

NANO NEWS - SOUTH AFRICA

Volume 3, April 2010

Edited by *Patience Iyuke*

Co-edited by *Neil Coville*

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Editorial

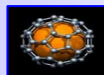
There are a range of initiatives that have been undertaken by the Department of Science and Technology (DST) that relate to Nanotechnology. This includes the establishment of Centres and Research Chairs as well as equipment programmes (NNEP) and also the initiatives made to look at bi (and tri)-lateral agreements between South Africa and other countries. There is no doubt that a major investment has taken place in the last five years. Through this newsletter we would like to advertise to the nano community any developments that have arisen from this DST support. So let us know. It is important that this information is distributed to nano practitioners as well as to the public.

Included in this newsletter are reports on the recent IBSA meeting held in India. As will be seen from the report – a successful event was held and one that will lead to further interactions in this South-South venture. The next set of three workshops (sensors/solar/ drug delivery) will take place between September 2010 and February 2011. Adverts for the events will appear in the newsletter in the months ahead. Note also the article on the forthcoming: Nanoscience Young Researcher Symposium. In 2009 the student chapter put together a great event – and certainly the same can be expected in 2010.

Neil Coville

IBSA Nanotechnology School on Advanced Materials 2010

A South African delegation led by Dr. Lucky Sikhwivhilu, recently visited India to attend and participate in the IBSA nanotechnology school on advanced materials (22-26 February 2010). The school was held in Kalpakkam, India, some 50 km outside of Chennai.



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Attended by some 90 delegates representing academia, industry and government, this week-long event follows similar events hosted in Brazil (energy) and South Africa (health and water). The carefully structured programme commenced with an introduction to opportunities, success and challenges to be addressed within IBSA domains. Dr Baldev Raj, Chairman of the IBSA initiative, outlined the three priority subject areas for the trilateral initiative to be advanced materials, energy, and health and water. However, human resource development is also considered as a thrust area for the initiative. The main objectives of the school were to establish contact points for scientists, explore areas of mutual interest and identify available expertise and infrastructural capabilities in various scientific institutes in these three countries.

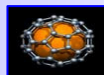
A total of 30 lectures and 40 poster presentation were delivered throughout the event covering fundamental as well as advanced aspects of nanomaterials with specific emphasis on sensor application. The meeting reflected on the current status of research in this area and was certainly of great value to the participants. Discussions on collaboration and exchange programme with special emphasis on implementation strategy formed an integral part of the event. It was established that there is a dire need to undertake rigorous training at various phases of development to ensure capacity building. Furthermore, knowledge generation and sharing, training, resource sharing and skill transfer will continue to be relevant for the advancement and development of modern technologies.

The event was fun-filled with musical performances and dances from the three countries (India, Brazil, and South Africa). It is undoubtedly clear that modern scientists possess more than just scientific knowledge and great ideas. Delegates were also treated to some palatable traditional South Indian cuisines.

The event was organised by Indira Gandhi Centre for Atomic Research (IGCAR) and funded by Department of Science and Technology, India, Ministry of Science and Technology, Brazil, and Department of Science and Technology, South Africa.



Front row from left: *Dr Koena Rammutla (UL), Dr Thuto Mosuang (UL),*



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Dr Nthapo Sehlotho (Mintek), and Dr Sibulelo Vilakaz (Mintek).

Back row from left: *Dr Rajasekhar Pullabhotla (Unizul), Prof Neil Coville (Wits), Prof Malick Maaza (Ithemba labs), Mr Christopher Mtshali (Ithemba labs), Prof Neersish Revaprasadu (Unizul), Prof Thembela Hillie (CSIR), and Dr Lucky Sikhwivhilu (CSIR).*

Not shown: *Dr Bonex Mwakikunga (CSIR) and Dr Mlungisi Nkosi (Ithemba labs).*



Some of the attendants pause for a photograph

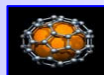
Contributed by *Dr Lucky Sikhwivhilu (CSIR)*

India, Brazil and South Africa to Work on Nanotechnology



IGCAR director Baldev Raj, foreign delegates Prof Monica A. Cotta, UNICAMP, Brazil (L) and Dr T. Hillie, South Africa (R) at the inaugural session of IBSA Nanotechnology School Workshop on Advanced Materials Sensor Applications, at Mamallapuram, 55 km from the Chennai on Monday. —PTI

For the first time, India joins with Brazil and South Africa in an intercontinental research project on energy, water, health and material sciences to ensure that all people get clean and potable water, low-cost and effective medicines and solar power.



