

NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

Edited by *Patience Iyuke*

Co-edited by *Neil Coville*

CONTENTS

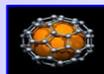
1. Update on Nano conferences
2. Seminar update on Polymer Nanocomposites Technology
3. NASA Nanotechnology Expert visits Wits University
4. The First South African Nanotechnology Book for Children
5. The Microshape Tweakers
6. The Small World of Nanotechnology Offers Big Opportunity for SA's Fledgling Nanopioneers
7. Supporting International Cooperation in Environmental Nanotechnology
8. Call for Project Proposals
9. List of Forthcoming Nano Events

Update on Nano Conferences

I have just returned from a trip to India where I attended the recent IBSA School on Sensors (about 70 attendees). A full report on the event will appear in the next issue of the Newsletter. Also, while in India I attended two Conferences on Nanoscience and Nanotechnology. Both events were well supported (600 and 250 delegates). Within a two week period the above three events were three of SIX events on nano topics that were being held in India!. This is truly amazing and gives an indication of the importance of the area of nano within the scientific and engineering communities in India.

The implication of course is that the nano area will produce goods that will aid humanity (health, social etc.) and provide jobs and livelihoods for citizens. And while the scientific changes are underway the impact on society is being assessed within a research environment. Examples include two papers that show issues that need to be considered these days in the nano area – cost (Economic assessment of single-walled carbon nanotube processes; *J Nanopart Res* (2010) 12:551–562) and citizens views of nano (The morality of attitudes toward nanotechnology: about God, techno-scientific progress, and interfering with nature; *J Nanopart Res* (2010) 12:373–381). These types of issues were never considered when other areas of science were being developed, and this gives an indication of the changed research world in which we operate today.

Neil Coville



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

Seminar update on Polymer Nanocomposites Technology

Prof. Suprakas Sinha Ray gave a seminar presentation on "Polymer Nanocomposites Technology: Industrial Opportunities or Challenges?" on 24th of February 2010 at the School of Chemistry, Wits. His talk addressed some of the properties and benefits that Polymer nanocomposites can provide such as mechanical and barrier properties. Despite the proven benefits, he mentioned that polymer nanocomposites are used today only in specific areas.

He gave some of the reasons for the limited growth of this technology such as inconsistent quality of CNTs supplied, the poor dispersion and solubility of CNTs in most solvents and polymer, and owing to the very large surface area of CNTs, the polymer-CNT mixtures are highly viscous and thus difficult to process.

Prof. Suprakas Sinha Ray is the Chief Researcher and Leader at DST/CSIR Nanotechnology Innovation Centre, National Centre for Nano-Structured Materials, South Africa. He is currently leading the first emerging research area (ERA) at the CSIR. His research programme is based on scientific research on the properties and structure of nanomaterials which could lead to new materials and applications for nanotechnology with local industries.

For more information about his work, please contact Prof. Suprakas at rsuprakas@csir.co.za or Tel: +27 12 841 3702. Fax +27 12 841 2229

Patience Iyuke

NASA Nanotechnology Expert Visits Wits University

The School of Chemical and Metallurgical Engineering at the University of the Witwatersrand (Wits) is privileged to host Dr. Meyyappan, Director and Senior Scientists at NASA's Ames Research Centre for Nanotechnology, USA.

Dr. Meyyappan will be the guest lecturer for "An Introduction to Nanotechnology" a short course to be held from 22nd to 26th March 2010 at the University of the Witwatersrand. This is a rare opportunity to meet one of the world's most distinguished nanotechnologists.

Cost: R8550.00 per person excl VAT

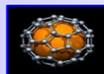
To register, contact: Tennyson Mashiloane

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

Phone: +27 11 717 1188

Fax: 086556247

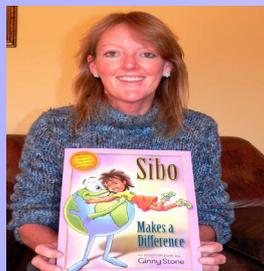
Mobile: +27 (0) 82 69987376



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

The First South African Nanotechnology Book for Children



Writer Ginny Stone with one of her Sibos books

Pretoria science writer Ginny Stone is writing the country's first nanotechnology book for children." The book has been commissioned by the South African Agency for Science and Technology Awareness, "says Stone, who has published seven books featuring heroine and junior environmental activist Sibos. "The books are just a nice way to reach the next generation in a non-threatening way," explains Stone, who did considerable science outreach in Cape townships through iThemba Laboratory for Accelerator-Based Sciences before moving to Gauteng.

