

PENNSTATE



Center for Innovative Sintered Products

2006 Industry Member Meeting



April 25–26
The Atherton Hotel
State College, PA

Speakers



Dr. Stephen Fonash

*Bayard D. Kunkle Chair
in Engineering Sciences and Director,
Penn State Center for Nanotechnology
Education and Utilization*

Keynote abstract:

Particle and Powder Applications of Nanotechnology

The nano-scale offers unique opportunities because of the chemistry, biology, and physics phenomena that dominate at that size range. Nano-particles and nano-powders are nano-scale structures that are of particular interest. Nano-scale particles are grown nano by processing such as colloidal chemistry whereas nano-scale powders are rendered nano by processing such as grinding. Nano-particle shapes and exact sizes can be precisely controlled. Shapes include wires, tubes, and spheres (dots). Nano-powder shapes and sizes are much less precisely controlled. Shapes are generally limited to being spherical-like. The unique opportunities that become available at this nano-scale size range will be discussed and examples of how these are being exploited with nano-particles and nano-powders will be presented.

Dr. Stephen J. Fonash is Director of the PSU site of the National Science Foundation's (NSF) National Nanotechnology Infrastructure Network (NNIN). He is also Director of the Pennsylvania Nanofabrication Manufacturing Technology (NMT) Partnership and of its NSF Advanced Technology Education Center in Nanotechnology.

Professor Fonash's educational contributions focus on nanotechnology workforce development and on nanotechnology education at the secondary and post-secondary level. His research activities encompass the processing and device physics of micro- and nanostructures. Current research activities include studies of the effects of nanoparticle plasmon-related enhancement of optical characterization techniques, electrical sensing based on nanowires, and nanowire thin film transistors on glass. Dr. Fonash's industry activities include his founding of the nanotechnology company NanoHorizons and his serving as a consultant to a variety of firms. He has published over 250 refereed papers in the areas of education, nanotechnology, photovoltaics, microelectronics devices and process, sensors, and TFTs. He has also published one book, contributed to numerous book chapters, and holds 22 patents in his research areas.

Professor Fonash received his Ph.D. from the University of Pennsylvania. He is a Fellow of the Institute of Electrical and Electronics Engineers and of the Electrochemical Society.



Dr. Dinesh Agrawal

*Professor of Materials and Director,
Microwave Processing and Engineering Center*

- Microwave Processing of Metallic and Ceramic Powders
- Microwave Technologies for WC/Co tools
- Global perspectives on Microwave Commercialization in Japan, China, India and Europe.



Dr. Jogender Singh

*Chief Scientist, Materials and Manufacturing
Division, Applied Research Laboratory*

- Powder products and processing at the Applied Research Laboratory
- Gears, cold spray, advanced manufacturing processes
- Coatings, multifunctional materials
- Collaborative graduate research programs

Industry Highlight



Kirby Quirk and John Dobstetter will show how components can be fabricated from titanium powders using the ARCAM® EBM S400 rapid prototyping system—a rapid manufacturing and prototyping system that makes 100 percent solid metal parts.

In contrast to laser sintering (SLS), the electron beam fully melts the metal particles to produce a void-free part.

The process occurs in a high vacuum, which ensures the part is completely solid, without imperfections caused by oxidation.

"Stratasys is eager to bring this hot technology to North America," says CEO Scott Crump. "We're confident in its potential, and we think having a U.S. source will make it even more attractive to manufacturers here."



AGENDA

Save the date!
Fall IMM

3-4 October 2006

CISP Industry Member Meeting

25-26 April 2006

25 April 2006

- 12:00 **Registration / light lunch**
- 1:30 **Welcome and introductions**—*Judith Todd*
- 1:45 Associate Director Presentation—"Novel Process Methods and Applications for Refractory Metals"—*Ivi Smid*
- 2:00 Associate Director Presentation—Compaction Lubricants—*Don Heaney*
- 2:15 Introduction of CISP Faculty Associates
- 2:45 **Break**
- 3:00 Future Collaborations with ARL and the Center for Multiscale Wave Materials Interactions—*Judith Todd / Richard Martukanitz*
- 3:20 Future Collaborations with the Ceramic and Composite Materials Center—*Judith Todd / James Adair*
- 3:40 Breakout Group Discussions—Charting the Future of CISP
- 4:45 Breakout Group Reports
- 5:15 **Social / Poster session**
- 6:30 **Dinner**
- 7:30 Powder Products at ARL—*Jogender Singh*
- 8:15 **Closing—plan for tomorrow**—*Judith Todd*

26 April 2006

- 7:30 **Continental Breakfast**
- 8:00 **Welcome**—*Judith Todd*
- 8:10 Financial update – *Sandra Watson*
- 8:20 "Fabrication of Ni-MoS₂ and Ni-BN Coatings Using High-Velocity-Particle-Consolidation Process"—*Parul Walia*
- 8:30 "Microwave Technologies: A Global Perspective"—*Dinesh Agrawal*
- 9:00 "Binder Removal in Nitrogen/Hydrogen Atmospheric Mixtures"—*Chantal Binet*
- 9:15 "Planned Research for China Exchange"—*Nick Koseski*
- 9:30 "Fabricating Powder Components Using the ARCAM® EBM S400 System"—*Kirby Quirk / John Dobstetter*
- 10:00 **Break and poster session**
- 10:30 CISP Global Initiatives-Spain—*Sharon Elder*
- 11:00 Particle and Powder Applications of Nanotechnology—*Stephen J. Fonash*
- 12:00 **Lunch**
- 1:15 Industry Council Meeting
- 3:00 **Meeting adjourned**

Registration Form

Register me for the CISP Industry Member Meeting, 25–26 April 2006, Atherton Hotel, 125 South Atherton St., State College, PA. Registrations will be accepted by e-mail, mail or fax through Friday, 21 April 2006.

Name

Company

Address

City

State/Province

Country

Telephone

Fax Number

E Mail

My company is a member of CISP

My company is not a member of CISP, but I would like to attend this meeting (\$75⁰⁰ registration fee)

I will attend: 25 Apr 2006 26 Apr 2006 Both Days

I may attend: 25 Apr 2006 Lunch Dinner

26 Apr 2006 Cont. Breakfast Lunch

Mail checks payable to The Pennsylvania State University

Charge my: VISA Mastercard ...in the amount of \$75⁰⁰

Account Number

Exp. Date

CV2 Code

Name as it Appears on card

Signature



Fax or mail completed registration form by 21 April 2006 to:

Judith A. Todd—Acting Director

Center for Innovative Sintered Products

147 Research West

University Park, PA 16802

Fax: (814) 863-8211

Phone: (814) 865-1914 (inquires)

E Mail: CISP@psu.edu

ACCOMMODATIONS are available at the Atherton Hotel—*please make reservations immediately*

Atherton Hotel - 125 S. Atherton St., Phone: 800-832-0132, email: atherton@statecollege.com

\$75⁰⁰ flat rate (on-line reservation code: CISPI250406)

Map & Directions



Need help? Call 814-865-2121



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