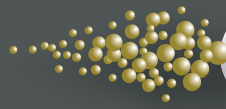




Center
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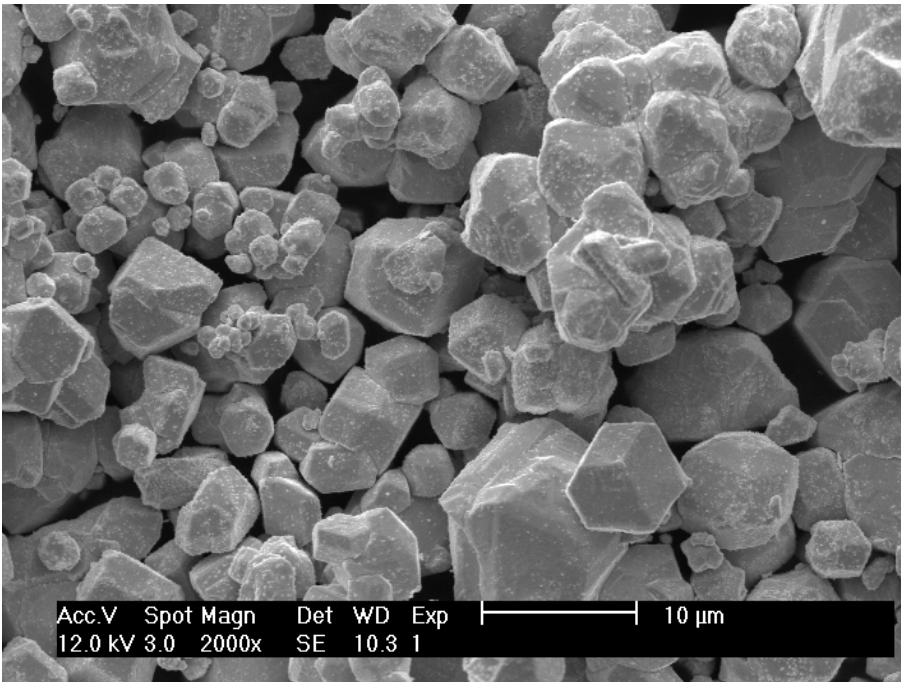
CISP

The Pennsylvania State University
CISP Lab, 118 Research West
University Park, PA 16802-6809

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2008 Industry Member Meeting

**Ramada Inn
State College, PA
April 16-17**



Acc.V	Spot	Magn	Det	WD	Exp	10 μ m
12.0 kV	3.0	2000x	SE	10.3	1	

An SEM micrograph of tungsten powder. Note the angular nature of the particles and the agglomerations. The powder is produced by a multistep process where the final step is the reduction of tungsten oxide by hydrogen gas.

In conjunction with Penn State's
Materials Research Institute
Materials Day 2008

Penn Stater Conference Center Hotel
April 14-15, 2008
<http://www.mri.psu.edu/Events/Materials-Day/2008>



For additional information:
Donna Lucas, Coordinator
280 Materials Research Laboratory Bldg.
University Park, PA 16802
Phone: (814) 865-1656
Fax: (814) 863-9704



Keynote Speaker



Dr. Gary L. Messing

*Distinguished Professor of
Ceramic Science and Engineering*

*Head of the Department of
Materials Science and Engineering*

Sintering of Transparent Yttrium Aluminum Garnet (YAG) Ceramics—A major challenge in ceramic powder processing

G. L. Messing, S. Kochawattana, S. H. Lee, L. Kupp, A. Stevenson and J. Anderson

Transparent YAG is a prime candidate to replace single crystal YAG in high power laser applications. It has been shown that starting with powders and densifying to >99.9% density yields theoretical transparency—the YAG looks like window glass. However, to achieve this extraordinary property in a ceramic requires exceptional control of all stages of powder processing, forming and densification. In this talk, I will focus on our efforts on in situ solid state sintering, as well as, the sintering of nanoscale YAG powders and the pros and cons of each approach for obtaining transparent Nd:YAG ceramics.

Biography:

Dr. Gary L. Messing served as Director of the Materials Research Laboratory at Penn State, and was Founding Director of the NSF Industry/University Cooperative Research Center on Particulate Materials at Penn State.

Dr. Messing received his B.S. degree in Ceramic Engineering at the New York State College of Ceramics at Alfred University in 1973 and his Ph.D. in Materials Science and Engineering at the University of Florida in 1977.