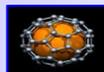
Although the book is called Sibos Sizes Things Up, the focus is actually down, down, down to the size of a nanometre, or a billionth of a metre. The word comes from the Greek nanos, meaning dwarf. "The research process was really interesting. I learnt a lot from books, people, the internet. Who knew that nano was so cool?" Stone says. "It's the wave of the future. Our kids will be nanokids."

The book is due to go to illustrators next month. It will be in bookstores in April. Stone is also planning to submit the book to the department of education for possible use in science classrooms for children in grades 4 to 6. Professor Rui Krause, who heads the nanomaterials research focus group at the University of Johannesburg, will check the book for scientific accuracy.

Krause designs carbon nanotubes and titanium dioxide nanomaterials to improve water treatment and remove pollutants, and he is researching the use of membranes, using nanoquantities of platinum metal, for use in experimental hydrogen energy fuel cells.

Meanwhile, the Gauteng education department and singer Karen Zoid will launch the Sibos Says ... campaign on Friday, February 19, at 9.45am at the Kloofendal nature reserve in Roodepoort. "The campaign is meant to improve scientific and environmental awareness at 100 selected schools," Stone says. "There will be tree-planting with the help of City Parks, industrial theatre, workshops on recycling glass, worksheets, and Toyota is covering the cost of donating 24 of my books to each school participating."

If the pilot project works well, the Gauteng education department will roll out the books to all primary schools in the province. More at <http://sibosays.blog.com>



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

Sources: Christina Scott : 32 Mail & Guardian February 12 to 18 2010 and



Submitted by: Rui Krause, University of Johannesburg

The Microshape Tweakers



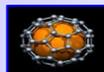
Visiting doctoral student Linda Nyamen from the University of Yaoundé, Cameroon, is flanked by University of Zululand nanotechnology professor Neerish Revaprasadu and Karthik Ramasamy, a visiting PhD student from the Materials Science Centre at the University of Manchester in the UK

Can a small thing like nanotechnology sort out a big problem with solar panels? Professor Neerish Revaprasadu, who heads the nanotechnology research unit at the University of Zululand, thinks the answer is yes. And he wants industry to beat a path to his lab door.

The big problem first: all solar panels, regardless of their design, are only able to convert a small percentage of the sun's power into energy. Most of the sun's energy goes untapped. The little solution: tweaking the atomic shape of the semiconductors used in solar photovoltaic panels. Semiconductors have been around since the first transistor radio was switched on.

Revaprasadu's conductor materials, used in solar panels around the world, include cadmium telluride, a crystal formed from the metals cadmium (once used in pigments and still found in batteries) and tellurium, which smells like a radish when heated and is named after the Latin for Mother Earth. But Revaprasadu's tight-knit group — which includes three PhD students, four master's students, a handful of honours students and some post-doctoral fellows — does something extraordinary with the semiconductors.

They are redesigning the shape of the semiconductor materials, atom by atom, reshaping them from spheres into rods." It's an architectural problem in the nano world. This is like Lego blocks. If they're shaped like rods, they can pack better and



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

sit next to each other,” explained Revaprasadu, who holds the chair in nanotechnology funded by the department of science and technology and the National Research Foundation.

“If we get this right, nanotechnology will reduce the amount of rare metals needed to build a solar panel,” said Revaprasadu, who also leads the public understanding nanotechnology subcommittee of the South African Nanotechnology Initiative. “Nanotechnology will also make the solar panels more efficient, because a higher percentage of the energy will be turned into electricity.”

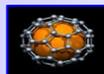
The team’s published work on controlling shape to make conducting electricity easier and stronger is making people sit up and take notice. One of his honours students, Durban-born single mom Nonto Ziqubu, has a research paper on shape control coming out soon in *Chemistry of Materials*, a prestigious peer reviewed journal in the US.

Revaprasadu is among several South African researchers, including Neil Coville from Wits University and Malik Maaza from iThemba Laboratories for Accelerator-Based Sciences in the Western Cape, working on energy research in the India-Brazil-South Africa alliance to fight the brain drain and find solutions without relying on the richer nations of the world. As a result, he will be in India this month to attend an IBSA workshop on nanosensors such as smoke alarms and gas detectors.

