  
Universiteit van KwaZulu-Natal (UKZN)  
Universiteit van Pretoria (UP)  
Universiteit van Pretoria, Fakulteit Veeartsenykunde  
Universiteit van Venda (UV)  
Universiteit van Wes-Kaapland (UWK)  
Werk vir Water Program (WvW)  
Wetenskaplike en Nywerheidsnavorsingsraad (WNNR)

### INTERNASIONAAL

#### Argentinië

Universiteit van Cordoba

#### Australië

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

#### België

Flanders Instituut vir Biotegnologie

#### Brasilië

Universidade Federal de Santa Catarina

#### China

Guangdong Universiteit van Tegnologie

Prof. Conrad Matthee received the award for the **best presentation** at the 7th International Conference of Ticks and Tick-borne Pathogens in Spain.

**Prof. Conrad Matthee** het in Spanje die toekening vir die beste aanbidding ontvang by die 7de Internasionale Kongres oor Bosluise en Bosluiseverwante Patogene.





**China**

Guangdong University of Technology  
Hefei University of Technology  
Lanzhou University

**Czech Republic**

Academy of Sciences of the Czech Republic  
Botanical Institute  
Charles University  
Masaryk University

**Denmark**

University of Copenhagen

**Finland**

University of Jyväskylä

**France**

Institut National de l'Environnement Industriel et des Risques (INERIS)  
Muséum national d'Histoire naturelle  
National Centre for Scientific Research (CNRS)  
Université de Franche-Comté  
Université Montpellier I  
Université Montpellier II  
Université Paul Sabatier Toulouse III

**Germany**

Alfred Wegener Institute for Polar and Marine Research  
University of Braunschweig  
University of Freiburg  
University of Hamburg  
University of Leipzig  
University of Würzburg

**Greece**

Agricultural University of Athens

**Hungary**

Hungarian Academy of Sciences

**India**

Indian Institute of Science

**Iran**

Tarbiat Modares University

**Italy**

University of Bologna  
University of Siena

**Japan**

Kyoto University  
National Institute for Basic Biology

**Kenya**

University of Nairobi

**The Netherlands**

Data-Analyse Ecologie  
Wageningen University

**New Zealand**

University of Auckland

**Norway**

University of Oslo

**Poland**

Institute of Botany, Polish Academy of Sciences  
Jagiellonian University

**Portugal**

Instituto Superior de Psicologia Aplicada (ISPA)  
Technical University of Lisbon  
University of Evora

**Spain**

Centre Tecnològic Forestal de Catalunya  
Doñana Biological Station  
National Museum of Natural Sciences  
Universidad Pablo de Olavide  
Universitat de Girona  
Universitat de València

**Sweden**

Lund University  
Stockholm University  
Swedish University of Agricultural Sciences

**Switzerland**

University of Zurich

**United Kingdom**

British Antarctic Survey  
British Trust for Ornithology  
University of Cambridge  
Plymouth Marine Laboratory  
Queen Mary College, University of London  
Royal Botanic Gardens, Kew  
University of Bristol  
University of Exeter  
University of Sheffield

**United States of America**

Cornell University  
Field Museum Chicago  
Nobel Foundation  
University of California (Berkeley)  
University of California (Davis)  
University of California (Santa Cruz)  
University of South Georgia  
University of Vermont  
University of Villanova  
University of Wisconsin (Madison)  
West Virginia University



Dr Cang Hui of the DST-NRF Centre of Excellence for Invasion Biology received a **P rating from the National Research Foundation.**

**Dr. Cang Hui** van die DWT-NNS Sentrum van Uitnemendheid vir Indringerbiologie het 'n P-evaluering van die Nasionale Navorsingstigting ontvang.

Hefei Universiteit van Tegnologie  
Lanzhou Universiteit

**Denemarke**

Universiteit van Kopenhagen

**Duitsland**

Alfred Wegener Instituut vir Navorsing oor die Pole en Mariene Gebiede  
Universiteit van Braunschweig  
Universiteit van Freiburg  
Universiteit van Hamburg  
Universiteit van Leipzig  
Universiteit van Würzburg

**Finland**

Universiteit van Jyviskyla

**Frankryk**

Institut National de l'Environnement Industriel et des Risques (INERIS)  
Muséum national d'Histoire naturelle  
National Centre for Scientific Research (CNRS)  
Université Franche-Comté  
Université Montpellier I  
Université Montpellier II  
Université Paul Sabatier Toulouse III

**Griekeland**

Landbou Universiteit van Athene

**Hongarye**

Hongaarse Akademie vir Wetenskappe

**Indië**

Indiese Instituut vir Wetenskap

**Iran**

Tarbiat Modares Universiteit

**Italië**

Universiteit van Bologna  
Universiteit van Siena

**Japan**

Kyoto Universiteit  
Nasionale Instituut vir basiese Biologie

**Kanada**

Simon Frazer Universiteit  
Universiteit van Toronto

**Kenia**

Universiteit van Nairobi

**Nederland**

Data-Analyse Ecologie  
Universiteit van Wageningen

**Nieu-Seeland**

Universiteit van Auckland

**Noorweë**

Universiteit van Oslo

**Pole**

Universiteit van Jagelonië  
Instituut vir Botanie, Poolse Akademie vir Wetenskap

**Portugal**

Instituto Superior de Psicologia Aplicada (ISPA)  
Tegniese Universiteit van Lissabon  
Universiteit van Evora

**Spanje**

Centre Tecnològic Forestal de Catalunya  
Doñana Biological Station  
Nasionale Museum van Natuurwetenskappe  
Universidad Pablo de Olavide  
Universitat de Girona  
Universitat de València

**Swede**

Lund Universiteit  
Stockholm Universiteit  
Sweedse Universiteit van Landbouwetenskappe

**Switserland**

Universiteit van Zürich

**Tsjeggiese Republiek**

Botaniese Instituut  
Charles Universiteit  
Masaryk Universiteit  
Tsjeggiese Akademie van die Wetenskappe

**Verenigde Koninkryk**

Britse Antarktiese Opname  
Britse Trust vir Ornitologie  
Cambridge Universiteit  
Koninklike Botaniese Tuin, Kew  
Natuurhistoriese Museum  
Plymouth Mariene Laboratorium  
Queen Mary Kollege, Universiteit van London  
Universiteit van Bristol  
Universiteit van Exeter  
Universiteit van Sheffield

**Verenigde State van Amerika**

Cornell Universiteit  
Field Museum Chicago  
Nobel Stigting  
Universiteit van Kalifornië (Berkeley)  
Universiteit van Kalifornië (Davis)  
Universiteit van Kalifornië (Santa Cruz)  
Universiteit van Suid-Georgia  
Universiteit van Vermont  
Universiteit van Villanova  
Universiteit van Wisconsin (Madison)  
Wes-Virginia Universiteit

**31**

The number of PhD students registered in the **Department of Botany and Zoology** during 2011

**Die getal PhD-studente** wat in 2011 in die Departement Plant- en Dierkunde geregistreer was

## ► Funding

Claude Leon Foundation  
National Centre for Scientific Research (CNRS), France  
Citrus Research International  
Council for Scientific and Industrial Research (CSIR)  
Department of Agriculture, Forestry and Fisheries (DAAF)  
Department of Science and Technology (DST)  
Ernst Oppenheimer Fellowship Trust Fund  
German Academic Exchange Service (DAAD)  
National Geographic Society of America  
National Natural Science Foundation of China (NSFC)  
National Research Foundation (NRF)  
Oppenheimer Memorial Trust  
Royal Society, United Kingdom  
Sasol Technology  
South African Biodiversity Initiative (SABI)  
South African National Antarctic Program (SANAP)  
Stellenbosch University (SU)  
Table Mountain Fund  
Thuthuka  
University of Montpellier  
Water Research Commission (WRC)  
Working for Water (WfW) Programme

The Department of Botany and Zoology co-hosted the joint **conference of the Zoological Society of Southern Africa** (ZSSA), held in Stellenbosch.



