



American Society of Mechanical Engineers - Fox Valley Section

Nanoscience and Nanotechnology: What does it mean?

Presenter: Dr. L. E. Ocola, Center for Nanoscale Materials, Argonne National Laboratory

**Jimmy's Charhouse, Naperville, IL
Wednesday, January 31, 2007**

"Nano" is the new buzzword that has been thrown around everywhere from classical surface science, chemistry, to movies and fiction books. The influence of "nano" can be found ranging from visions of small robots going around creating havoc to possible ways to cure cancer and improve solar energy devices. The former is "nano-hype", while the latter is closer to true nanoscience and nanotechnology.

The world of nanoscience and technology starts when new physical and chemical properties arise when matter is made into pieces that are below 100 nm in size. Several key factors have enabled nanoscience and nanotechnology to explode into the technical world. One is the advancement the semiconductor industry has made to make smaller and smaller transistors. Current CPU's have 65 nm structures in them. State of the art manufacturing in the lab can go down to 10 nm. In addition, chemists and material scientists have found ways to synthesize nanoparticles and other free standing nanostructures with high reproducibility and stringent size control. And finally, the bio-world has progressed to the point where one can custom make a biomolecule for a specific purpose. The convergence of all these, and other, advancements is why "nano" is so exciting.

In the present talk we will revisit these ideas and provide a glimpse of this new playground for scientists and engineers. Dr.Ocola will also talk a little about one of his current projects, wherein he is collaborating with a mechanical engineer at the University of Wisconsin-Milwaukee.

Dr. Leonidas E. Ocola is the Nanofabrication theme co-leader at the Argonne National Laboratory Center for Nanoscale Materials (CNM). He received his B.Sc. from the Universidad Nacional de Ingenieria (Lima, Peru) and his M.Sc. and PhD from the University of Wisconsin-Madison, all in physics. He has held industry positions at Bell Laboratories, first with Lucent Technologies and then with Agere Systems, a later spin-off, working in the areas of projection electron beam lithography and then in high resolution electron beam nanolithography. His research interests include electron beam lithography and simulating high-energy electron beam interactions with polymer materials, scanning probe characterization techniques, FTIR micro-spectroscopy, single molecule spectroscopy, nanofluidics and nanophotonics. Dr Ocola has been involved with program committees on nanofabrication and nanotechnology for many years and recently served on NSF a panel on nanotechnology. He is currently co-chair of NanoFab held at the NSTI NanoTech conference since 2006, which has more than 3000 attendees.

Dr. Ocola joined Argonne National Laboratory in 2002 and is responsible for procuring instrumentation for the nanofabrication facility at the CNM and nanopatterning user support for the CNM.

LOCATION AND DIRECTIONS:

Jimmy's Charhouse, 523 Fairway Drive, Naperville, Illinois Tel: 630-753-0400

From I-88 (East-West Tollway), exit at Route 59 going south. The restaurant is one block west of Route 59 and North Aurora Road on the corner of North Aurora Road and Fairview Drive.

SCHEDULE: 5:30 PM Registration and Cash Bar 6:30 PM Dinner 7:30 PM Presentation

DINNER: Choice of:

- Grilled Chicken
- Pork Chops
- Vegetarian Pasta

COST: \$25.00 payable at the door, by check or cash

RESERVATIONS:

Send e-mail to mjm@packereng.com with the subject 'ASME Meeting' and include your name, phone number, ASME membership number, company name, address and choice of entree. If you do not have e-mail access, call (630) 505-5722, and leave a message stating this is a reservation for the ASME Meeting on January 31st and include the above information.

DEADLINE:

5 PM on Thursday, January 25, 2006. Please cancel if your plans change. Reservations not cancelled by the deadline may be invoiced cost of dinner.

MAP:



Greetings for a Happy, Healthy & Prosperous 2007!

Fox Valley Section (FVS) has some excellent programs planned for this year, including a program on 'Value Engineering' on the 22nd of February. I am looking forward to your input and participation. Please feel free to contact me or any of the other Executive Committee members with your ideas, questions & concerns.

FVS will be having a display at the Engineers' week activities at IIT-Rice campus on February 24th. We encourage you to bring along any school age kids, as well as participate in hosting the display.

Best Wishes & Regards,
Anand Prabhakaran - Chair, FVS-ASME
Tel: (708) 588-9871 Ext: 202