

NANO NEWS-SOUTH AFRICA

Volume 1, February 2010

Edited by: Patience Iyuke

Co-edited by: Neil Coville

Greetings all

The start of another year; this one certainly dominated in SA by the World cup in June/July. The nano community may be able to capitalize on this through the fullerene emblem and its relationship to the older style soccer ball. Perhaps the new generation ball with the different stitching pattern can provide a motif for yet new structures of carbon and other elements. The February newsletter is the first newsletter in 2010. The long holidays meant few workers at the bench or in offices in the first week or so of January – and so we decided to hold back news till month two of the year. As always – send on news to Patience. This is the community's newsletter and needs to reflect what is happening in SA.

Neil Coville

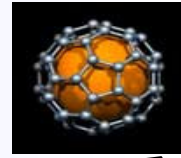
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Report on the First South African Nanotechnology Summer School

The first South African Summer School in Nanoscience and Nanotechnology took place at the Farm Inn Lodge in Pretoria from the 22nd of November to the 2nd of December 2009. It was organised by the Department of Science and Technology in conjunction with the University of the Western Cape, Mintek and the CSIR. It also received overwhelming support in the form of lecturers from IBSA, Argentina and France. The summer school was a success with well over 100 people in attendance. The school was aimed at training aspirant and experienced scientists from South Africa and abroad on the frontiers and fundamentals of nanoscience and the application of the technology in the field of water and health.

The summer school started with a welcome address by Prof Emmanuel Iwuoha, DVC Representative from the University of the Western Cape, followed by an opening address by the Deputy Minister of Science and Technology, Derek Hanekom. This was later followed by well articulated and informative lectures in three parallel schools on the fundamentals of



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nanotechnology and the IBSA advanced application programme on both water and health.

Some of the topics covered in the lectures included, but was not limited to, the following:

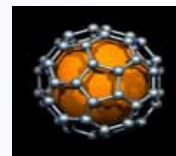
[Nanomedicine](#); [Nano-Electronics](#); [Water and Nano](#); [Bio and Nano](#); [Physics and Nano](#); [Green Nanotechnology](#); [Targeting with Nanoparticles](#); [Engineering and Nanotechnology](#); [Materials Science from a "Nano" Perspective](#); [Nanotechnology and Polymeric Drug Delivery](#); [Dried Polymeric Nanocapsules for Oral Drug Delivery](#); [The Toxicity of Engineered Nanoparticles in Mammalian Systems](#); [Nanotechnology Risk Assessment: Nanoecotoxicology Perspective](#); [Nanomembrane Treatment of Brackish Water in Rural Areas of North West Province](#); [Removal of Organic Contaminants from Water Using Nanospace Cyclodextrin Polyurethanes](#); [Chemistry and Nanotechnology Mechanism: Porous Material Formation by Nanocluster Stabilization](#); and [Nanoscience and Technology in India: India - Brazil - South Africa: A Few Commonalities, Resources, Trends and Vision](#).

In addition, there were extensive discussions and debates on very interesting topics such as nanotechnology fiction to future, nanotechnology scenarios, health, safety and the ethics of nanotechnology.

Dr. Daniel Adams from the Department of Science and Technology gave the closing remarks on the summer school and presented certificates to students.

For more information about the summer school lectures, as well as electronic copies of the lecture slides, please visit nanoschool web page at www.sananoschool2009.co.za or <http://www.sananoschool2009.co.za/presentations.aspx>

Patience Iyuke
Wits University



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Launch of SANi Student Chapter

The SANi student chapter was officially launched on the 24th November 2009 at the Farm Inn Lodge in Pretoria. The event was launched during the SA Summer Nanoschool and was well attended. Students attended the event in their numbers and there was a good representation of Universities in South Africa. Amongst the audience were DST Deputy Director for Nanotechnology: Ms Nontombi Marule, CSIR National Laser Centre Manager: Professor Ndumiso Cingo, SANi President: Dr Leskey Cele as well as important members of academia and industry. The guest speaker was Professor Neil Coville who gave an entertaining and well informed presentation, which gave a holistic overview of nanotechnology in South Africa.

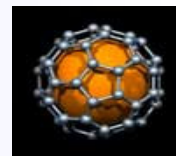
The programme was directed by Mr James Ramontja, a PhD candidate researcher from the CSIR National Centre for Nano-structured Materials (NCNSM). Dr Sabelo Mhlanga (interim chairperson) gave a brief introduction and history of the student chapter. He also facilitated the election of the new committee. Prior to the election, a presentation of the constitution of the student was presented by Miss Nikiwe Kunjuzwa from the University of the Witwatersrand, School of Chemistry, who emphasized that the students were encouraged to participate in shaping of the constitution.