Not bad going for a father of toddler triplets who still managed to publish 18 papers last year.” “Things are now really taking off,” Revaprasadu said enthusiastically. “People are sharing ideas and seeing how we can move it faster. Within South Africa, we are moving beyond internal collaborations. There’s huge emphasis on working across the south.” Of course, the scientific idea of fast is a little different from that of a Formula 1 driver.” Give us five to 10 years,” predicted Revaprasadu. “Even though the government is putting more money into hydrogen energy research than solar energy right now, the solar economy might come faster than the hydrogen economy.”

He’s organised for a British chemistry colleague and research collaborator, Paul O’Brien from the University of Manchester, to tour the Eastern Cape universities next month. The lecture tour will include at the Nelson Mandela Metropolitan, Fort Hare, Rhodes and Walter Sisulu universities between March 7 and 13. O’Brien — a contributor to the South African government’s nanotechnology strategy who works on Britain’s Royal Society nanomaterials project in Ghana and Tanzania — has received an honorary doctorate from the University of Zululand for his outreach work in South Africa and has been recognised by the American Chemical Society for his work in the developing world.

The department of science and technology has encouraged scientists to go out into the broader community to talk about this new technology, and that’s important,” said Revaprasadu. He understands people’s fears about nanotechnology, as some of his



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

conductor materials — cadmium, lead, telluride, selenide — can be toxic if not correctly handled. “Yes, there are potential dangers, as there are in any new development. We don’t know what will happen when nanomaterials degrade, when they are washed into rivers, if they are affected by other chemicals,” he warned. “But nanotoxicity is now a huge focus in research. Every conference has sessions devoted to it.” The biggest threat to nanotechnology — both here and worldwide — is not health problems but an indifferent industry, he suspects.

“We specialise in producing nanoparticles, but there is not a nano-industry to support them. I think only Sasol is really taking students in this area. I hope things will change. With our energy problems, there’s scope for entrepreneurs.” And in future, South African businesses will be large, medium, small— and nano!

**Neerish Revaprasadu can be contacted
at nrevapra@pan.uzulu.ac.za**

Sources: Christina Scott : 32 Mail & Guardian February 12 to 18 2010 and



Submitted by: Rui Krause, University of Johannesburg

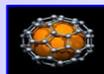
The Small World of Nanotechnology Offers Big Opportunity for SA's Fledgling Nanopioneers



Eastern Cape physics Professor Jan Neethling and nanotechnology research assistant Tasneem Limbada with their newly installed microscope. Photo: Amor Coetzee

Small things can yield significant benefits. Take nanotechnology, for example. The careful engineering of materials at microscopic level, molecule by molecule, is quietly revolutionizing our world.” Materials behave differently at molecular level than they do in large quantities and nanotechnology takes advantage of that,” says Jan Neethling, a physics professor at Nelson Mandela Metropolitan University.

In Japan, minute nanocrystals that form a protective film on tooth enamel are squeezed out of a toothpaste tube. In Australia, a dollop of transparent sunscreen uses nanoparticles —invisible to the human eye — that are extremely effective at



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

absorbing skin cancer-causing ultraviolet light. You save money because the small size of the particles means the sunscreen spreads better. The result: more than half the market share now goes to nanosunblocks.

Toyota car manufacturers have been using nanocomposites in their bumpers — making them 60% lighter and twice as tough — for close to a decade. Golf club manufacturers are investing in nanocomposites, which behave completely differently from their individual normal-size components, for the same reason.

Dry-cleaners are probably furious at the news that in the US nanoparticles can create stain-repellent khakis, for a price.

Nanotechnology is in the bonding agents used by dentists. Nano-makeup can reflect the light from your wrinkles while nano-cosmetics can penetrate your skin. Nanotechnology is already involved in creating some imported drug capsules.

Nanotechnology is probably already in your life. But how much of the research is done in South Africa? Quite a lot, it turns out.

Pharmaceutical professor Viness Pillay from the University of Witwatersrand is researching neuronano drugs to combat brain degeneration diseases.

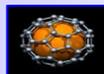
Dr Daven Compton heads the nanoscience division at Mintek, South Africa's national mineral research body, where nanotechnology is being explored to prevent or reduce environmental hazards such as leaching.

The Medical Research Council, the Council for Scientific and Industrial Research, the Water Research Commission and the science faculties of many universities are using nanotechnology to explore everything from air purification to cleaner water.