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The three teams of 90 scientists and research scholars from the three countries have been constituted and work is on to finalise the course of action. "We have identified the strengths and weaknesses of all the three countries in these areas.

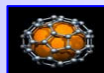
Each nation will take the initiative in areas where it is strong and incorporate scientists and research scholars. This was disclosed by distinguished scientist, Dr. Baldev Raj, Chairman, IBSA initiative, while speaking to reporters on Monday on the sidelines of an India-Brazil-South Africa School on Nanotechnology, termed Mamallapuram School. "We have not fixed on any time-frame to deliver the final results. But we are sure to come out with revolutionary results with this projects" said Dr. Raj, who is also the main brain behind India's fast breeder reactor programme.

Source: Deccan Chronicle – Chennai, Feb 23, 2010-03-17; Page 2
Submitted by Dr Lucky Sikhwivhilu (CSIR)

Prof Sunny Iyuke's Inaugural lecture on Nanotechnology in Integrated Science & Engineering Education

Prof. Sunny Iyuke will deliver his inaugural lecture on Wednesday, 21st of April, 2010 at 17:00 for 17:30. The location is the Geology Lecture Theatre (GLT), East Campus, the University of the Witwatersrand. A reception will follow the lecture.

Professor Sunny Iyuke was appointed the Head of School (HoS) for the School of Chemical & Metallurgical Engineering of the University of the Witwatersrand in July 2009. He led the School through a successful ECSA accreditation, after about six years of tremendous preparations. He has presented several key note speeches in the field of Nanotechnology at both local and international scenes. He has produced several patents in nanotechnology locally and internationally including World Intellectual Property Organization of International Bureau in 2007. He collaborates in research with NASA, USA, Vaal University of Technology (VUT), Schools of Chemistry and Pharmacy at Wits, Department of Chemical Engineering of the University of Pretoria, and Institute of Fuel of the Faculty of Engineering, National University of Malaysia. Prof Iyuke currently holds the "Chair" of APV-SPX Flow Technology Professor of Biochemical Engineering. He is a registered Professional Engineer (Pr Eng) with the Engineering Council of South Africa and a Chartered Engineer (CEng) with UK Engineering Council, London. He is council member of The South African Institution of Chemical Engineers (SAIChE).



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The Second Nanoscience Young Researcher Symposium

This is a call for participation in the 2nd symposium for young researchers (Masters and PhD students) currently undertaking research in the nanosciences.

The symposium will take place at the University of Johannesburg Doornfontein Campus on the 07th May 2010 from 09h30 – 15h00. All students from academic institutions based in Gauteng, North-west and Limpopo are invited.

There will be prizes for the best presentations and lunch will be served.

Abstract deadline: 16 April 2010

Email the abstracts to sani.studentchapter@gmail.com

Organizers:

Mr. Nsika Dlamini : 011 559 6754, dlaminijeanclaude@yahoo.com

Ms . Niki Kunjuzwa : 083 749 8762, nikikunju@yahoo.co.uk

Prof. Rui Krause: 011 559 6152, rkrause@uj.ac.za



Foreword

Nanotechnology is one of the key technologies of this century. Rapid scientific progress and new discoveries show the great potential for numerous applications and commercial opportunities. An intensive exchange of ideas between researchers and companies is vitally important for an efficient technology transfer and successful commercializations.

Under the theme “Thinking Big in a nanosize World”, the Nanosciences Young Research Symposium will present, for the 2nd successive year, a platform for the exchange of ideas and the generation of initiatives between research and industry. The scope of the symposium will be nanotechnology in the fields of materials and surfaces, electronics, life sciences as well as energy. Contributed oral presentations will offer students good opportunities to become acquainted with the latest developments in this diverse field. A poster session complements the program. Special emphasis will be given to promote informal discussions and networking among the attendees.

We are looking forward to welcoming you in Johannesburg.

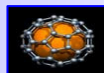
Nikiwe Kunjuzwa

Student Chapter Chair

University of Witwatersrand, Johannesburg.

Submitted by Ntombi Mathe

Vice-Chair SANi Student Chapter.



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Call for papers: Advanced Materials Letters

Advanced Materials Letters (AML) invites original papers from all areas of materials science particularly in the area of structure, synthesis and processing, characterization, advanced-state properties, and applications of materials.

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. (Conference papers can be submitted only if the paper was not originally copyrighted and if it has been completely modified and re-written).

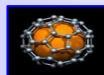
All papers are refereed through a peer-review process. A guide for authors and other relevant information for submitting papers is available on the [Author Guidelines](#) page.