The new committee that was elected consists of six members namely:

1. Nikiwe Kunjuzwa, University of the Witwatersrand (nikikunju@yahoo.co.uk)
2. James Ramontja, CSIR and University of Free State (jramontja@csir.co.za)
3. Langelihle Dlamini, University of Johannesburg (dlaminijeanclaude@yahoo.com)
4. Ntombi Mathe, CSIR and University of Cape Town (nmathe@csir.co.za)
5. Olushola Adeniyi, University of the Western Cape (oadeniyi@uwc.ac.za)
6. Rosy Ocwelang, North West University (atsile.rosy@gmail.com)

The concluding remarks were done by Prof Ndumiso Cingo who acknowledged everyone and encouraged student engagement in the student chapter. He concluded by declaring that the SANi Student Chapter was now officially opened.

Dr Sabelo Mhlanga, Wits University



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A Short course on Nanotechnology

Wits Enterprise is pleased to announce a short course on: **“An introduction to Nanotechnology.”**

- When: 22-26th March, 2010 (5-days)
- Time: 8h30 to 17h00
- Where: University of the Witwatersrand
- Guest Lecturer: Dr. Meyya Meyyappan, Director of the Center for Nanotechnology at NASA, USA
- Convenor: Professor Sunny Iyuke, Head of School, Chemical and Metallurgical Engineering, University of the Witwatersrand, Johannesburg
- Who should attend: Chemical and Metallurgical Engineers
- Cost: R8550.00 per person excl VAT

To register, contact: Tennyson Mashiloane

E-mail: Tennyson.mashiloane@wits.ac.za

Phone: +27 11 717 1188

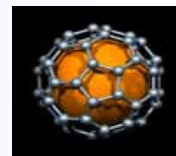
A comprehensive course brochure and registration form can be found at http://hermes.wits.ac.za/Enterprise/course/ebe_cme_16.html

Course: CHMT7055 - INTRODUCTION TO NANOTECHNOLOGY

Nanotechnology is a technology that owes its basis on the prefix nano, a Greek word, which means (dwarf) billionth (1×10^{-9}) meter dimensions. It is a relatively new technology that deals, studies or possesses the ability to systematically organise and manipulate properties and behaviour of matter and even builds matter at the atomic and molecular levels. It may be seen as the next technological rush since the Silicon Valley outburst in electronic miniaturisation, and the emerging cutting-edge technology. It is certainly setting the pace for the creation of functional devices, manufacturing and fabrication, materials and systems at the molecular level, atom by atom, to create large structures with fundamentally precise and specific molecular organisation.

Special instructions: There will be a half day laboratory work included in the course.

Submitted by Judy Blom, Wits Enterprise



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Announcement on the ICPC Nanonet Africa Report

Dear ICPC Nanonet Member,

As you are aware, the ICPC NanoNet project brings together partners from the EU, China, India, Russia and Africa and aims to provide wider access to published nanoscience research and opportunities for collaboration between scientists in the EU and International Cooperation Partner Countries.

I am currently compiling an annual report on nanoscience and nanotechnology developments in sub-Saharan Africa and would like to invite you to contribute details about your current N&N activities to help foster such collaborations; in particular:

- Name of organisation
- Current focus / applications of research
- Recent milestones
- Current or planned collaborations

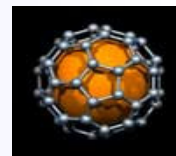
In addition, up to date information about any of the following would be highly useful to the report:

- Activities of regional N&N organizations and networks
- Key themes and topics (e.g.. Water purification, renewable energy)
- Developments in N&N S&T agreements
- National or regional funding programmes for N&N
- Collaborative research centres or projects
- N&N networks that exist between countries within this region and/or with the EU

This report offers a unique opportunity to showcase your role in N&N R&D with a view to helping form networks as well as identifying similar fields of interest. I would greatly appreciate it if you could take the time to respond. Reports for 2009 are available to download here: <http://www.icpc-nanonet.org/content/category/7/20/46/>

Thank you and best wishes

Lesley Tobin
Technology Analyst
ICPC-NanoNet Project Coordinator



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Symposium on the Biological Interactions of Engineered Nanoparticles.

The symposium on “The Biological Interactions of Engineered Nanoparticles: Novel Functions and Nanosafety Issues” will be held at the Hawaii Convention Centre, Honolulu, USA from December 15-20, 2010. This symposium will bring scientists in Material Sciences, chemistry, medical sciences, nanotoxicology and related fields from Pacific Rim countries to exchange the latest information on this emerging area of research, and to review and discuss what we should pursue in the future. The topic is highly interdisciplinary and the sessions are designed to be of interest to multiple research communities.