But nano will grow bigger when the continent's first high-resolution transmission electron microscope is installed at the Nelson Mandela Metropolitan University in the Eastern Cape next year. The microscope, which is worth close to R100-million, is so sophisticated that it will be able to detect individual atoms on the surface of a crystal. "Most nanomaterials are made of crystals," Neethling says. "This way we can really exploit the material fully."

The microscope will be able to analyse and take pictures, making it invaluable for researchers interested in improving the strength or reducing the cost of everything from paint to plastic, steel to silk. Several South African companies are lining up, including synthetic fuel giant Sasol, the Nuclear Energy Corporation of South Africa and Element Six, a manufacturer of artificial diamonds.

The multimillion-rand nanotechnology equipment is so important that a building and research centre is being built around it, with a 1m thick concrete floor to protect against the tiniest vibration, even as the continent drifts. A ceiling will tower at least



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

4m above the floor. Special air conditioning will keep out dust. Insulated walls will block interference from the electromagnetic radiation of cell phones. The rattle and hum of traffic will be nonexistent. The building will be known by the unpronounceable acronym CHRTEM, which stands for the Centre for High-Resolution Transmission Electron Microscopy.

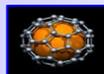
More importantly, the equipment is a gift from the nation, through the National Research Foundation, to the nation. It is available for industry as well as researchers and students around the country. This is not just a first for Africa and for South Africa. This is one of the finest microscopes available anywhere, one of 100 in the world that have lenses that can correct for distortions. "Without a machine like this South Africa can forget about competing with the world," says Neethling, the fledgling centre's director. "If we can't see what other people are seeing, we cannot compete with them. This instrument will allow us to see atoms for the first time in South Africa."

The new microscope will help answer health questions. When the slightest manipulation in the size of the material can make it toxic, it helps to have the equipment to get the shape and size of the material just right, to harness the protection without causing harm.

"The new microscope makes nanotechnology an accessible area of study. It won't be remote any more," notes Mthuthuzeli Zamxaka, the Pretoria-based coordinator of the Public Engagement on Nanotechnology (PEN) programme". South African youth should realise that there are many exciting opportunities that this emerging technology may provide. "South Africa is heading for an era of great nanotechnology discoveries," predicts Zamxaka, whose PEN programme falls under the South African Agency for Science and Technology Awareness."

We have the opportunity to use nanotechnology to supply solutions specific to African problems." There will be many exciting opportunities for thousands of nanopioneers. Doing well in maths and science at school is the first step. There are bursaries so you can do science or engineering at university, followed by paid-for postgraduate studies in fields such as materials science, bioengineering or biotechnology."

This month Zamxaka, a doctoral student in environmental microbiology at Wits University, sat on a panel reviewing more than 20 proposals for about R4-million worth of nanotechnology communication projects. In between proposals he worked on his research on how plants have the potential to reduce the heavy metal content in mine dumps. "Nanotechnology has the potential to change significantly the way we do things in our daily lives. The public will need to be prepared for this", said the Eastern Cape-born scientist. "The PEN programme helps the public make informed decisions."



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

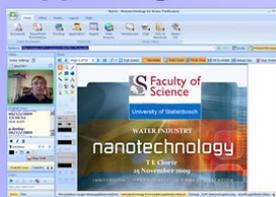
**Jan Neethling can be contacted
at www.nmmu.ac.za/physics**

Sources: Christina Scott : 32 Mail & Guardian February 12 to 18 2010 and



Submitted by: Rui Krause, University of Johannesburg

Supporting International Cooperation in Environmental Nanotechnology

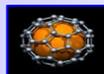


Article written by Dr Ineke Malsch, postbus@malsch.demon.nl, MalschTechnoValuation

Abstracts

The ICPC-NanoNet project can support international research cooperation in environmental nanotechnology between the European Union and International Cooperation Partner Countries to the EU (emerging economies and developing countries). This article focuses on the case of nanotechnology for water purification.