Die **Department Plant- en Dierkunde** was mede-gashere van die gesamentlike konferensie van die Dierkundige Vereniging van Suider-Afrika (DVSA) in Stellenbosch.

## ► Befondsing

Claude Leon Stigting  
Departement van Landbou, Bosbou en Seevisserye  
Departement van Wetenskap en Tegnologie (DWT)  
Duitse Akademiese Uitruildiens (DAAD)  
Ernst Oppenheimer Fellowship Trustfonds  
John Ellerman Stigting  
Kaapse Luiperd Trust  
Nasionale Geografie Vereniging van Amerika  
Nasionale Natuurwetenskap Trust van China (NSFC)  
Nasionale Navorsingstigting (NNS)  
Nasionale Sentrum vir Wetenskaplike Navorsing (CNRS), Frankryk  
Oppenheimer Memorial Trust  
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 Stellenbosch (US)  
Waternavorsingskommissie (WVK)  
Werk vir Water Program (WfW)  
Wetenskaplike en Nywerheidsnavorsingsraad (WNNR)



Danksy die Nutshell-stoorstafieprojek kan studente hulle **studiemateriaal** vanaf 'n sentrale plek aflaai op hul eie rekenaars, sodat hulle dit verder aflyn kan gebruik.

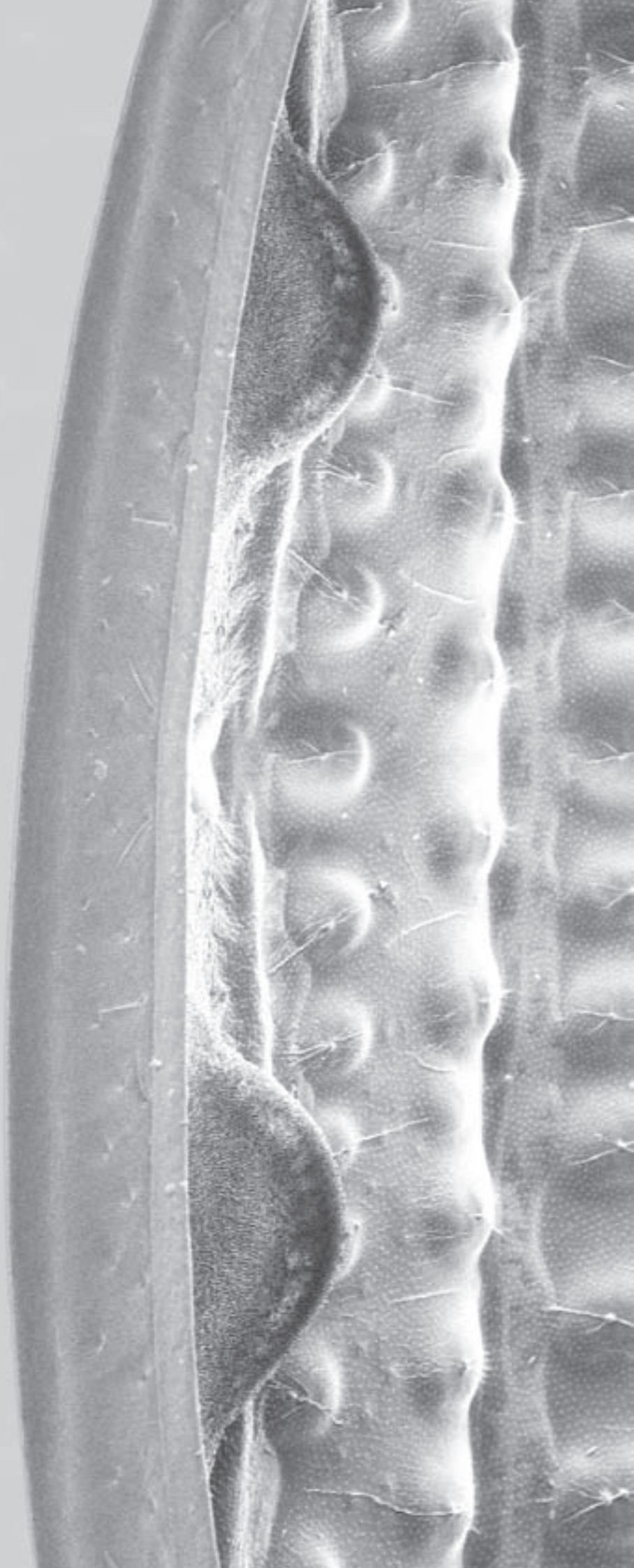
The new **Nutshell flash disc** enables students to download all their study material from a central storage space onto their computers, after which they can use the available electronic study material offline.

## **Ons jong navorsers**

– ons toekoms. Volgens ons personeelrekords het ons 'n gebalanseerde ouderdomsverspreiding van personeel wat wissel tussen 31% wat ouer as 50 jaar is, 30,1% wat tussen die ouderdomme van 40 en 50 is en 39,2% wat tussen 20 en 40 jaar oud is. Aangesien dit belangrik is om ons groot groep talentvolle jonger personeellede te behou en hulle op professionele vlak te ontwikkel, verskaf ons beurse en befondsing vir navorsingsondersteuning. Hierdeur wil ons verseker dat hulle so gou as moontlike aktiewe navorsers word. Omdat ons glo dat ons afgetrede personeellede 'n belangrike rol as mentors vir jong wetenskaplikes kan speel, hou ons hulle by navorsing betrokke deur hulle as buitengewone professors of navorsers aan te stel en hulle 'n aansporingsloon vir die publikasie van navorsing te gee.

## **Our young researchers**

are our future. Our staff records show an age profile balanced between 31% of staff older than 50 years, 30,1% between 40 and 50 years and 39,2% between 20 and 40 years old. Because the professional development and retention of our large group of talented younger staff members are so important, we provide them with research support funding and scholarships. All of this is an effort to ensure that they become research active as soon as possible. Because we believe that our retired staff can play an important mentoring role for young scientists, we continue to involve them in research by appointing them as extraordinary professors or researchers and by giving them incentives for publication outputs.



