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SNO REPORT

THE SUSTAINABLE NANOTECHNOLOGY ORGANIZATION

Sustainable Nanotechnology Organization

Research | Education | Responsibility

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SNO Report Submissions

Please send news, conference announcements, job postings, and other contributions to the SNO Report to the editor, **Kyle Doudrick kdoudrick@nd.edu**

Letters to the President may be sent to:
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barbara.karn@susnano.org

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www.susnano.org

President's Message

By WUNMI SADIK
SUNY Binghamton

Dear SNO Members:

In this edition of the SNO Report, you can read about the work we are doing in championing sustainable nanotechnology to solve the society's challenges in food, energy, and water; as well as empowering all nanotechnology researchers to think about sustainability.

The 4th annual SNO conference was held November 8 - 10, 2015 at the Benson Hotel, Portland, Oregon. The conference was co-chaired by Dr. Greg Lowry (Professor of Civil and Environmental Engineering at Carnegie Mellon University, Pittsburgh, PA) and Dr. Paul Tratnyek (Professor from the Institute of Environmental Health, Division of Environmental and Biomolecular Systems at the Oregon Health and Science University). Some of the conference sessions included selected "systems", e.g. air-water systems, as well as the applications, effects and implications, analytical methods, and lifecycle aspects of nanomaterials within each system. The conference featured an exciting three days of activities from over 160 participants including outstanding technical programs, cutting edge research on nanotechnology and sustainability, and diverse group of participants. Attendees were drawn from across the US, France, UK, Taiwan, Canada and South Africa.

A major highlight of the 2015 conference included the SNO banquet and the presentation of this year's award. The 2015 SNO Award recipient was Dr. Vicki Colvin of Brown University. The award is intended to recognize an individual who has demonstrated a commitment to impactful research and services that deepen the scientific community's understanding of issues related to sustainable nanotechnology. It is clear that Dr. Colvin exemplifies these qualities in her work. Prior awardees include Dr. Mike Roco of the National Science Foundation and Dr. Clayton Teague, former director of the National Nanotechnology Coordination Office. The 2015 SNO/RSC Emerging Investigator Award was shared between Dr. John Fortner, Washington University in St Louis, and Dr. Navid Saleh, University of Texas at Austin (see article for award details). SNO students' awards were also presented to 19 graduate students and one undergrad, and three students won prizes for their "nano pitch."

A very big thank you to all who made the 2015 meeting a great success! These include session chairs, plenary speakers, oral and poster presenters, and all national and international attendees. We will very soon be inviting presenters to submit their paper for a special issue in the *ES: Nano*, the Royal Society of Chemistry's journal in partnership with SNO.

Of course, we are looking forward to seeing you at SNO's 5th Annual Conference in Orlando, FL from November 10-12, 2016. The dates were chosen to avoid Halloween and the US Presidential election, but we are likely to go back to our regular Sunday-to-Tuesday meetings next year. This year's meetings are already proving to be exciting, featuring famous speakers from government, industry, and academia focusing on the future of nanotechnology, discussing "looking back on the last five years of achievements," as well as welcoming our newest members. More information can be found on our website at www.susnano.org.

Thank you to everyone for your commitment. Together, we will continue to provide great leadership and platform for nanotechnology for the benefit of society.

Sincerely,
Wunmi Sadik

SNO at the Food-Energy-Water Nexus

SNO partnered with Carnegie Mellon to hold an NSF-sponsored workshop, October 28, 2015, on the "Role of Nanotechnology in Achieving Sustainability at the Food-Energy-Water-Nexus (FEW)." Drs. Greg Lowry of CMU and Jason White from the Connecticut Agricultural Research Station chaired the workshop. The interdisciplinary nature of SNO made for a perfect partnership to suggest how nanotechnology can be applied to these areas. The Critical Opportunities for nanotechnology in FEW were identified in seven areas: Nanomaterials, sensing and analytics; Treating and recycling agricultural wastes; Nanomaterials for improved efficiency and performance of water system at the FEW nexus; Minimize food waste and loss-detection and intervention approaches; Food safety detection and intervention approaches; Smart nanomaterials for fertilizers and pesticides; and Animal health protection and intervention approaches. The full workshop findings will be published this year, and SNO will continue to promote partnerships in this interdisciplinary area.