Currently, potential and actual applications of nanotechnology in environmental technologies are receiving considerable attention worldwide. Relevant applications include environmental remediation (air, water and soil), monitoring, and resource saving (energy and materials). These technologies are not only intended for markets in wealthy countries, including in Europe, the USA and Japan, but may also be particularly useful for protecting consumers and the environment in emerging economies and developing countries. Furthermore, research groups and companies in emerging economies and developing countries are increasingly active in R&D and manufacturing environmental nanotechnologies, as part of a national knowledge economy. International cooperation in environmental nanotechnology research involving universities and companies from North and South is expected to bring benefits to both sides. The European Union fosters such research cooperation by opening up the current Seventh Framework Programme for RTD (FP7, 2007-2013) to participants from outside the EU. Research groups from emerging economies and developing countries can participate as additional partners in EU funded research projects and receive funding from the EU. The projects should always be coordinated by a European organisation. However, a bottleneck has been created by the lack of visibility of excellent research groups in emerging economies and



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

developing countries to their European peers. The ICPC-NanoNet project www.icpc-nanonet.org is funded by the EU to help overcome this problem.

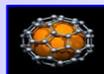
Aims and scope of the ICPC-NanoNet project

ICPCNanoNet is funded by the EU under FP7 for four years from 1st June 2008. It 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. Specifically, the project provides:

- An electronic archive of nanoscience publications, freely accessible to researchers around the globe: www.nanoarchive.org;
- An electronic database of nanoscience organizations and networks in ICPC at www.icpc-nanonet.org;
- An electronic database of nanoscience researchers and stakeholders across the globe at www.icpc-nanonet.org;
- Annual reports on nanoscience developments in eight ICPC regions: Africa, Caribbean, Pacific, Asia, Eastern Europe and Central Asia (EECA), Latin America, Mediterranean Partner Countries (MPC), Western Balkan Countries (WBC) at www.icpc-nanonet.org;
- Online networking tools including a discussion forum at www.icpc-nanonet.org and teleconferencing/online workshop facilities to support networking between peers in different world regions (info at www.icpc-nanonet.org);
- Annual workshops in the EU (Prague, 1 June 2009), China (Beijing, 14-15 June 2010), India (in 2011) and Russia (in 2012). These will also be webcast live to facilitate greater access.

Nanotechnology for Water Purification

How can the ICPC-Nanonet project be useful to researchers in environmental nanotechnology? The recent ICPC-Nanonet online workshops examining nanotechnology for water purification is a case in point. Worldwide 1.1 billion people have no access to safe drinking water. Each year, there are 4 billion cases of diarrhoea, including 88% due to unsafe water; and 1.8 million people die each year because of unsafe drinking water. (WHO/UNICEF: Water for Life, Making it Happen, 2005, quoted by Patrick Dunlop, University of Ulster). Nanotechnology is expected to contribute to water purification in a number of ways. Eugene Cloete of the University of Pretoria lists the following: filtration, surface modification, monitoring, bio-adsorption and remediation, antimicrobials, photocatalysts and desalination. Excellent research groups specialising in this area can be found in South Africa and other emerging economies and developing countries as well as in Europe and North America, but a lack of awareness of each others' expertise and research infrastructure, as well as relevant funding opportunities, hampers international cooperation. The report "Nanotechnology, Water and Development" published in 2006 by the Meridian Institute includes an overview of the issues and available technologies as well as case studies in Bangladesh and South Africa (Hillie et al, 2006).



NANO NEWS - SOUTH AFRICA

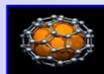
Volume 2, March 2010

Teleconferences

To help overcome the lack of visibility of excellent researchers, ICPC-NanoNet organised a series of three free teleconferences in December 2009 on nanotechnology for water purification, featuring experts in this field from Europe and South Africa. The topics discussed include 'Control of Biofouling in Nanofiltration Systems' (by Prof. Dr Eugene Cloete, Head of the Microbiology Department of the University of Pretoria, South Africa); 'Functionalized nanotubes/polyurethane composites for the removal of chlorinated organics in water' (by Dr Rui Krause, Department of Chemical Technology, University of Johannesburg, South Africa); 'Water Treatment in Developing Regions – Using Nanotechnology to Enhance Solar Disinfection' (by Dr Patrick Dunlop, University of Ulster, Northern Ireland, UK); 'Nanotechnology for Water Treatment: Promises, Questions and Detection of C60' (by Dr Bas Hofs - KWR Water Cycle Research Institute, The Netherlands); 'Photocatalytic Decontamination of Water by Nano-TiO₂: Perspectives and Challenges' (by Dr Lorette Scifo - LABEIN Tecnalia, Spain); and 'European funding possibilities for European and non-European researchers' (by Ineke Malsch, Malsch TechnoValuation). For each of the three sessions more than 80 people registered, but due to technical constraints participants who attended numbered around 20-25. The presentations gave rise to lively, stimulating discussions of technical, economic and safety issues. The presentations and slides highlighting the research interest of several other participants are available free at the ICPC-Nanonet website for registered users, who can continue their discussions on the online forum on the website or by contacting the relevant experts directly. Nanoscientists from Europe or from the International Cooperation Partner Countries to the EU are welcome to propose their own teleconference/online workshop related to nanotechnology, which can be organised by ICPC-Nanonet on request. (contact lesley.tobin@nano.org.uk)