Session 1 will focus on the fabrication and novel biomedical applications of nanoparticles/nanostructures/nanosystems, including: i) the synthesis and characterization of biomedical nanomaterials, ii) the basic biology of the nanoparticle/organism interface, such as non-specific protein adsorption, iii) the consequences of the protein coats on particles and their reactivity towards biomolecules, etc, and iv) recent advances and future prospects for the novel biomedical functions of engineered nanoparticles.

Session 2 will focus on the potential for health and environmental impacts from exposure to engineered nanoparticles. This session will mainly focus on nanotoxicological research, with an emphasis on whole organism studies, including absorption, distribution, metabolism, excretion and toxicity of the engineered nanoparticles, and any other nanosafety aspects.

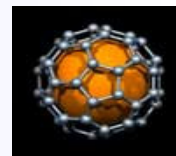
Session 3 will draw both of these subjects together, with a focus on how computational models can be used to look for trends in these complex datasets.

Finally, **Session 4** will discuss computational modelling, including QSAR and other approaches for predicting the biological effects of engineered nanoparticles or to screen for the toxic potential of nanoparticles. We will also invite decision makers from governmental agencies in Pacific Rim countries for discussions with researchers about the regulatory framework for responsible development of nanoscience and nanotechnology.

Abstract submission: January 1 to April 5, 2010
www.pacificchem.org/abstracts.

Further Information and Contact Addresses

Further information is available at <http://www.pacificchem.org/>.



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For any question , please contact one of the symposium co-chairs:

Prof. Yuliang Zhao, zhaoyuliang@ihep.ac.cn (Co-Chair, Chinese Academy of Sciences)

Prof. Vicki Colvin, colvin@rice.edu (Co-Chair, Rice University)

Prof. Chris Metcalfe, cmetcalfe@trentu.ca (Co-Chair, Trent University)

Prof. Paul J.A. Borm, p.borm@hszuyd.nl (Co-Chair, Zuyd University)

Dr Maxine McCall, maxine.mccall@csiro.au (Co-Chair, CSIRO Australia)

Submitted by Prof. Gulumian (Wits)

Stanford Scientists Coat Paper with Nanotubes to Create Instant battery

Scientists at Stanford University are harnessing nanotechnology to produce ultra-lightweight, bendable batteries and supercapacitors in the form of everyday paper. Coating a sheet of paper with ink made of carbon nanotubes and silver nanowires makes a highly conductive storage device, according to Yi Cui, PhD, assistant professor of materials science and engineering. "These nanomaterials are special," Cui explains. "They're a one-dimensional structure with very small diameters." The small diameter helps the nanomaterial ink stick to the fibrous paper, making the battery and supercapacitor very durable. The paper supercapacitor may last through 40,000 charge-discharge cycles — at least an order of magnitude more than lithium batteries. The nanomaterials also make ideal conductors because they move electricity more efficiently than ordinary conductors, Cui maintains.

Cui previously created nanomaterial energy storage devices using plastics. His research shows that a paper battery is more durable because the ink adheres better to paper. Crumpling or folding the paper battery — even soaking it in acidic or basic solutions — does not degrade its performance, allowing for many clever applications. "This technology has the potential to be commercialized within a short time," says Peidong Yang, professor of chemistry at the University of California-Berkeley. "I don't think it will be limited to just energy storage devices." Cui's work was reported online in [Proceedings of the National Academy of Sciences](#).

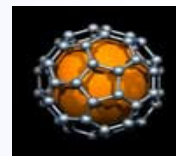
Sources: Tech Transfer:

<http://www.technologytransfertactics.com/content/2009/12/16/stanford-scientists-coat-paper-with-nanotubes-to-create-instant-battery/> and

Science Direct:

<http://www.sciencedaily.com/releases/2009/12/091207165035.htm>

Submitted by: Robert Caveney, Wits Enterprise.



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Invited Chair in the Field of Nanotechnology

The University of Madeira/Santander-Totta Bank and Portuguese Foundation for Science and Technology, Portugal are launching a public international call for an Invited Chair (Full Professor) in the field of Nanotechnology/Nanochemistry and Nanomaterials.

Applications are invited for the following position:

Invited Chair in the field of Nanotechnology/Nanochemistry and Nanomaterials (4 years contract)

Salary: up to 40.000€ gross income and fringe benefits, supported by University of Madeira/Santander-Totta Bank, and the researcher must spend, at least, one semester in each year at University of Madeira/Centro de Química da Madeira.

Further information for applicants is available online at:

<http://www.uma.pt/vagas>

The closing date for receipt of applications is February 15th, 2010.

