FACULTY OF SCIENCE

RESEARCH SHOWCASE

17 November 2017

Biochemistry

* + - * Systems biology and the silicon cell (Dr Dawie van Niekerk; [ddvniekerk@sun.ac](mailto:ddvniekerk@sun.ac).za)
      * Learning from Nature's pharmacy (Prof Marina Rautenbach; [mra@sun.ac.za](mailto:mra@sun.ac.za))
      * From infection and disease to drug discovery (Dr Marianne de Villiers; [mdevilliers@sun.ac.za](mailto:mdevillier@sun.ac.za))
      * Solving puzzles with bioinformatics (Prof Hugh Patterton; [hpatterton@sun.ac.za](mailto:hpatterton@sun.ac.za))
      * Steroid power (Dr Nicky Verhoog; [nverhoog@sun.ac.za](mailto:nverhoog@sun.ac.za))

Botany and Zoology

* + - * Sharksafe Barrier Project – Keeping humans and sharks safe (Prof Conrad Matthee, [cam@sun.ac.za](mailto:cam@sun.ac.za))
      * Hormone disrupting activity in our waters: Hype or Hurry (Prof Hannes van Wyk, [jhvw@sun.ac.za](mailto:jhvw@sun.ac.za))
      * Polychaete Research: Pests, Aliens and Fish food Dr Carol Simon, [csimon@sun.ac.za](mailto:csimon@sun.ac.za)
      * Marine research and applications (Prof Sophie von der Heyden, [svdh@sun.ac.za](mailto:svdh@sun.ac.za))
      * Bamboo research (Prof Dave Richardson, [rich@sun.ac.za](mailto:rich@sun.ac.za))
      * Working for water (Prof Dave Richardson, [rich@sun.ac.za](mailto:rich@sun.ac.za))

Chemistry and Polymer Science

* + - * SASOL polymer research ( Prof Albert van Reenen/Prof Harald Pasch  [ajvr@sun.ac.za](mailto:ajvr@sun.ac.za) )
      * Molecules on a mission, GOMOC (Group of Medicinal and Organic Chemistry) (Prof  Willem van Ottlerlo  [wvo@sun.ac.za](mailto:wvo@sun.ac.za) Dr Gareth Arnott  [arnott@sun.ac.za](mailto:arnott@sun.ac.za))
      * Designer porous materials (Prof Len Barbour, [ljb@sun.ac.za](mailto:ljb@sun.ac.za))
      * A radical approach to functional materials (Prof Delia Haynes, [dhaynes@sun.ac.za](mailto:dhaynes@sun.ac.za))
      * Nanomedicine – Polymers in the field of drug delivery (Prof Bert Klumperman [bklump@sun.ac.za](mailto:bklump@sun.ac.za) )
      * Nano-structured materials – Functionality and responsiveness (Prof Bert Klumperman [bklump@sun.ac.za](mailto:bklump@sun.ac.za))

Earth Sciences

* + - * Elemental and isotopic analysis applied to natural resources and exploration

(R. Rossouw and Dr. Laura Bracciali, CAF, [bracciali@sun.ac.za](mailto:bracciali@sun.ac.za) )

* + - * Groundwater in the Western Cape: Quality, quantity and sustainability and its role in securing the City of Cape Town’s water supply (Dr Jodie Miller [jmiller@sun.ac.za](mailto:jmiller@sun.ac.za) )
      * Petrogenesis & metallogeny of mafic-ultramafic intrusions (central-southern Africa) – (Dr Martin Klausen and Dr Hielke Jelsma, Anglo American Exploration; [klausen@sun.ac.za](mailto:klausen@sun.ac.za) )
      * Controls of trace metals in seawater (Dr Susanne Fietz [sfietz@sun.ac.za](mailto:sfietz@sun.ac.za) )
      * Controls on the distribution of the deleterious elements bismuth, cobalt and cadmium in the base metal sulphide deposits of the Mesoproterozoic Aggeneys-Gamsberg ore district, South Africa (Dr Bjorn von der Heyden [bvon@sun.ac.za](mailto:bvon@sun.ac.za) )
      * Applying X-ray Compositional MicroAnalytical tools in the mining industry: a case study using electron microscopy EDS and WDS analysis (Dr Lydia-Marie Joubert, CAF [lydiaj@sun.ac.za](mailto:lydiaj@sun.ac.za) )
      * High resolution SEM imaging and X-ray elemental  analysis for characterization of industrial samples (Dr Lydia-Marie Joubert, CAF [lydiaj@sun.ac.za](mailto:lydiaj@sun.ac.za) )