# Departement **Wiskundige Wetenskappe**

## Department of **Mathematical Sciences**

(Mathematics, Applied Mathematics, Computer Science)  
(Wiskunde, Toegepaste Wiskunde, Rekenaarwetenskap)

### ► 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*

### ► Personeel | **Staff**

#### ► Doserend | **Academic**

Prof IM Rewitzky (*uitvoerende  
hoof / executive head*)

- Dr B Bartlett
- Dr S Benecke
- Prof F Breuer
- Dr WH Brink
- EJ Burger
- Dr J Coetzer
- PH Crous
- Prof JM de Villiers
- Prof A Fransman
- J Geldenhuys
- I Govender
- Prof BW Green
- Dr PJP Grobler
- Prof J Hargrove
- HA Haroldt
- Prof BM Herbst
- Dr M Hoffman
- Prof D Holgate
- Dr K-T Howell
- Dr CP Inggis
- 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 Prodinger
- 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 S Wagner
- Prof JAC Weideman
- LK Wessels
- Prof M Wild
- SWoudberg

### ► Buitengewone professore | **Extraordinary professors**

- Prof M Dwyer
- Prof G Frey
- Prof B Schölkopf
- Prof N Turok

### ► Buitengewone senior lektore | **Extraordinary senior lecturers**

- Dr R Ghomrasni
- Dr A Welte

### ► Buitengewone lektore | **Extraordinary lecturers**

- Dr A Ouhinou
- Dr SC Oukouomi Noutchie

### ► Ondersteuningspersoneel | **Support staff**

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

### WEBSITES OF OUR VARIOUS DIVISIONS

Toegepaste Wiskunde | **Applied Mathematics:** <http://dip.sun.ac.za>

Rekenaarwetenskap | **Computer Science:** <http://cs.sun.ac.za>

Wiskunde | **Mathematics:** <http://math.sun.ac.za>

### CONTACT DETAILS | KONTAKINLIGTING

Tel 021 808 3282

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

## 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, fluid dynamics and modelling.

## Research highlights

Researchers in Mathematics, Applied Mathematics and Computer Science have continued to achieve high standards in their respective fields of specialisation through high quality research outputs, strong collaborative links, productive visits from leading researchers, and participating at international conferences.

Dr Stefan van der Walt took up a postdoctoral research position in the Henry H Wheeler Jr Brain Imaging Center within the Helen Wills Neuroscience Institute, University of California at Berkeley. This is a unique opportunity for Dr Van der Walt to collaborate with Prof. Fernando Pérez, a leading researcher in the field of neuro-imaging.

Two prestigious awards – the MERC award and the Erasmus Mundus award – made it possible for Dr McElory Hoffmann to establish a collaborative link with researchers at the Katholieke University in Leuven and also to extend his research on computer vision algorithms further with probabilistic techniques.

Prof. Ingrid Rewitzky accepted the opportunity to spend a month in January/February at the Stellenbosch Institute for Advanced Study as project leader for the project "Understanding emergence," proposed jointly with Dr Jeff Sanders.

Staff members were actively involved in workshops and conferences. Prof. André Weideman delivered a keynote address: "Efficient contours for the numerical computation of the Bromwich integral" at the Hot Topics Workshop on Laplace Transform Methods and Their Applications (Korea). Prof. David Holgate delivered a keynote address on the enhancement of student learning at the 8th Delta Conference on the Teaching and Learning of Undergraduate Mathematics and Statistics (New Zealand).

A very successful Conference on Arithmetic Geometry was held on the Stellenbosch University campus and at the African Institute for Mathematical Sciences (AIMS). This biennial event, organised by Prof. Florian Breuer and Prof. Barry Green, the director of AIMS, was attended by 15 international researchers.

Celebrating the research visits of four international academics and collaborators to Stellenbosch University in February, Prof. Helmut Prodinger and Prof. Stephan Wagner organised a two-day workshop on Discrete Mathematics. The speakers included Dr

## Research outputs

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

Elmar Teufl (University of Tübingen in Germany), Prof. Clemens Heuberger and Ms Nina Schmuck (Graz University of Technology in Austria), and Prof. Florian Luca (National Autonomous University of Mexico). A number of local academics from Stellenbosch University, the University of the Witwatersrand, the University of Cape Town and the University of Johannesburg also presented talks.

The Department of Mathematical Sciences hosted the 35th Annual Congress of the South African Society for Numerical and Applied Mathematics, thanks to the sterling effort of Prof. Ben Herbst, Prof. André Weideman and Dr Stefan van der Walt. Five leading researchers presented plenary lecturers. They were Prof. Desmond Higham (University of Strathclyde), Prof. Mike Powell (Cambridge University), Prof. Douw Steyn (University of British Columbia and AIMS), Prof. Nick Trefethen (Oxford University) and Prof. Jared Tanner (University of Edinburgh).

The department offers the opportunity for specialised research in each of the disciplines of Mathematics, Computer Science and Applied Mathematics. In addition, some researchers have found a special opportunity for interdisciplinary research, such as in computer vision and machine learning (in collaboration with Applied Mathematics and Computer Science), Mathematical Biology (in collaboration with Mathematics, Applied Mathematics, Wine Biotechnology, Biochemistry, Invasion biology and the Faculty of Health Sciences), and jurometrics (in collaboration with Mathematics and the Faculty of Law).

## Academic affairs

At undergraduate level, a record number of first year students enrolled for Computer Science. This can partly be ascribed to the various marketing activities by the Division of Computer Science, as well as to exciting new modules such as Mobile Computing, which have been introduced by Prof. Brink van der Merwe and Dr McElory Hoffman.

In 2011, there were 54 first-year enrolments in the Computer Science programme, 18 in the Mathematics programme and nine in the Applied Mathematics programme. With the shortage of skills in each of these disciplines, much effort is being devoted to increase these numbers and also to improve keeping these

**"Trying to find the golden thread in my research – from 1987 to 2011",** was the title of mathematician Prof. Marcel Wild's inaugural lecture.

"Trying to find the golden thread in my research – from 1987 to 2011" was die tema van **wiskundige prof. Marcel Wild** se intreerede.



## Navorsingsuitlette:

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

## Navorsingshoogtepunte

Navorsers in Wiskunde, Toegepaste Wiskunde en Rekenaarwetenskap het die hoë peil wat hulle in hul onderskeie spesialisgebiede behaal het, gehandhaaf, deur middel van navorsingsuitlette van hoë gehalte, sterk samewerkingsbande, produktiewe besoeke van toonaangewende navorsers en hul deelname aan internasionale kongresse.

Dr. Stefan van der Walt het 'n nadoktorale navorsingsaanstelling aanvaar in die Henry H Wheeler Jr Brain Imaging Center in die Helen Wills Neuroscience Institute van die Universiteit van Kalifornië by Berkeley. Hierdie is 'n sonderlinge geleentheid vir dr. Van der Walt om met prof. Fernando Pérez, 'n toonaangewende navorser op die gebied van neurobeelding, saam te werk.