Advanced Materials Letters (AML, www.amlett.com) is an international journal published quarterly starting from June 2010. AML is intended to provide top-quality peer-reviewed research papers in the fascinating field of materials science particularly in the area of structure, synthesis and processing, characterization, advanced-state properties, and applications of materials.

AML provides an international publication platform for the broad spectrum of issues regarding theoretical and experimental advancements in materials science and engineering including molecular device materials, biomimetic materials, hybrid-type composite materials, functionalized polymers, superamolecular systems, information- and energy-transfer materials, bio-based and biodegradable (environmental friendly) materials etc. at macro and nano levels.

AML is focused to the interest of scientists and engineers from academia and industry who are participating in the materials engineering which is being formulated with the functional properties like thermal, electric, magnetic, optical and biological with the materials for the development of a wide range of smart, biocompatible and biodegradable materials for the food, adhesives, drug delivery, tissue engineering, gene delivery, biosensor, structural and other applications.

The Journal welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence in the field of materials science. AML includes review articles, research articles, notes and short communications. The peer-review and proof-ready editing is expected to be completed with-in 3 months and the online version will be published immediately. All the published articles are indexed and are available for download for free. AML is fully committed to publish article with no page charges and will provide free access to all articles as soon as they are published.



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Abstracting/indexing
ChemPort (CAS)
Journal Citation Reports/Science Edition (Thomson Reuters)
Chemical Citation Index (Thomson Reuters)
Chemistry Server Reaction Center (Thomson Reuters)
Current Contents/Physical, Chemical & Earth Sciences (Thomson Reuters)
Materials Science Citation Index (Thomson Reuters)
Science Citation Index Expanded (Thomson Reuters)
Science Citation Index (Thomson Reuters)
SCOPUS (Elsevier)
Web of Science (Thomson Reuters)
JDreamII
Polymerlibrary

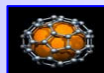
Submitted by Dr. Ajay Kumar Mishra Associate Editor Advanced Materials Letters) and Makwena Moloto, University of Johannesburg, South.Africa.

Online Workshop on Nanotechnology and PhotoVoltaics

An invitation to a unique free online event:

Date: 16 April 2010, 12.45-15.15 GMT

The ICPC-NanoNet project stimulates global networking in nanoscience and nanotechnology. This online workshop on Nanotechnology and PhotoVoltaics enables nanoscientists working in this field to meet and find out about each others' expertise, infrastructure and research interests. The invited speakers include Prof Dr Wim Sinke, who is a representative of the European Technology Platform on Photovoltaics (<http://www.eupvplatform.org/>), and Prof Dr Lucimara S. Roman from Brazil - a senior expert in nanotechnology for photovoltaics to stimulate intercontinental cooperation between Europe and emerging economies and developing countries. The prospective audience consists of nanoscientists specialising in photovoltaics from Europe and International Cooperation Partner Countries to the EU (emerging economies and developing countries). Participation is free for registered users of the ICPC-NanoNet website (sign up free of charge at <http://www.icpc-nanonet.org>).



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Programme

Time (GMT)/Event	Speaker
12.45- 13.00 System Check, welcome participants, about ICPC-NanoNet	Dr Ineke Malsch
13.00-13.30 Nanotechnology for high-performance and low-cost PV technologies; conclusions from the Strategic Research Agenda of the EU PV Technology Platform	Prof Dr Wim Sinke, UU, ECN, Netherlands, EUPVplatform
13.30-13.45 Discussion	
13.45-14.15 Electrical, optical and morphological aspects of organic photovoltaics	Prof Dr Lucimara S. Roman, DQ-UFPR, University of Parana, Curitiba
14.15-15.45 Discussion and closure	

About the speakers

Prof Wim Sinke (Utrecht University, nanophotonics and ECN, Netherlands, WG3 (Research) leader, EUPVplatform) <http://www.eupvplatform.org/>, <http://www.uu.nl/EN/FACULTIES/SCIENCE/ORGANISATION/DEPTS/PHYSICSANDASTRONOMY/RESEARCH/CHAIRS/NANOPHOTONICS/Pages/default.aspx> and <http://www.ecn.nl/units/zon/>

Prof Dr Lucimara S. Roman, DQ-UFPR, University of Parana, Curitiba, group leader nanodevices for Photovoltaics and memory devices <http://dqp.cnpq.br/buscaoperacional/detalhepesq.jsp?pesq=4882090058522429>

How to register:

To sign up for the Nanotechnology for PhotoVoltaics workshop go to <http://www.icpc-nanonet.org/content/section/6/42/>

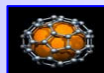
For more information contact the organiser Ineke Malsch postbus@malsch.demon.nl Workshop participants must be registered users of ICPC-Nanonet (www.icpc-nanonet.org). Registration is free.