He has published over 250 papers and co-edited 13 books on various aspects of ceramic processing including solution synthesis, phase transformations, processing-microstructure relations, sintering and templated grain growth. He has co-organized the International Ceramic Processing Science Conference with Professor Shin-ichi Hirano of Nagoya University since 1986. He was co-editor of the Journal of the American Ceramic Society from 1993-98 and is Editor in Chief of Ceramics International and Principal Editor of Materials Letters.

Professor Messing has received numerous awards for his research and leadership in the field of ceramics including the Richard M. Fulrath Pacific Award and the Robert M. Sosman Memorial Lecture of the American Ceramic Society. He was elected Fellow of the American Ceramic Society in 1990 and served on the Board of Directors for many years and was then elected President of the American Ceramic Society. In 1999 he was elected to the World Academy of Ceramics. In 2003 he was recognized as one of the most “Highly Cited Researchers” in Materials, and was honored with the International Award of the European Ceramic Society for his international collaborations. In 2005 he received the Outstanding Educator Award of the Ceramic Education Council of ACerS. In 2005-2006 he served as Chairman of the University Materials Council and currently serves as Secretary/Treasurer of the International Ceramics Federation.

Evening Speaker



Dr. Raúl J. Martín-Palma

*Professor of Physics,
Universidad Autónoma de Madrid, Spain*

*Visiting Professor,
Pennsylvania State University*

Nanostructured Porous Silicon and Its Application

The electrochemical etch under the appropriate experimental conditions of silicon wafers leads to the formation of porous silicon (PS), basically consisting in a network of silicon nanocrystals with novel physico-chemical properties. These properties make nanostructured PS a very attractive material for the development of new devices based on silicon technology in a wide variety of fields, ranging from optoelectronics and microelectronics to biomedicine. Additionally, the high specific surface area of PS makes this material a good candidate for its use in chemical- and bio-sensing devices.

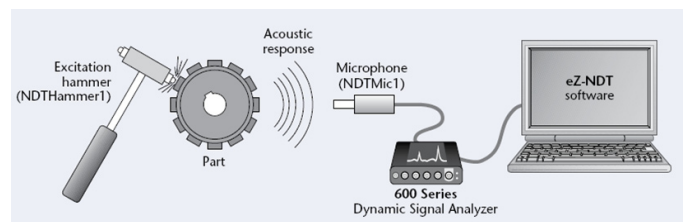
Biography:

Raúl J. Martín-Palma (Madrid, 1972) is Professor of Physics at the Universidad Autónoma de Madrid (Spain). He has been Post-Doctoral Fellow at the New Jersey Institute of Technology (Newark, USA) and visiting Professor at the Pennsylvania State University (State College, USA). He is currently engaged in interdisciplinary research in the nanostructured materials, optoelectronics and biosensors fields. He has received several young scientist awards for his research on nanostructured materials from the Materials Research Society (USA), European Materials Research Society, and Spanish Society of Materials. Dr. Martín-Palma has co-authored over 60 publications and one book.

Industry Highlight



Dave Hanshew, Instrumentation Systems, Inc. will show how components can be tested for defects using the IOtech eZ-NDT system. This system uses the Resonance Acoustic Method to perform 100%, on-line, non-destructive testing on powdered metal parts at different stages of the production process. This product uses a signal processor, a microphone, a modal hammer, and computer software to test good parts from bad parts and document the results. Basically, the part is hit with a hammer and a microphone listens to the “ring” (resonance components) of the part (like a bell would ring) to determine if the part is cracked. Bring your good and cracked components to determine if this system will work in your application.