Twee gesogte toekennings – die MERC-toekenning en die Erasmus Mundus-toekenning – het dit vir dr. McElory Hoffmann moontlik gemaak om 'n samewerkingsband met navorsers by die Katholieke Universiteit in Leuven te smee en om ook sy navorsing oor rekenaarvisie-algoritmes uit te brei met behulp van probabilistiese tegnieke.

Prof. Ingrid Rewitzky het die geleentheid aanvaar om 'n maand lank in Januarie/Februarie by die Stellenbosse Instituut vir Gevorderde Studie as projekteier op te tree vir die projek *Understanding Emergence*, wat in medewerking met dr. Jeff Sanders voorgelê is.

Personelede was aktief betrokke by werksessies en kongresse. Prof. André Weideman het 'n programrede gelewer: "Efficient contours for the numerical computation of the Bromwich integral" by die werkwinkel oor Aktuele Onderwerpe oor Laplace-transformasie-metodes en hulle toepassings (in Korea). Prof. David Holgate het 'n programrede gelewer oor die verdieping van studente se leerervaring by die 8ste Delta-kongres oor die onderrig en leer van voorgraadse Wiskunde en Statistiek (Nieu-Seeland).

Daar is 'n baie suksesvolle konferensie oor Rekenkundige Meetkunde is op die Universiteit Stellenbosch-kampus en by die Afrika Instituut vir Wiskundige Wetenskappe (AIMS) aangebied. Hierdie tweejaarlikse geleentheid is deur prof. Florian Breuer en AIMS direkteur prof. Barry Green gereël en is deur 15 internasionale navorsers bygewoon.

Ter viering van die navorsingsbesoeke aan die Universiteit Stellenbosch van vier internasionale akademici en medewerkers in

## Navorsingsbelange

Algebra en getalleteorie; analise, topologie en kategorieëteorie; 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, vloedinamika en -modelle.

Februarie, het prof. Helmut Prodinger en prof. Stephan Wagner 'n tweedaagse werksessie oor diskrete wiskunde gereël. Onder die sprekers was dr. Elmar Teufl (die Universiteit van Tübingen, Duitsland), prof. Clemens Heuberger en me. Nina Schmuck (Graz-universiteit vir Tegnologie in Oostenryk) en prof. Florian Luca (Nasionale Outonome Universiteit van Meksiko). 'n Aantal plaaslike akademici van die Universiteit Stellenbosch, die Universiteit van die Witwatersrand, die Universiteit van Kaapstad en die Universiteit van Johannesburg het ook praatjies gelewer.

Die Departement Wiskundige Wetenskappe was die gasheer vir die 35ste jaarlikse kongres van die Suid-Afrikaanse Vereniging vir Numeriese en Toegepaste Wiskunde, deur die voortrefflike toedoen van prof. Ben Herbst, prof. André Weideman en dr. Stefan van der Walt. Vyf toonaangewende navorsers het hooflesings gegee. Hulle was prof. Desmond Higham (Universiteit van Strathclyde), prof. Mike Powell (Cambridge-universiteit), prof. Douw Steyn (Universiteit van Brits-Kolombië en AIMS), prof. Nick Trefethen (Oxford Universiteit) en prof. Jared Tanner (Universiteit van Edinburg).

Die Departement Wiskundige Wetenskappe bied die geleentheid vir spesialisnavorsing in die onderskeie studierigtings Wiskunde, Rekenaarwetenskap en Toegepaste Wiskunde. Daarbenewens het sommige navorsers 'n besondere geleentheid vir interdisiplinêre navorsing raakgesien – in rekenaarvisie en masjienleer (in samewerking met Toegepaste Wiskunde en Rekenaarwetenskap, Wiskundige Biologie (in samewerking met Wiskunde, Toegepaste Wiskunde, Wynbiotegnologie, Biochemie, Indringerbiologie en die Fakulteit Gesondheidswetenskappe), en jurometriek (in samewerking met Wiskunde en die Fakulteit Regsgeleerdheid).

## Akademiese aangeleenthede

Op voorgraadse vlak het 'n rekordgetal eerstejaarstudente vir Rekenaarwetenskap ingeskryf. Dit kan deels toegeskryf word aan die verskeie bemarkingsaktiwiteite van die Afdeling Rekenaarwetenskap, asook aan opwindende nuwe modules soos Mobiele Rekenaarwetenskap wat deur prof. Brink van der Merwe en dr. McElory Hoffman begin is.

In 2011 was daar 54 eerstejaarinskrywings vir die Rekenaarwetenskap-program, 18 vir die Wiskunde-program en nege vir die

Bioinformatics expert Prof. Konrad Scheffler was one of three researchers to be honoured with the annual **TWAS-AAS-Microsoft Award for Young Computer Scientists** working in Africa.

'n Kenner oor bio-informatika, **prof. Konrad Scheffler**, was een van drie navorsers wat met die jaarlikse TWAS-AAS-Microsoft-prys vir jong wetenskaplikes in Afrika vereer is.





students, interested in these scarce skills areas. This should also lead to an increase in the number of South African postgraduate students in each of these disciplines.

We were proud to see Mr Willem Venter and Mr Rynhardt Kruger graduate, each obtaining a BSc in Mathematical Sciences with a focus on Computer Science. They are the visually impaired students in the history of Stellenbosch University to complete this degree. The fact that they did this in the minimum timeframe of three years makes their achievements even more outstanding. Many thanks are due to their academic mentor Prof. Lynette van Zijl, for all her time and effort to ensure that their special needs were accommodated at the University.

A total of 30 students in the Department were awarded PhD and Master's degrees. These included three PhDs in Mathematics, one PhD in Applied Mathematics, nine MSc degrees (cum laude) in Mathematics, two MSc degrees (cum laude) in Applied Mathematics, four MSc degrees (cum laude) in Computer Science, eight MSc degrees in Mathematics and three MSc degrees in Computer Science. Of those awarded an MSc, 12 were South African students and 14 were students from Africa who completed the AIMS Postgraduate Diploma (PGD). Three of the students who obtained a PhD were South African and one was a former AIMS PGD student.

Two Applied Mathematics Honours modules namely Numerical Methods, offered by Prof. André Weideman, and Partial Differential Equations, offered by Dr Milton Maritz, attracted 20 postgraduate students from the Faculty of Engineering, in addition to postgraduate students from the Faculty of Science.

As we strive to enrich undergraduate students who have a special enthusiasm for Mathematics, two new undergraduate modules were introduced. Foundations of Abstract Mathematics I and II were introduced as second and third year modules. From 2012 the Department will offer elective modules, open to students across all Faculties of Stellenbosch University. The style of teaching, the flexible assessment approach and the learning opportunity provided in these modules, have a very positive influence on most of the undergraduate students, including students from Engineering and Education.

### Service to the scientific community

As part of a drive to spark a renewed interest in Algebra within the Western Cape, Dr Karin-Therese Howell, together with Dr Zurab Janelidze and Dr Andrew Fransman organised a Morning with Algebra. Speakers included Prof. Carl Maxson of the Texas A&M University (USA), Prof. Yaroslav Sysak of Taras Shevchenko University (Ukraine), Dr Thomas Everaert of the Free University of Brussels (Belgium) and Prof. Bernard Amberg of the University of Mainz (Germany). The event attracted researchers and postgraduate students from Stellenbosch University, AIMS, the

University of Cape Town (UCT) and the University of the Western Cape (UWC).