Mathematical Sciences

Applied Mathematics division

* Automated identification of tsetse fly wing vein intersections (Prof Ben Herbst herbst@sun.ac.za))
* Predicting the effect of biofilm growth on the pressure drop over a biofilter (Dr Sonia Woudberg woudberg@sun.ac.za)
* Hydrodynamic and sediment transport modelling to evaluate dredge disposal sites (Dr Hardus Diedericks ,hardus@sun.ac.za and Prof Francois Smit, fsmit@sun.ac.za)

Computer Science division

* + - * DEEPSEA: Dynamic Symbolic Execution for Java (Prof Jaco Geldenhuys, [geld@sun.ac.za](mailto:geld@sun.ac.za)) & (Prof Willem Visser, [visserw@sun.ac.za](mailto:visserw@sun.ac.za))
      * GREEN: Reducing, Reusing and Recycling Constraints in Program Analysis (Prof Jaco Geldenhuys, [geld@sun.ac.za](mailto:geld@sun.ac.za)) &  (Prof Willem Visser, [visserw@sun.ac.za](mailto:visserw@sun.ac.za))
      * Learning dynamics of neural networks in reinforcement learning (Dr Steve Kroon, [kroon@sun.ac.za](mailto:kroon@sun.ac.za))
      * JPF-Android (Me HM Botha, [heilamvdm@gmail.com](mailto:heilamvdm@gmail.com))

Mathematics division

* + - * Assembling three-dimensional spaces from building blocks (Dr Bruce Bartlett [bbartlett@sun.ac.za](mailto:bbartlett@sun.ac.za) )
      * Analysis of random tree structures (Prof Stephan Wagner [swagner@sun.ac.za](mailto:swagner@sun.ac.za))

Microbiology

* Isolation and molecular identification of biosurfactant producing bacteria from a wastewater treatment plant (Dr. Thando Ndlovu; thandon@sun.ac.za (Khan Lab))
* Pilot-scale CPC solar disinfection systems for rainwater treatment (Mr. André Strauss; 16974492@sun.ac.za (Khan Lab))
* Sunny side up: using an antioxidant producing bacterium to enhance pigmentation in egg yolks of laying hens (Ms. Tersia Conradie; tcon@sun.ac.za (Jacobs Lab))
* Plant growth-promoting properties of fynbos rhizobia and their diversity (Mr. Casper Brink; 16058623@sun.ac.za (Jacobs Lab))
* Sporatec: indoor air quality service (Prof. Karin Jacobs; kj@sun.ac.za / Mr. JJ Kriel; jjkriel@sun.ac.za (Jacobs Lab))
* Estimating the fate and loads of emerging contaminants and drugs of abuse (DOA) within South African surface waters (Mr. Edward Archer; earcher@sun.ac.za Wolfaardt Lab))

Physics

* Bayesian statistics in science and industry (Prof Hans Eggers, [hce@sun.ac.za](mailto:hce@sun.ac.za) )
* Soft Condensed Matter Theory in Science and Industry (Prof Kristian [Müller-Nedebock kkmn@sun.ac.za](mailto:Müller-Nedebock%20kkmn@sun.ac.za) )
* Laser based imaging and microscopy (Dr Pieter Neethling, [pietern@sun.ac.za](mailto:pietern@sun.ac.za) )
* Lasers and ion trapping (Dr Hermann Uys, [hermann@sun.ac.za](mailto:hermann@sun.ac.za) )
* Laser diagnostic techniques (Prof Erich Rohwer, [egr@sun.ac.za](mailto:egr@sun.ac.za) )
* Nuclear physics (Dr Paul Papka, [papka@sun.ac.za](mailto:papka@sun.ac.za) )

Physiological Sciences

* Diseases of national priority: Unravelling Disease Mechanisms in Cancer, Cardio-Oncology & Neurodegeneration (Prof Anna-Mart Engelbrecht, [ame@sun.ac.za](mailto:ame@sun.ac.za))
* Countering lifestyle-mediated diseases onset in South Africa (Prof Faadiel Essop , [mfessop@sun.ac.za](mailto:mfessop@sun.ac.za))
* Regenerative medicine – an extreme sport (Prof Carine Smith, [csmith@sun.ac.za](mailto:csmith@sun.ac.za) )