Databases

Searching the online organisations database at www.icpc-nanonet.org by keyword "water" resulted in 40 hits (January 2010). In general, 81 of the currently 790 organisations in this database are active in nanotechnology for environmental applications. These organisations are all located in International Cooperation Partner Countries to the EU. This means they are in emerging economies or developing countries. 2502 European research organisations and companies active in nanotechnology are included in the online database at www.nanoforum.org. This includes 173 organisations in safety and environment, of which 11 are water-related. The researchers' database at www.icpc-nanonet.org holds 358 records including 131 whose interests include environmental applications. These researchers come from all over the world including Europe, Asia and Pacific, North and South America and Africa and are all self-registered. Nanoscientists and stakeholders who are not yet included are welcome to register themselves in this database, Registration is free. The nanoarchive www.nanoarchive.org currently contains 5517 peer reviewed publications, including 42 in nanotechnology for environmental applications. About 685 records are connected to the full text either as a pdf or through a link to the corresponding author. Nanoscientists are welcome to upload their own publications



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

to the nanoarchive, respecting the copyright rules of the publisher. (contact lesley.tobin@nano.org.uk)

Annual reports

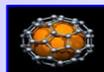
The ICPC-NanoNet annual reports 2009 review nanotechnology activities per country in eight world regions: Africa; Asia (East and West); the Caribbean; Eastern Europe and Central Asia; Latin America; Mediterranean Partner Countries; Pacific; and Western Balkans. In Africa, the Nanocentre for Africa located at iThemba Laboratories for Accelerator Based Science in South Africa is an international research centre with a strong focus on nanotechnology and water. The NanoAfNet network incorporates 318 researchers from 30 African countries. Water purification is among their research interests. In Nigeria, production of nanoporous filters for water-purification and bio-oxidants is one of the four major areas relevant to the country's needs as identified in a workshop organised by the National Agency for Science and Engineering Infrastructure (NASeni) in 2006. The results of this workshop have led to the inclusion of nanotechnology for water purification in the national funding policy as expressed in the Nigerian Nanotechnology Initiative. In South Africa, nanotechnology for water purification is one of the social priorities in the national nanotechnology strategy. Water purification is also targeted in the IBSA network, which brings together nanoscientists in India, Brazil and South Africa. Several research organisations in South Africa are engaged in relevant research. (Tobin, 2009) In Asia, water purification has been a priority of the ten-year Iranian Nanotechnology Initiative since 2005. However, a SWOT analysis evaluating the programme concluded that many areas of nanoscience and technology including water treatment are left out. (Kulkarni et al, 2009) In the Caribbean, one university in Trinidad and Tobago is interested in nanotechnology for water purification. (Newton & Hyttel, 2009a) In Latin America, research groups and networks are working on nanotechnology for water treatment in Brazil, Chile, Mexico and Peru. (Malsch, 2009) Finally, in the Mediterranean Partner Countries, research groups are active in nanotechnology for water treatment in Algeria, Egypt (e.g. in cooperation with Italy), Morocco (in cooperation with Spain and France), Tunisia and West Bank. (Newton & Hyttel, 2009b)

Conclusions

Researchers interested in international cooperation in environmental nanotechnology can use the information available on the ICPC-Nanonet website and the networking tools, including teleconferences, an online discussion forum and publishing their research interests in an online researchers' database to establish contacts with peers in other world regions. The EU Seventh Framework programme for RTD offers funding in regular calls for proposals published once or twice a year at the CORDIS website <http://cordis.europa.eu>.

Acknowledgements

The information presented in this article was collected with financial support by the European Union in the ICPC-NanoNet project, contract nr 218282. Note that this article is not legally binding and does not represent any commitment on behalf of the



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

European Commission. Any opinions given are solely the responsibility of the author and can not be attributed to the European Commission.