The Division for Computer Science, through the involvement of Prof. Willem Visser, has continued to play a key role in various IT initiatives in the Western Cape and the broader South Africa.

Skills in the field of Mathematical Sciences are scarce, but extremely important. Several projects in the department are contributing to the University's commitment to building scientific and intellectual capacity in Africa by developing human capital in Mathematical Sciences.

The department's project in collaboration with AIMS is still running. Staff members presented specialised modules and/or research essays. Prof. Ingrid Rewitzky was appointed to serve on the AIMS executive team. A record number of thirteen students who completed the AIMS Postgraduate Diploma in Mathematical Sciences were offered bursaries to pursue masters studies at Stellenbosch University.

The partnership with the University of Antananarivo (Madagascar) was strengthened with the visits of Prof. David Holgate, his doctoral student Mr Ando Razafindrakoto, and Prof. Stephan Wagner, together with his doctoral student Mr Dimbinaina Ralaivaosaona.

Dr Bruce Bartlett is working together with Dr David Stern in Kenya on an ongoing project, trying to improve maths education in sub-Saharan Africa. He attended the First Strathmore Conference in Mathematics at Strathmore University in Kenya, and did a presentation at the Pure Mathematics Workshop which was held as part of the conference. Dr Bartlett was also part of the organising team of this event.

Dr Fara Nyabadza serves as a board member of the Canon Collins Trust, as the secretary general of the Africa Society for Biomathematics (ASB), and as the secretary general of the Southern Africa Mathematical Sciences Association (SAMSA).

Prof. Ingrid Rewitzky was appointed as external examiner for the Department of Mathematics at the University of Makerere in Uganda, while Prof. Farai Nyabadza and three of his postgraduate students participated in MASAMU Advanced Study Institute and Workshops in Mathematical Sciences Zambia).

Most of our academic staff members are also involved in editorial activities for journals or serve on programme committees of research conferences. Prof. Florian Breuer was appointed to the editorial board of the *Journal of Number Theory*, while Prof. Willem Visser was appointed to the editorial board of the journal, *ACM Transactions of Software Engineering and Methodology*.

### Awards to staff and students

Computer scientist Prof. Konrad Scheffler, who uses his expertise in bioinformatics to analyze the evolution of HIV, was one of three



Mathematics Prof. David Holgate was **commended** at the HELTASA/CHE National Excellence in Teaching and Learning Awards.

**Wiskunde professor David Holgate** het eervolle vermelding ontvang by die Nasionale Toekenning vir Uitnemende Onderrig en Leer van die Vereniging vir Hoër Onderwys en Leer (HELTASA).

Toegepaste Wiskunde-program. Weens die tekort aan vaardighede in elkeen van hierdie vakrigtings word baie moeite gedoen om die getalle te vergroot en om meer van hierdie studente wat belangstel in die skaarsvaardighedsareas, te behou. Dit behoort ook te lei tot 'n toename in die getal nagraadse Suid-Afrikaanse studente in elkeen van hierdie vakrigtings.

Ons was trots daarop om mnr. Willem Venter en mnr. Rynhardt Kruger te sien gradueer, elkeen met 'n BSc in Wiskundige Wetenskappe met 'n fokus op Rekenaarwetenskap. Hulle is die eerste visueelgestremde studente in die geskiedenis van die Universiteit Stellenbosch om hierdie graad klaar te maak. Die feit dat hulle dit in die minimum tydperk van drie jaar gedoen het, maak hulle prestasie nog meer besonders. Baie dank is verskuldig aan hul akademiese mentor, prof. Lynette van Zijl, vir al haar tyd en moeite om te verseker dat die Universiteit in hulle spesiale behoeftes voorsien.

Daar is PhD- en meestersgrade aan 'n totaal van 30 studente in die departement toegeken (drie ontvang 'n PhD in Wiskunde, een 'n PhD in Toegepaste Wiskunde, nege 'n MSc (cum laude) in Wiskunde, twee 'n MSc (cum laude) in Toegepaste Wiskunde, vier 'n MSc (cum laude) in Rekenaarwetenskap, agt 'n MSc in Wiskunde, en drie 'n MSc in Rekenaarwetenskap). Uit diegene aan wie 'n MSc-grad toegeken is, was 12 Suid-Afrikaanse studente en 14 studente uit Afrika wat die AIMS Nagraadse Diploma (NGD) klaargemaak het. Drie van die studente wat 'n PhD ontvang het, was Suid-Afrikaans en een was voorheen 'n AIMS NGD-student.

Twee honneursmodules in Toegepaste Wiskunde, naamlik Numeriese Metodes aangebied deur prof. André Weideman, en Parsiële Differensiaalvergelykings, aangebied deur dr. Milton Maritz, het 20 studente van die Fakulteit Ingenieurswese gelok, bo en behalwe nagraadse studente uit die Fakulteit Natuurwetenskappe.

Omdat ons streef na die verryking van voorgraadse studente wat 'n besondere geesdrif vir Wiskunde toon, is twee nuwe voorgraadse modules ingebring. Fundamentele Onderwerpe in Abstrakte Wiskunde I en II is ingestel as tweede- en derdejaarsmodules. Vanaf 2012 sal die departement keusemodules aanbied wat oop sal wees vir studente van al die fakulteite van die Universiteit Stellenbosch. Die onderrigstyl, die buigsame assesseringsbenadering en die leerleentheid wat in hierdie modules gebied word, sal 'n baie positiewe invloed hê op die meeste van die voorgraadse studente, asook die studente uit Ingenieurswese en Opvoedkunde.

### Diens aan die wetenskaplike gemeenskap

As deel van 'n veldtog om hernude belangstelling in algebra in die Wes-Kaap aan te vuur, het dr. Karin-Therese Howell saam met dr. Zurab Janelidze en dr. Andrew Fransman 'n Oggend met Algebra gereël. Onder die sprekers was prof. Carl Maxson van die Texas A&M-universiteit (VSA), prof. Yaroslav Sysak van die Taras

Shevchenko-universiteit (die Oekraïne), dr. Thomas Everaert van die Vrije Universiteit Brussel (België) en prof. Bernard Amberg van die Universiteit van Mainz (Duitsland). Die geleentheid het navorsers en nagraadse studente van die Universiteit Stellenbosch, AIMS, die Universiteit van Kaapstad (UK) en die Universiteit van Wes-Kaapland (UWK) gelok.

Die Rekenaarwetenskap-afdeling het deur die betrokkenheid van prof. Willem Visser, voortgegaan om 'n sleutelrol in verskeie IT-inisiatiewe in die Wes-Kaap en breër Suid-Afrika te speel.