By Vishal Shah, June 2012
Edited by: Illya Medina Velo

A COMMENT BY

DR. MIHAIL ROCO

Senior Advisor for Nanotechnology at National Science Foundation.
Dr. Roco is the founding chair of the National Science and Technology Council's subcommittee on Nanoscale Science, Engineering and Technology (NSET), and played a major role in developing the National Nanotechnology Initiative (NNI).

How can nanotechnology make society more sustainable?

Our desire to have a sustainable society is a main reason behind the growth of nanotechnology. Nanotechnology requires fewer amounts of material, water, and energy, and with the high degree of precision in nanomanufacturing, we are generating less pollution for the same functionality. I see the future trend in the production of nanoparticles will be to also become more sustainable.

In the past, the topic of sustainable nanotechnology did not receive satisfactory attention because the benefits of nanotechnology were primarily in the advanced materials and electronics areas, where sustainability issues are generally not considered immediately. However, after 2005 there has been an increase in the applications of nanotechnology in energy and water sector, and more recently in climate change and biodiversity. We have also seen a spike in the development of nanotechnology in special minerals and materials. These areas are highly linked with sustainability.

I believe that nanotechnology has the potential to influence the wider economy and society and to provide the path for attaining a high degree of social sustainability.

Student Poster Award Winners (Portland)

Allisa Deline First Place

Pryanka Deka 3rd Place

FOLLOW US ON FACEBOOK

We are revamping our Facebook efforts in order to bring SNO members and interested people "live" updates about SNO happenings and events/news relevant to sustainable nanotechnology. Please follow us at https://www.facebook.com/susnanotech.

Our Facebook page will be administered by SNO student, Illya Aidee Medina Velo (UT El-Paso). Please send her an email if you have questions or want to contribute (iamedinavelo@utep.edu).

Dr. Stacey Harper leads Pre-SNO workshop on Nanoinformatics

Portland Plenaries

A big thanks to the Portland Chairs, Drs. Greg Lowry (left) and Paul Tratnyek (right)!

Dr. Andre Nel

Dr. Vicki Colvin

Dr. Mike Roco

Dr. Paul Westerhoff

Dr. Yoram Cohen

Dr. Bob Hamers

Dr. Faye Duchin

PORTLAND AWARD WINNERS

Drs. John Fortner and Navid Selah Win Emerging Investigator Award

RCS Young Investigator Award
Drs. Navid Saleh (left) and John Fortner (right) with Sara Ruthgen, Royal Society of Chemistry

The SNO Emerging Investigator designation recognizes up-coming scientists and engineers who are working in the area of sustainable nanotechnology. In recognition of the award, a $1500 prize provided by the Royal Society of Chemistry (RSC) and an award certificate were presented to each of the awardees during the 2015 Conference. This price is open to investigators who are within 10 years post Ph.D. Other criteria and eligibility include: i) an impactful body of independent work and publications in the field of sustainable nanotechnology: environmental, societal, or economic; ii) attendance at the annual SNO Conference; *and* iii) the submission of a high quality paper to ES: Nano within one year prior to receiving the award. Dr. Debora Rodrigues from the University of Houston was the winner in 2014.

Dr. Vicki Colvin Receives the 2015 SNO Award

Dr. Vicki Colvin (right) with Dr. Wunmi Sadik (left)

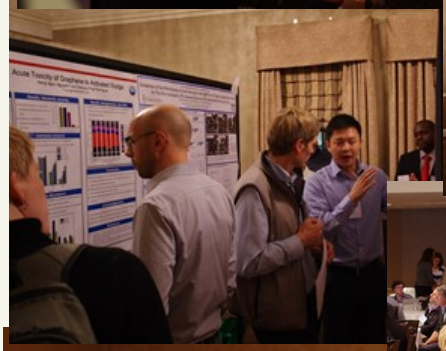
SNO NanoPitch Winners (From left to right: Anjali Mulchandani (First Place), Eric Melby (Second Place), Marjorie Willner (Third Place) with Dr. Barbara Karn)