CISP Industry Member Meeting

16–17 April 2008

Wednesday, April 16, 2008

- 12:00 **Registration / Light Lunch**
- 1:00 **Welcome and introductions** - *Judith Todd, Past Director*
- 1:10 **Status of CISP**—*Donald Heaney, Director*
- 1:20 MMCs from Particulate Composites-Processing, Characterization, Modeling—*Ivi Smid*
- 1:40 Modeling Vickers Indentation Cracks in Hard Metals with Ceramic Inclusions—*Erik Byrne*
- 2:00 Biodegradable P/M Alloys for Medical Implants—*Barbara Shaw*
- 2:20 2007 International Research Experience for Students in Innovative Sintered Materials at University Carlos III de Madrid (Spain) with Penn State and Mississippi State: Powder Metallurgy and Sintering Cycles—*James Moses, Jens Weyant*
- 2:35 **Industry Spotlight:** Resonance Acoustic Nondestructive Testing of Powdered Metal Parts—*Dave Hanshew*
- 3:00 **Break**
- 3:30 Sintering of Transparent Yttrium Aluminum Garnet (YAG)-A Major Challenge in Ceramic Powder Processing—*Gary Messing*
- 4:30 **Social/Poster Session**
- Investigation of Microwave Sintering on High Velocity Cold Spray Coatings—*Sinthu Chanthapan, Brent Shoffner, Timothy Eden, and Dinesh Agrawal*
 - Wear Resistant Coatings Applied by Cold Spray—*D. E. Wolfe, T. J. Eden & J. K. Potter*
 - Nanoparticulate-Enabled Manufacturing of Mesoscale Ceramic Components—*N. Antolino, G. Hayes, M. Aguirre, M. Frecker and J. Adair*
 - YAG as a Transparent Armor Material—*Adam Stevenson and Libby Kupp*
 - Templated Grain Growth for Tailoring Novel Microstructure Composites—*Bob Pavlacka*
 - Nano-Engineered Encapsulated-Particles for the Creation of Self-Lubricating Coatings and Alloys—*Jens Weyant*
 - Thermodynamic Stability in Selected Metal/Ceramic Particulate Composites—*Eric Gift*
 - "ON-CHIP" Microcomponent Fabrication Utilizing Micron Size Metal Powders—*Craig Shaffer*
 - Modeling Vickers Indentation Cracks in Hard Metals with Ceramic Inclusions—*Erik Byrne*
 - Composite Hard Metal for Wire Drawing Dies – Fabrication, Experimentation, Modeling—*Dan Cunningham*
 - Bioimaging and Drug Delivery with Nanocomposite Colloids—*E. Altinoglu, T. Russin, T. Morgan, A. Tabakovic, P. Eklund and J. H. Adair*
- 6:00 **Dinner**
- 7:00 Nanostructured Porous Silicon and Its Applications—*Raul Martin-Palma*
- 7:45 **Closing/Plan for Tomorrow**—*Donald Heaney*

Thursday, April 17, 2008

- 8:00 **Continental Breakfast**
- 8:30 **Welcome**—*Don Heaney*
- 8:35 Financial update
- 8:45 Materials Testing at CISP—*Kristina Cowan*
- 8:55 Composite Hard Metal for Wire Drawing Dies–Fabrication, Experimentation, Modeling—*Dan Cunningham*
- 9:15 Wear Resistant Coatings Applied by Cold Spray—*Tim Eden*
- 9:35 Nano-Engineered Encapsulated-Particles for the Creation of Self-Lubricating Coatings and Alloys—*Jens Weyant*
- 9.55 "ON-CHIP" Microcomponent Fabrication Utilizing Micron Size Metal Powders—*Craig Shaffer*
- 10:15 **Break and Poster Session**
- 10:45 Thermodynamic Stability in Selected Metal/Ceramic Particulate Composites—*Eric Gift*
- 11:05 Transformation Assisted Consolidation—*Donald Heaney*
- 11:25 Thermal Technology SPS System—*Robert Aalund*
- 11:45 **Lunch**
- 1:00 Industry Council Meeting
- 2:30 **Meeting adjourned**

Registration Form

Register me for the CISP Industry Member Meeting, April 16–17, 2008, Ramada Inn, 1450 South Atherton St., State College, PA. Registrations will be accepted by e-mail, mail or fax through Friday, April 11, 2008.

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 we are considering joining and would like to attend this meeting (\$100⁰⁰ registration fee)

I will attend: April 16,2008 Lunch Dinner

I may attend: April 17,2008 Cont. Breakfast Lunch

Mail checks payable to The Pennsylvania State University

Fax or mail completed registration form by April 11, 2008 to:

Donald Heaney—Director

Center for Innovative Sintered Products

118 Research West

University Park, PA 16802

Fax: (814) 863-8211

Phone: (814) 865-2121 (inquires)

E Mail: CISP@psu.edu



ACCOMMODATIONS are available at the Ramada Inn—*please make reservations immediately*

Atherton Hotel - 1450 S. Atherton St., Phone: (814) 238-3001, Fax: (814) 867-1527, email: ramadasc@aol.com

\$95⁰⁰ per room (mention Penn State CISP)

Map & Directions

Need help? Call 814-865-2121



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