Vaardighede in die vakrigting Wiskundige Wetenskappe is skaars, maar uiters belangrik. Verskeie projekte in die departement dra by tot die Universiteit se verbondenheid aan die uitbou van wetenskaplike en intellektuele kapasiteit in Afrika deur die ontwikkeling van menslike kapitaal in die Wiskundige Wetenskappe.

Die departement se medewerkingsprojek met die Afrika Instituut vir Wiskundige Wetenskappe (AIMS) gaan steeds voort. Personelelede het spesialismodules aangebied en/of navorsingsopstelle voorgedra. Prof. Ingrid Rewitzky is aangewys om in die AIMS uitvoerende span te dien. 'n Rekordgetal van dertien studente wat die AIMS Nagraadse Diploma in Wiskundige Wetenskappe voltooi het, is beurse aangebied om meestersgraadstudie aan die Universiteit Stellenbosch te onderneem.

Die vennootskap met die Universiteit van Antananarivo (Madagaskar) is versterk deur die besoeke van prof. David Holgate en sy doktorsale student, mnr. Ando Razafindrakoto, en prof. Stephan Wagner, tesame met sy doktorsale student mnr. Dimbinaina Ralaivaosaona.

Dr. Bruce Bartlett werk tans saam met dr. David Stern in Kenia aan 'n voortgesette projek in 'n poging om wiskunde-onderrig in sub-Sahara Afrika te verbeter. Hy het die eerste Strathmore-kongres oor Wiskunde aan die Strathmore Universiteit in Kenia bygewoon en 'n aanbieding gegee by die Werksessie oor Suiwer Wiskunde wat deel van die kongres was. Hy was ook een van die span wat die reëlings vir hierdie geleentheid getref het.

Dr. Farai Nyabadza dien as raadslid van die Canon Collins Trust, as die sekretaris-generaal van die Afrika Vereniging vir Biowiskunde (ASB), en as die sekretaris-generaal van die Suider-Afrikaanse Wiskundige Wetenskappe Vereniging (SAMSA).

Prof. Ingrid Rewitzky is aangewys as eksterne eksaminator vir die Departement Wiskunde aan die Universiteit van Makerere in Uganda, terwyl prof. Farai Nyabadza en drie van sy nagraadse studente deelgeneem het aan die MASAMU Gevorderde Studie Instituut en Werkswinkel oor Wiskundige Wetenskappe (Zambië).

Die meeste van ons akademiese personeel is ook betrokke by die redaksionele aktiwiteite van vaktydskrifte of dien op die programkomitees van navorsingskongresse. Prof. Florian Breuer is aangestel op die redaksionele raad van die *Journal of Number Theory*, terwyl prof. Willem Visser aangestel is op die redaksionele raad van die joernaal, *ACM Transaction on Software Engineering and Mythology*.

The MERC and Erasmus Mundi Awards made it possible for computer scientist Dr McElory Hoffman to establish **collaborative research links** with the Katholieke University in Leuven.

Rekenaarwetenskaplike **dr. McElory Hoffman** het danksy die MERC- en Erasmus Mundi-toekennings kans gekry om navorsingsbande met die Katolieke Universiteit in Leuven te smee.



researchers who have been honoured with the annual TWAS-AAS-Microsoft Award for Young Computer Scientists working in Africa. He was the only researcher from Sub-Saharan Africa to be honoured. He received the award at the 5th TWAS-ROSSA Young Scientists' Conference in Kenya, along with two academics from Egypt and Algeria. The prize recognises young scientists living and working in Africa whose research in computer science has had, or could have, a positive impact in the developing world.

Mathematician Prof. David Holgate was nominated for the HELTASA/CHE National Excellence in Teaching and Learning Awards for 2011. He was one of two nominees from Stellenbosch University. In the final awards he was one of nine commendation awardees nationally.

In recognition of their contribution to the success of our top first-year students, six colleagues were honoured by the vice-chancellor of the University at a special First-Year Academy Evening. They were Dr Hendrik Boshoff, Prof. Florian Breuer, Prof. Johan de Villiers, Dr Magdalene Marais, Dr Arnold Muller and Dr Stefan van der Walt.

L'Oréal South Africa once again sponsored a gift pack for the female student in Applied Mathematics who obtained the highest average in her final year Applied Mathematics modules. In 2011 the winner was Ms Andrea Von Flotow.

### Staff matters

During the year the Ad Hominem promotion of several staff members were approved with effect from 1 January 2012. Dr Jaco Geldenhuys and Dr McElory Hoffmann were promoted to senior lecturer (Computer Science). Dr Sonja Mouton was promoted to associate professor (Mathematics) and Dr Francois Smit and Dr Willie Brink were promoted to associate professor and senior lecturer respectively (Applied Mathematics).

Dr Stephen Benecke was appointed as lecturer in Applied Mathematics, but decided to return to Canada with his family for personal reasons. In April we welcomed Ms Bessie Burger as the new contract lecturer for the Extended Degree Programme in Mathematics. This followed the resignation of Mr Abraham Prins who took up a permanent position as lecturer in Mathematics at Stellenbosch University Military Academy.

The fluid modelling and simulation research group in Applied Mathematics was strengthened with the appointment of Prof. Mapundi Banda who will join the department as professor of Applied Mathematics in January 2012.

Ms Sonia Woudberg was invited to present a lecture at the National Science Festival (SciFest Africa) in Grahamstown. This gave her the opportunity to inspire learners to consider a career in Science. On invitation of L'Oréal, Sonia marketed the L'Oréal-UNESCO Regional Fellowships for Women in Science in Sub-Saharan Africa at the 4th International Conference on Women

in Physics of the International Union of Pure and Applied Physics (IUPAP) in April in Stellenbosch.

With the growing interaction between Computer Science and the Media Lab, Dr McElory Hoffmann was appointed as the deputy director of the Media Lab.

The Mathematics division had to bid Dr David Kubayi, a senior lecturer; farewell. He accepted an appointment as associate professor at the University of Limpopo. Prof. Konrad Scheffler, an associate professor in Computer Science, also left us to take up a full-time research position at the University of California (USA).

December marked the formal retirement of Prof. Johan de Villiers, a professor in Mathematics since July 1989. Throughout his academic career at Stellenbosch University, starting in 1969, Prof. de Villiers contributed positively and constructively towards all the departmental activities. He was acknowledged for the creative ways in which he integrated his research interests and his teaching to the benefit of all. It is an honour for the Department to still have Prof. de Villiers on an ad hoc basis for him to continue his service to teaching and learning and to inspire our first year Mathematics students.

### Community interaction

Through Dr Steve Kroon's commitment to programming competitions, Stellenbosch University qualified to send a team to represent Sub-Saharan Africa at the World Finals of the Association for Computing Machinery (ACM) Inter collegiate Programming Competition. About 100 teams from around the world participated in the competition, held in Orlando (USA). The best two teams managed to solve eight of the eleven problems posed to the teams at the World Finals. By finding correct solutions to four of the problems, the SU team tied for a 42nd place overall, and finished in the top position among the seven teams from Africa and the Middle East.