Numbers are limited to the first 25 registrations.

Other related events

20-24 April 2010 Photovoltaics Thin Film week 2010, http://www.helmholtz-berlin.de/projects/pvcomb/thin-film-week/index_en.html

3-7 May 2010, African School on Nanoscience for Solar Energy Convergence, Addis Ababa, Ethiopia, <http://portal.ictp.it/energynet/african-school-on-nanoscience-for-solar-energy-conversion>



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4-9 July 2010, Nanotechnology for Sustainable Energy, ESF Research Conference, Austria, <http://www.esf.org/activities/esf-conferences/details/2010/confdetail315.html>

About ICPC-Nanonet:

The ICPC-Nanonet project is funded by the European Union under FP7 for four years, from 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.

For further information about the ICPC-Nanonet project contact the project coordinator Lesley Tobin, Lesley.tobin@nano.org.uk, visit the website at www.icpc-nanonet.org or browse the free open-access nano publications archive at www.nanoarchive.org.

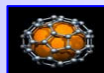


**Submitted by Lesley Tobin,
ICPC-Nanonet project coordinator**

University of Akron Start-Up to Develop Pulmonary Infection Treatment.

Researchers at the University of Akron (UA) and Washington University School of Medicine in St. Louis have developed an antibiotic treatment for pulmonary infections, including pneumonia and cystic fibrosis, with the potential to significantly increase survival among patients with lung infections. The nanoparticle antibiotic treatment is composed of encapsulated silver carbene complexes (SCC), developed by Wiley Youngs, PhD, UA distinguished professor of chemistry, and colleagues. The nebulized antimicrobials, administered once daily, offer effective and convenient drug delivery, encouraging patient compliance, reducing illness severity, limiting development of resistance to antibiotics, and potentially decreasing the spread of epidemics, according to the researchers.

During mouse studies, all untreated animals died while all of those treated with the aerosolized, nano-sized, silver-based antibiotics survived an infection of *Pseudomonas aeruginosa* — a common bacteria that infects the respiratory tract in humans, especially those who are immunocompromised, on mechanical ventilator support, or afflicted with cystic fibrosis. Treatment with the SCC-loaded nanoparticles also minimized weight loss and the bacteria burden in the lung, while also reducing the spread of bacteria from the lung through the blood stream to the spleen. The researchers are commercializing the technology through the UA Research Foundation start-up Akron Research Commercialization Corp. They plan to file a U.S. Food and Drug Administration application for Investigational New Drug



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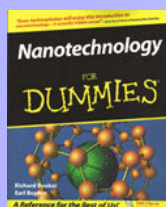
status for their first product offering, called Silvamist.

Sources: *The Universtiy of Akron: News* http://www.uakron.edu/im/online-newsroom/promo_detail.dot?promold=554344&pageTitle=New and <http://www.technologytransfertactics.com/content/2010/03/10/u-akron-start-up-to-develop-pulmonary-infection-treatment/>

Submitted by Dr. Robert Caveney

List of Books and DVDs on Nanotechnology

Books on Nanotechnology



Nanotechnology for Dummies by [Richard D. Booker](#) & [Mr. Earl Boysen](#)

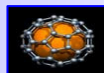
This title demystifies the topic for investors, business executives, and anyone interested in how molecule-sized machines and processes can transform our lives. Along with dispelling common myths, it covers nanotechnology's origins, how it will affect various industries, and the limitations it can overcome. [Read more](#) <http://www.amazon.com/Nanotechnology-Dummies-Richard-D-Booker/dp/0764583689>



Bionanotechnology: Lessons from Nature by [David S. Goodsell](#)

Discussions of the basic structural, nanotechnology, and system engineering principles, as well as an introductory overview of essential concepts and methods in biotechnology are included in this book. The text is presented side-by-side with extensive use of high-quality illustrations prepared using cutting-edge computer graphics techniques [Read more](#) on:

<http://www.sme.org/cgi-bin/get-item.pl?BK06PUB2&2&SME&> or <http://www.amazon.com/Bionanotechnology-Lessons-David-S-Goodsell/dp/047141719X>