References

- Hillie, Thembela, Munasinghe, Mohan, Hlope, Mbhuti and Deraniyagala, Yvani, "Nanotechnology, Water and Development," Meridian Institute, 2006, <http://www.merid.org/nano/waterpaper/>
- Kulkarni, G.U. Sundaresan, A. Eswarmoorthy, M. and Srinivas S. "First Annual Report on Nanotechnology in Asia (West)," ICPC-Nanonet, 29 June 2009, www.icpc-nanonet.org
- Malsch, Ineke, "First Annual Report on Nanotechnology in Latin America," ICPC-Nanonet, 29 June 2009, www.icpc-nanonet.org
- Newton, Rachel & Hyttel, Anders, "First Annual Report on Nanotechnology in the Caribbean," ICPC-Nanonet, 29 June 2009a, www.icpc-nanonet.org
- Newton, Rachel & Hyttel, Anders, "First Annual Report on Nanotechnology in the Mediterranean Partner Countries," ICPC-Nanonet, 29 June 2009b, www.icpc-nanonet.org
- Tobin, Lesley, "First Annual Report on Nanotechnology in Africa," ICPC-Nanonet, 29 June 2009, [ICPC Nanonet](http://www.icpc-nanonet.org)

[Download article as PDF :](#)

The article can be found online here: <http://www.nano.org.uk/articles/35/>

Source: [Republication. The original article was published in ENT Magazine, Issue 01/2009 pp 24-26. Published 8 February 2009 /...](#)

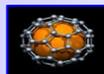
Submitted by: *Lesley Tobin, Technology Analyst, ICPC-NanoNet Project Coordinator.*

CALL FOR PROJECT PROPOSALS (2010)

On 27 January 2010, the National Research Foundation (NRF) and the Fonds Wetenschappelijk Onderzoek (FWO) of Flanders, Belgium, agreed on a joint science and technology research agreement. The Working Group (WG) composed of representatives of both the FWO and NRF agreed on fundamental modalities and general arrangements relating to the administration of this call and of the agreement.

Who may apply?

Applicants must reside in South Africa and be full-time employed researchers at a



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

recognised higher education or research institution such as a university, university of technology, national facility or science council. Applications must designate the primary Flemish counterpart in collaboration with whom joint research or networking is to be undertaken. The Principal Investigators (PI) will bear full responsibility for the project, including its technical and administrative coordination as well as scientific and financial reporting.

How do I apply?

Application forms can be found on www.fwo.be or www.nrf.ac.za

Only applications endorsed by the research office or its equivalent at higher education or research institutions will be accepted.

No hard copies will be accepted.

Which activities may I apply for?

- Workshops as part of a collaborative project
- Conference organisation (not attendance) as part of joint research projects
- Symposia organisation
- A maximum of 10% of the budget may be used for consumables
- A purchase of piece of scientific equipment not exceeding 10% of the grant
- International travel, accommodation, subsistence and local travel

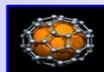
Identified research priority areas

- Biotechnology, nanotechnology and humanities
- Astronomy
- Human-social dynamics
- Global change/environment
- ICT

Funding Modalities

Funding will be available for a maximum of three years, starting in FY 2010/2011.

- **Short-term Visits:** A maximum **two-week** visit proposed by institutes of either side to help bring researchers together to identify research projects of common interest and further develop long-term cooperation. Only one visit allowed.
- **Funding will only be made available for a single year for the short term visits.**
Short term visits: the sending party will be responsible for the researcher's international and local travel, accommodation and subsistence, including medical insurance.
- **3-year collaborative research projects** jointly developed and completed by researchers on both sides. Three flights per year with a maximum of **two months stay** at a time.



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

- In both countries, all the approved projects will get funding support from the two parties in terms of the cost of exchange of experts, scientists and other specialists unless specified otherwise by the two parties. Besides, each party may provide additional research funds to some/all of the approved projects based on its internal evaluation of the projects. Apart from the financial support from the two parties, institutions and universities in both countries are encouraged to solicit other funding resources.
- **Funding will be available for a maximum of three years**, starting in 2010, and while the exact nature of expenditure is not fixed, the following may not be funded from this allocation: consultant's fees, educational expenses, insurance and medical care, large equipment, project management fees, publication costs, temporary staff fees, etc.
- **Three year collaborative projects:** The sending party will be responsible for financing international travel – including medical insurance, while the receiving party will be responsible for financing the accommodation and subsistence of their international visitors. Local travel and fees relating to the organisation of joint scientific events (venue, catering, audiovisual equipment etc.) will be the financial responsibility of the investigator representing the country in which the event is held, to be paid from his/her allocation of the joint funding accorded.