The department is actively involved in Mathematics Olympiad activities. Prof. André Weideman is the chairperson of the senior committee for the SA Mathematics Olympiad, while Prof. Stephan Wagner is the South African Mathematical Society representative for the SA Mathematics Olympiad Committee. Dr Paul Grobler assisted with setting a paper for the SA Mathematical Olympiad. The department hosted the Cape leg of the Interprovincial Mathematics Olympiad in which 60 high school learners from the Boland and Western Province competed face-to-face. This project of the SA Mathematical Society is part of the nationwide Mathematical Talent Search to find teams to represent South Africa at the Pan African and International Mathematical Olympiads.

The 20th annual South African Mathematical Foundation Mathematical Camp was also hosted by the department, which again attracted bright youngsters to the Stellenbosch University campus at the beginning of the December school holidays. This



**The number of students** who were awarded PhD and Master's degrees in Mathematics, Applied Mathematics or Computer Science

• **Die getal studente** wat  
• PhD- of meestersgrade in  
• Wiskunde, Toegepaste Wiskunde of  
• Rekenaarwetenskap ontvang het

## Toekennings aan personeel en studente

Rekenaarwetenskaplike prof Konrad Scheffler, wat met behulp van sy kundigheid in bio-informatika die evolusie van MIV ontleed, was een van drie navorsers wat met die jaarlikse TWAS-AAS-Microsoft-prys vir jong wetenskaplikes in Afrika vereer is. Prof. Scheffler is die enigste navorsers van sub-Sahara-Afrika vir wie dié eer vanjaar te beurt geval het. Hy het die prys by die vyfde TWAS-ROSSA-konferensie vir jong wetenskaplikes in Kenia saam met twee akademici uit Egipte en Algerië ontvang. Die prys erken jong wetenskaplikes wat in Afrika woon en werk, wie se navorsing op die gebied van Rekenaarwetenskap 'n positiewe uitwerking op die ontwikkelende wêreld het of kan hê.

Wiskundige prof. David Holgate is genomineer vir die 2011 Nasionale Toekenning vir Uitnemende Onderrig en Leer van die Vereniging vir Hoër Onderwys en Leer (HELTASA) en die Raad op Hoër Onderwys en Leer (CHE). Hy was een van twee genomineerdes van die Universiteit Stellenbosch. Met die finale toekennings was hy een van nege persone landwyd wat eervolle vermelding ontvang het.

Ter erkenning van hulle bydrae tot die sukses van ons top eerstejaargestudente, is ses kollegas vereer deur die visekanselier van die Universiteit Stellenbosch by 'n spesiale Eerstejaarsakademie-aand. Hulle was dr. Hendrik Boshoff, prof. Florian Breuer, prof. Johan de Villiers, dr. Magdalene Marais, dr. Arnold Muller en dr. Stefan van der Walt.

L'Oréal Suid-Afrika het weer 'n geskenkpak geborg vir die vrouestudent in Toegepaste Wiskunde wat die hoogste gemiddeld behaal het in haar finalejaar- Toegepaste Wiskunde-modules. In 2011 was die wenner Andrea von Flotow.

## Personeelaangeleenthede

In die loop van die jaar is die ad hominem-bevordering van verskeie personelede goedgekeur met ingang 1 Januarie 2012. Dr. Jaco Geldenhuys en dr. McElory Hoffmann is tot senior lektor bevorder (Rekenaarwetenskap). Dr. Sonja Mouton is bevorder tot medeprofessor (Wiskunde) en dr. Francois Smit en dr. Willie Brink is onderskeidelik bevorder tot medeprofessor en senior lektor (Toegepaste Wiskunde).

Dr. Stephen Benecke is aangestel as lektor in Toegepaste Wiskunde, maar het besluit om weens persoonlike oorwegings met sy gesin na Kanada terug te keer. In April het ons me Bessie Burger verwelkom as die nuwe kontraklektor vir die Verlengde Graadprogram in Wiskunde. Dit het gevolg op die bedanking van mnr. Abraham Prins wat 'n permanente betrekking aanvaar het as lektor in Wiskunde aan die Universiteit Stellenbosch Militêre Akademie.

Die navorsingsgroep in Toegepaste Wiskunde vir vloeimodellering en -simulasie is versterk deur die aanstelling van prof. Mapundi Banda, wat in Januarie 2012 by die departement sal aansluit as professor in Toegepaste Wiskunde.

Me Sonia Woudberg is uitgenooi om 'n lesing te gee by die Nasionale Wetenskapfees (SciFest Africa) in Grahamstad. Dit het haar die kans gegee om leerders te inspireer om 'n loopbaan in die Natuurwetenskappe te oorweeg. Op uitnodiging van L'Oréal het Sonia die L'Oréal-UNESCO-streeksbeurse vir Vroue in die Natuurwetenskappe in Sub-Sahara Afrika bemark by die 4de Kongres oor Vroue in Fisika van die Internasionale Unie van Suiwer en Toegepaste Fisika (IUPAP). Dit is in April in Stellenbosch gehou.

Met die groeiende interaksie tussen Rekenaarwetenskap en die Media Lab, is dr. McElory Hoffmann aangestel as die adjunkdirekteur daarvan.

Die Wiskunde-afdeling moes afskeid neem van dr. David Kubayi, 'n senior lektor. Hy het 'n aanstelling as medeprofessor by die Universiteit van Limpopo aanvaar. Prof. Konrad Scheffler, 'n medeprofessor in Rekenaarwetenskap, het ons ook verlaat om 'n voltydse navorsingsbetrekking by die Universiteit van Kalifornië (VSA) te aanvaar.

Desember is die formele aftrede van prof. Johan de Villiers aangekondig. Hy was reeds sedert Julie 1989 'n professor in Wiskunde. Dwarsdeur sy akademiese loopbaan by die Universiteit Stellenbosch, beginnende in 1969, het prof. De Villiers 'n positiewe en opbouende bydrae gelewer tot al die departementele aktiwiteite. Hy het erkenning ontvang vir die skeppende wyses waarop hy sy navorsings- en onderrigbelange tot voordeel van almal geïntegreer het. Dit is 'n eer vir die departement om prof. De Villiers steeds op ad hoc-grondslag aan te wend sodat hy sy diens aan onderrig en leer kan voortsit en ons eerstejaargestudente in Wiskunde kan inspireer.

## Gemeenskapsinteraksie

Danksy dr. Steve Kroon se toewyding aan programmeringswedstryde, het die Universiteit Stellenbosch daarvoor gekwalifiseer om sub-Sahara Afrika te verteenwoordig by die wêreldreindronde van die "Association for Computing Machinery" (ACM) se interkollege programmeringswedstryd. Ongeveer 100 spanne van regoor die wêreld het aan die wedstryd deelgeneem wat in Orlando (VSA) gehou is. Die twee beste spanne het dit reggekry om agt probleme uit die elf op te los wat aan die spanne by die wêreldreindronde gestel is. Deur die regte oplossings vir vier van die probleme te vind, het die US-span gelykop geëindig in die 42ste algehele plek, en in die voorste posisie onder die sewe spanne van Afrika en die Midde-Ooste.