The [University of Madeira](#) and [Centro de Química da Madeira](#) (CQM) is an equal opportunity employer and committed to selection based on merit

Posted by [Joao Rodrigues](#) on December 12, 2009 at 5:34pm

Source: <http://www.nanopaprika.eu/profiles/blogs/invited-chair-in-the-field-of>

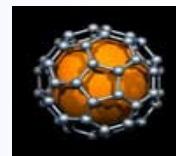
List of Forthcoming Nano Events

Local event

- i) A short course on "An Introduction to Nanotechnology" School of Chemical and Metallurgical Engineering, Wits University, 22nd to 26th March 2010. On line registration form:

http://hermes.wits.ac.za/Enterprise/course/ebe_cme_16.html

or Tennyson Mashiloane : Tennyson.mashiloane@wits.ac.za



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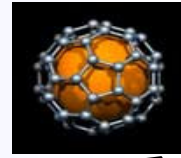
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International Events

- i) Nanomedicine: Visions for the Future Conference, Amsterdam, Netherland, 24th-25th February, 2010 .
<http://www.nano.org.uk/conferences/nanomed2010/overview.htm> or
<http://www.nanovip.com/nanomedicine-visions-for-the-future-conference-on-24th-and-25th-february-2010.html>
- ii) Second NanoImpactNet Conference - Lausanne 2010, Lausanne, Switzerland, 10th-12th March, 2010: : <http://www.nanoimpactnet.eu> or
<http://www.nanopaprika.eu/events/second-nanoimpactnet>
- iii) NanoManufacturing Conference & Exhibits, Mesa AZ USA, 14th -15th April 2010: <http://www.sme.org/nanomanu...> or
<http://www.nanopaprika.eu/events/nanomanufacturing-conference>
- iv) International Conference on Nanoengineering, University of Edinburgh, UK, 15th April 2010 <http://www.lifelong.ed.ac.uk/nanoengineering2010/>
or <http://www.pepublishing.com/acadpub/jnn/home/events.htm>
- v) Collaborative Conference on Interacting Nanostructures, San Diego, CA, USA, 19th-23rd April 2010. http://www.oanano.org/ccin?_c=1
- vi) ICBB 2010: "International Conference on Bioengineering and Bionanotechnology" Rome, Italy, 28th-30th April 2010.
<http://www.goingtomeet.com/conventions/details/55332>
<http://www.waset.org/conferences/2010/rome/icbb/>
- vii) ICNOP 2010 "International Conference on Nanotechnology, Optoelectronics and Photonics" Roman, Italy, 28th-30th April 2010
<http://www.goingtomeet.com/conventions/details/55331>
<http://www.waset.org/conferences/2010/rome/icnop/>
- viii) Nanosens 2010, Tech Gate, Vienna, Austria, 29th-30th April 2010
<http://www.nanosens.at/>
- ix) First Online Nano-Globe Conference & Exhibition, Internet, 5th May at 6 am to 8th May at 7 pm: <http://www.nano-globe.com/> or
<http://www.nanopaprika.eu/events/first-online-nanoglobe>
- x) Bridging the Gaps: 2010 SME Annual Conference, Sheraton Music City Nashville TN USA, 6th-8th June 2010
<http://www.goingtomeet.com/conventions/details/55058> or
<http://www.sme.org/cgi-bin/get-event.pl?--001889-000007-home--SME->



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- xi) Intensive Course on Nanomaterials, Bad Gastein, Austria, 8th-10th June 2010
<http://www.nanoconsulting.de/englisch/annoucement-2010.pdf>
- xii) The 2nd Annual ICPC NanoNet Workshop, Beijing, China, 14th-15th June 2010: <http://www.icpc-nanonet.org/>
- xiii) 5th Annual Greener Nanoscience Conference & Program Review, Portland, Oregon, 16th-18th June 2010:
<http://oregonstate.edu/conferences/greenernano/> or
<http://www.nanopaprika.eu/profiles/blogs/greener-nano-2010-reducing>
- xiv) Nanotech Conference & Expo 2010, Anaheim Convention Centre, Anaheim, California, USA, 21st-25th June, 2010
<http://www.techconnectworld.com/Nanotech2010/>
- xv) 2010 Villa Conference on Interaction Among Nanostructures (VCIAN-2010), Santorini, Greece, 21st-25th June 2010:
<http://www.oanano.org/vcian> or
http://www.nanopaprika.eu/events/events/show?id=161234%3AEvents%3A56407&xg_source=msg_invite_event
- xvi) 18th International Conference on Composites/Nano Engineering (ICCE-18), Anchorage, AK (USA), 4th-10th July 2010
http://myweb.polyu.edu.hk/~mmktlau/ICCE/ICCE_Main.htm
- xvii) Nanosafe 2010, Minatec, Grenoble (France) 15th -19th November 2010. More information: <http://www.nanosafe.org/>
- xviii) The 2010 International Chemical Congress of Pacific Basin Societies (Pacifichem), Honolulu, Hawaii, USA, 15th-20th December 2010.
<http://www.pacifichem.org/>.