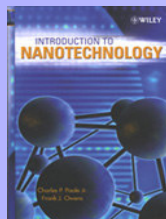


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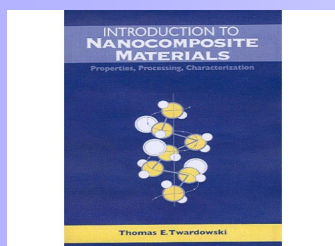
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Introduction to Nanotechnology [Charles P. Poole Jr.](#) & [Frank J. Owens](#)

This self-confessed introduction provides technical administrators and managers with a broad, practical overview of the subject and gives researchers working in different areas an appreciation of developments in nanotechnology outside their own fields of expertise. [Read more](http://www.sme.org/cgi-bin/get-item.pl?BK06PUB3&2&SME&) on <http://www.sme.org/cgi-bin/get-item.pl?BK06PUB3&2&SME&> or <http://www.amazon.com/Introduction-Nanotechnology-Charles-Poole-Jr/dp/0471079359>

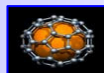


Introduction to Nanocomposite Materials: Properties, Processing, Characterization by [Thomas E. Twardowski](#)

This new volume presents the basics of nanocomposite materials in the context of composite materials in general. The goal of the book is to help the student understand nanocomposites in an integrated way, informed by the foundational concepts of materials science. This is achieved through a systematic exposition of the chemical structure of polymer composites, and the ways matrices and reinforcements are produced. Additional emphasis is placed on methods of characterizing nanocomposites. Numerous formulas illustrate nanocomposite performance, processing, and evaluation. [Read more](http://www.netcomposites.com/netcommerce/features.asp?1578) on <http://www.netcomposites.com/netcommerce/features.asp?1578>

Videos (DVD) on Nanotechnology

Videos (DVD) on Nanomanufacturing, Nanometrology, Structural DNA, Micromachining and Concepts of Silicon Surface Micromachining are available at: <http://www.sme.org/cgi-bin/getgmnpge.pl?/html/nanovideos.htm&&SME&>



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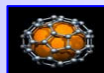
Forthcoming Nanoscience and Nanotechnology Events.

Local Events:

1. Inaugural Lecture by Prof. Sunny Iyuke, Geology Lecture Theatre (GLT), the University of the Witwatersrand, Johannesburg, South Africa, 21st April 2010 at 17:00 for 17:30.
2. The Second Symposium for Young Research (Masters and PhD students) currently undertaking research in the nanosciences, University of Johannesburg, Doornfontein Campus, &th May 2010 from 09h30-15h00.

International Events

- i) 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>
- 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) Online Workshop on Nanotechnology and PhotoVotatics, 16th April 2010, 12.45-15.15 GMT: <http://www.icpc-nanonet.org/content/section/6/42/>
- iv) Collaborative Conference on Interacting Nanostructures, San Diego, CA, USA, 19th-23rd April 2010. http://www.oanano.org/ccin?_c=1
- v) Photovoltaics Thin Film week 2010, Wista Management GmbI, Rudower Caussee 17, 12489 Berlin, Berlin Adlershof, 20th-24th April 2010 http://www.helmholtz-berlin.de/projects/pvcomb/thin-film-week/index_en.html
- 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/>



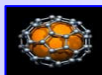
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- ix) First Online Nano-Globe Conference & Exhibition, Internet, 5th May at 6 am to 8th May at 7 pm: <http://www.nano-globe.com/> or <http://www.nanopaprika.eu/events/first-online-nanoglobe>
- x) African School on Nanoscience for Solar Energy Convergence, Addis Ababa, Ethiopia, 3rd-7th May 2010
<http://portal.ictp.it/energynet/african-school-on-nanoscience-for-solar-energy-conversion>
- xi) 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-](#)
- xii) Intensive Course on Nanomaterials, Bad Gastein, Austria, 8th-10th June 2010
<http://www.nanoconsulting.de/englisch/announcement-2010.pdf>
- xiii) The 2nd Annual ICPC NanoNet Workshop, Beijing, China, 14th-15th June 2010: <http://www.icpc-nanonet.org/>
- xiv) 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>
- xv) Nanotech Conference & Expo 2010, Anaheim Convention Centre, Anaheim, California, USA, 21st-25th June, 2010
<http://www.techconnectworld.com/Nanotech2010/>
- xvi) 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
- xvii) Nanotechnology for Sustainable Energy, ESF Research Conference, Austria, 4th-9th July 2010
<http://www.esf.org/activities/esf-conferences/details/2010/confdetail315.html>
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