Die departement is aktief betrokke by aktiwiteite rondom die Wiskunde-olimpiade. Prof. André Weideman was die voorsitter van die senior komitee vir die SA Wiskunde-olimpiade, terwyl prof. Stephan Wagner as die verteenwoordiger van die Suid-Afrikaanse Wiskundige Vereniging op die SA Wiskunde-olimpiade-komitee gedien het. Dr. Paul Grobler het gehelp om 'n vraestel vir die SA Wiskunde-olimpiade op te stel. Die departement was die gasheer vir die Kaapse been van die Interprovinsiale Wiskunde-olimpiade

The **Maties Computer science team** came first in the category for teams from Africa and the Middle East in the World Finals of the Association for Computing Machinery (ACM) Intercollegiate Programming Competition in Miami.



Die Matie Rekenaarwetenskap-span van die Universiteit Stellenbosch het die **eerste plek** behaal in die kategorie vir spanne uit Afrika en die Midde-Ooste in die "Association for Computing Machinery" (ACM) se interkollege programmeringswedstryd in Miami.

► event is the longest running mathematics camp in South Africa. This week-long programme of daily tests, lectures, group work and related activities provided learners with the opportunity to solve interesting and challenging problems typical of Mathematics competitions and Olympiads. Throughout the learners were ably assisted by a group of coaches led by Prof. Stephan Wagner.

As a key contributor to the open source library of scientific tools for the script-based programming language Python, Dr Stefan van der Walt was the ideal mentor for Mr Pieter Holtzhausen as he participated in the Google Summer of Code. In turn Prof. Willem Visser supervised Mr Kevin Durant's work on the Java PathFinder project within the Google Summer of Code. This is a global initiative for inspiring students to be involved in open source software development projects.

## ► 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 (UCT)  
University of the Free State (UFS)  
University of KwaZulu-Natal (UKZN)  
University of the Witwatersrand (Wits)

### 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

Ghent University  
Katholieke University Brussels  
Vrije University Brussels

#### 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

Mr Rynhardt Kruger and Mr Willem Venter became **the first visually impaired students ever to obtain a BSc** in Mathematical Sciences: Stream Computer Science.



**Mnr. Rynhardt Kruger en Mnr. Willem Venter** het die eerste twee visueelgestremde studente geword om 'n BSc-graad in Wiskundige Wetenskappe met Rekenaarwetenskap te verwerf.

waarin 60 hoëskoolleerders van die Boland en Westelike Provinsie mekaar van aangesig tot aangesig die stryd aangesê het. Hierdie projek van die SA Wiskundevereniging vorm deel van die landwye Soektog na Wiskundige Talent om spanne te vind wat Suid-Afrika by die Pan-Afrikaanse en Internasionale Wiskunde-olimpiades kan verteenwoordig.

Die 20ste jaarlikse Wiskundekamp van die Suid-Afrikaanse Wiskundige Stigting is ook deur die departement aangebied. Dit lok jaarliks aan die begin van die Desember-skoolvakansie skrandere jongelinge na die kamp van die Universiteit Stellenbosch. Hierdie Stellenbosse geleentheid is die wiskundekamp in Suid-Afrika wat al die langste aan die gang is. Hierdie weeklange program van daaglikse toetse, lesings, groepwerk en verwante aktiwiteite het aan leerders die kans gebied om interessante en uitdagende probleme wat tipies is van Wiskundekompetisies en -olimpiades, op te los. Leerders is deurgaans op bekwame wyse bygestaan deur 'n groep oefenmeesters onder leiding van prof. Stephan Wagner.

As 'n kernbydraer tot die oopbronsbiblioteek van wetenskaplike hulpmiddels vir die skriptaal Python, was dr. Stefan van der Walt die ideale mentor vir mnr. Pieter Holtzhausen toe hy aan die *Google Summer of Code* deelgeneem het. Op sy beurt het prof. Willem Visser as studieleier opgetree vir mnr. Kevin Durant, wat gewerk het aan die Java PathFinder-projek as deel van die *Google Summer of Code*. Dit is 'n wêreldwye onderneming om studente te besiel om betrokke te raak by projekte vir die ontwikkeling van oopbronsagteware.

## 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) (*samewerking 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 (UK)

Universiteit van KwaZulu-Natal (UKZN)

Universiteit van die Vrystaat (UV)

Universiteit van die Witwatersrand (Wits)

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

Katolieke Universiteit Leuven

Universiteit Gent

Vrije Universiteit Brussels

#### 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

**A record number of students** who completed the AIMS Postgraduate Diploma in Mathematical Sciences were offered bursaries to pursue master's studies at Stellenbosch University.

**'n Rekord getal studente** wat hulle AIMS Nagraadse Diploma in Wiskundige Wetenskappe voltooi het, het beurse ontvang om hul meestersgraadstudies aan die Universiteit Stellenbosch voort te sit.

# 13

**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  
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

► **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)  
National Research Foundation (NRF)  
National Research Foundation (NRF) Bilateral cooperation: Hungary  
Natural Resources Institute (NRI) University of Greenwich  
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)

Prof. Johan de Villiers – not only a mathematician, but also the **founder conductor of the Stellenbosch Libertas Choir** – retired. He started his academic career at Stellenbosch University in 1969.

**Prof. Johan de Villiers** – nie net 'n wiskundige nie, maar ook die stigtersdirigent van die Stellenbosch Libertas Koor – het afgetree. Hy het sy akademiese loopbaan aan die Universiteit Stellenbosch in 1969 begin.



*Afgetree  
Retired*

**Kanada**

McMaster Universiteit

**Pole**Nasionale Instituut vir Telekommunikasie  
Universiteit van Aveiro  
Universiteit van Coimbra  
Universiteit van Warsaw**Puerto Rico**

Universiteit van Puerto Rico

**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 South-Carolina  
Universiteit van Texas A&M► **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 samewerking: Hongarye  
NNS (KIC toekennings, Blue Skies toekenning, Fokusarea, Aansporingsbefondsing)  
NNS Mobiliteitstoekenning: Tsjeggiese Republiek  
Sentrum vir Eksperimentele Wiskunde aan die Universiteit Stellenbosch  
Universiteit Stellenbosch (US)  
Telkom - NSN  
UNAIDS  
Wêreldgesondheidsorganisasie (WGO)

Prof. Ben Herbst, Prof. André Weideman and Dr Stefan van der Walt helped to organise the 35th annual congress of the **South African Society for Numerical and Applied Mathematics.**

**Prof. Ben Herbst, prof. André Weideman** en **dr. Stefan van der Walt** het gehelp om die 35ste jaarlikse kongres van die Suid-Afrikaanse Vereniging vir Numeriese en Toegepaste Wiskunde te reël.



Aardwetenskappe  
Earth Sciences

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## Wiskundige Wetenskappe

(Wiskunde, Toegepaste Wiskunde, Rekenaarwetenskap)

## Mathematical Sciences

(Mathematics, Applied Mathematics, Computer Science)

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Epidemiological Modelling and  
Analysis (SACEMA)****Tydskrifartikels (gesubsidieer)/Journal Articles (subsidised)**

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