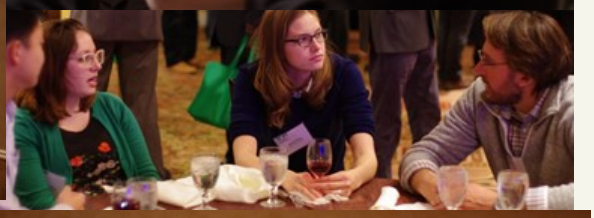
PORTLAND AWARD WINNERS

Congratulations to the Student Travel Award Winners!

Zhiyun Zhang (University of Massachusetts)
Mark Surette (Oregon State University)
Amy Dale (Carnegie Mellon University)
Alyssa Deline (Oregon State University)
Yuxiong Huang (University of California, Santa Barbara)
Jingga Morry (Oregon Health and Science University)
Mohammad Hossain (North Dakota State University)
Fan Wu (Oregon State University)
Mac Gifford (Arizona State University)
Bo Wang (Clemson University)
Joseph Murphy (University of Massachusetts Amherst)
Hang Nguyen (University of Houston)
Emily Fassbender (North Dakota State University)
James Dale (Virginia Tech)
Achintyamugdha Sharma (North Dakota State University)
Xiangyu Bi (Arizona State University)
Priyanka Deka (North Dakota State University)
Laura Saldivar-Tanaka (El Colegio de Mexico)
Yang Qiu (Brown University)
Victor Kariuki (SUNY Binghampton)

PORTLAND PHOTOS





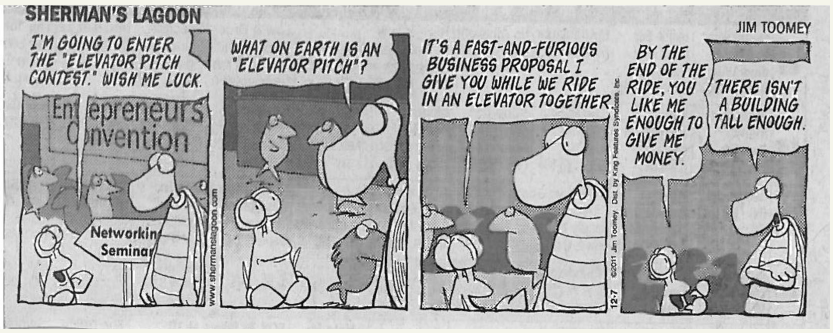
UPCOMING SNO MEETING IN ORLANDO

SNO Promotes A Systems Approach For Its Conference

The SNO 2016 Conference will be held at the Doubletree by Hilton at the entrance to Universal Orlando. Florida should be lovely at that time of year. We meet starting on Thursday, November 10, through Saturday, November 12, 2016. The days of the week were moved to accommodate voting on Tuesday. We will again structure the sessions around sustainable nano systems in an effort to place our focused research in a greater context. Abstract submission and registration are now open on the web. Go to www.susnano.org and click on the conference tab

Orlando Pitch!

It is time to get ready for the Nano Pitch Contest 2016 at the SNO Conference in Orlando (FL). Students will be able register for the contest on-site. Each participant will be given 100 seconds (don't forget nano!) to present her/his work using one slide (without animation). Three cash prizes will be awarded. Contestants will be judge by a panel of experts. Given the enthusiasm of the participants in Portland and popularity of the contest, more participants are expected in the Orlando Conference.



PORTLAND PANEL DISCUSSION PREVIEW

At the SNO meeting in Portland in November, we had a great panel discussion featuring the SNO board members (Drs. Barbara Karn, Wunmi Sadik, Philip Demokritou, and Jacqueline Isaacs; moderated by Dr. Kyle Doudrick). Here are a few clips from the discussion. Please look for the full discussion on our Facebook, Twitter, and Website, as well as the next SNO Report.