How much should I apply for?

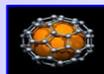
- A maximum of **R1 200 000.00** per joint project (**R400 000.00** per year).
Note that applicants will be funded only for the activities within the scope of the guidelines should they be successful.

How are applications evaluated?

Following the closing date indicated below applications will be submitted to a postal review by recognised local experts in the various fields of research represented by the proposals received. These experts will evaluate each proposal based on the following criteria:

- Scientific and technical merit
- Suitability and feasibility
- Methodology
- International significance
- Budget
- Students training

Note that proposals demonstrating strong elements of capacity building, particularly among previously disadvantaged socio-economic population groups, will be favourably regarded). programme. A final decision on projects to be funded will be made in consultation with the Fonds Wetenschappelijk Onderzoek (FWO) authorities. Note further that funding will only become available once both funding agencies have completed their respective evaluation and operational processes. Note that both scientific and financial reporting on the project is an obligatory. **It is highly recommended that students should be afforded the**



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

opportunity for exchange visits under this programme.

Closing date for all applications

All South African applications must be submitted by: **30 April 2010**
Applications received after this date will not be considered for funding. **Proposals which have only been received in either South Africa or Flanders, but not both, will not be evaluated or considered for funding.**

For more information contact:

Mr Raven Jimmy

Tel: +27 12 481 4069

Email: raven@nrf.ac.za

OR Mr Siyabongi Kohli

Tel: +27 12 481 4356

E-mail: Siyabonga@nrf.ac.za

Submitted by Robert Caveney, Wits Enterprise

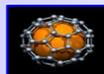
List of Forthcoming Nano Events

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

International Events

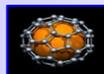
- i) Second NanoImpactNet Conference - Lausanne 2010, Lausanne, Switzerland, 10th-12th March, 2010: : <http://www.nanoimpactnet.eu> or <http://www.nanopaprika.eu/events/second-nanoimpactnet>
- ii) NanoManufacturing Conference & Exhibits, Mesa AZ USA, 14th -15th April 2010: <http://www.sme.org/nanomanu...> or <http://www.nanopaprika.eu/events/nanomanufacturing-conference>
- iii) International Conference on Nanoengineering, University of Edinburgh, UK, 5th April 2010 <http://www.lifelong.ed.ac.uk/nanoengineering2010/> or <http://www.pepublishing.com/acadpub/jnn/home/events.htm>
- iv) Collaborative Conference on Interacting Nanostructures, San Diego, CA, USA, 19th-23rd April 2010. http://www.oanano.org/ccin?_c=1



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

- v) 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/>
- vi) 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/>
- vii) Nanosens 2010, Tech Gate, Vienna, Austria, 29th-30th April 2010
<http://www.nanosens.at/>
- viii) 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>
- ix) 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-](#)
- x) Intensive Course on Nanomaterials, Bad Gastein, Austria, 8th-10th June 2010
<http://www.nanoconsulting.de/englisch/annoucement-2010.pdf>
- xi) The 2nd Annual ICPC NanoNet Workshop, Beijing, China, 14th-15th June 2010: <http://www.icpc-nanonet.org/>
- xii) 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>
- xiii) Nanotech Conference & Expo 2010, Anaheim Convention Centre, Anaheim, California, USA, 21st-25th June, 2010
<http://www.techconnectworld.com/Nanotech2010/>
- xiv) 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&xq_source=msg_invite_event



NANO NEWS - SOUTH AFRICA

Volume 2, March 2010

- xv) 18th International Conference on Composites/Nano Engineering (ICCE-18), Anchorage, AK (USA), 4th-10th July 2010
http://myweb.polyu.edu.hk/~mmktau/ICCE/ICCE_Main.htm
- xvi) Nanosafe 2010, Minatec, Grenoble (France) 15th -19th November 2010.
More information:<http://www.nanosafe.org/>
- xvii) The 2010 International Chemical Congress of Pacific Basin Societies (Pacifichem), Honolulu, Hawaii, USA, 15th-20th December 2010.
<http://www.pacifichem.org/>