What roles do you see nanotechnology taking to create a more sustainable future?

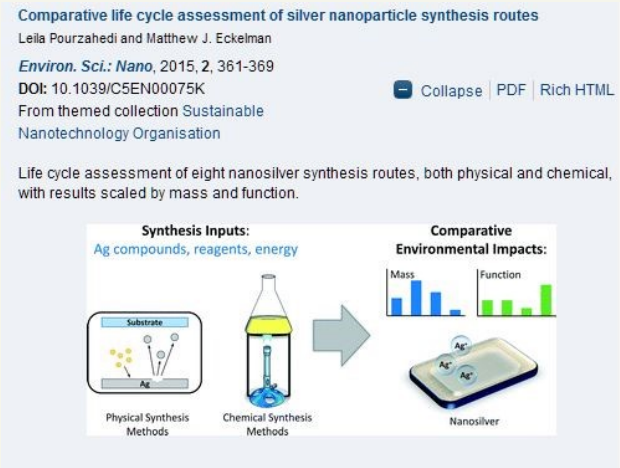
The golden opportunity we have as a community is to change the way we develop new chemicals and new materials…-**Demokritou**

What do you think are some of the concerns that some of the researchers may overlook when developing novel nanotechnologies and nanomaterials?

"One of the things we absolutely might fail in is looking at the full life cycle" -**Karn**
"Researchers should incorporate principles of green chemistry or safer by design into the synthesis of nanomaterials and nano-enabled products" -**Sadik**
"Life cycle approach and life cycle thinking is really important is getting thinking about how to avoid exposures and harm throughout nano-enabled product life" -**Isaacs**

SNO PUBLISHING NEWS

Two of the ten most downloaded articles in Environmental Science: Nano, SNO's partner journal published by the Royal Society of Chemistry, are from SNO conference participants. Congratulations to these SNO members.



SNO Collection

In November 2014, the Sustainable Nanotechnology Organization (SNO), a non-profit, international, professional society, held its 3rd annual conference in Boston with over 220 participants in attendance. Drs. Jackie Isaacs of Northeastern University and Philp Demokritou of Harvard University co-chaired the meeting. RCS Environmental Science: Nano teamed up with SNO to feature a special SNO collection from the Boston meeting, found here: http://rsc.li/sno.

This themed collection is the summary of representative research papers presented at the 2014 SNO meeting in Boston and the SUN-SNO-Guide Nano 2015 conference in Venice. Selected papers from the conference highlight how sustainable nanotechnology is leading the way to address economic development, global food supplies, as well as energy and water challenges while leaving minimal footprints that can give rise to environmental degradation. Some of the papers represent the core aspects of sustainable nanotechnology, including biomedical applications, water treatment, green synthesis, life cycle assessments (LCA) and NanoEHS issues

A full introduction to this special issue can be found at: http://blogs.rsc.org/en/2016/02/02/insights-from-sno-2014-annual-conference/.

SNO HAPPENINGS

Annual SNO Meeting (Orlando, FL): November 10-12, 2016
Systems approach to sustainable nanotechnology. Abstracts due August 15.

2016 International Conference on the Environmental Effects of Nanoparticles and Nanomaterials (ICEENN) (Golden, CO): August 14-18th 2016

Abstract submission deadline is April 18.

ACS Meeting (Philadelphia, PA): August 21-25, 2016
Elucidating the molecular-level interactions between biological membranes and engineered nanomaterials
Submission deadline is March 28, 2016. Please direct questions to francois.perreault@asu.edu.

The 8th International Nanotoxicology Congress (Boston, MA): June 1-4, 2016
A Decade of Nanotoxicology: Impact on Human Health and the Environment Abstracts due Feb. 15
Abstract Submission Deadline: February 15, 2016

WANTED: Good ideas for SNO

SNO is your organization. If you have an idea you want to implement through SNO—a workshop, a publication, an outreach activity, a new curriculum, a different session, etc.—please let us know. We are always open to great new ideas.

Join SNO at
www.susnano.org