

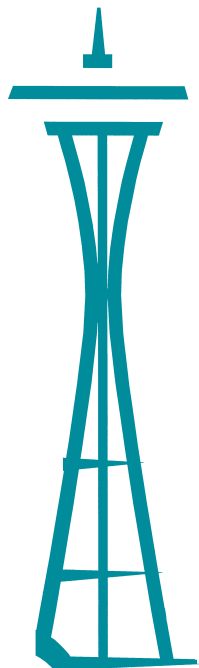
Nanocomposites for the Materials & Process Industry
October 31 – November 3, 2005
Washington State Convention Center, Seattle, Washington

As part of the SAMPE Fall Technical Conference, SAMPE is pleased to present its first nanotechnology conference. For the first time, three days of technical sessions, a keynote presentation, a nano tutorial, and roundtable discussions will focus on:

High temperature applications and resins	Nanotechnology revolutions and the energy industry
Multifunctional materials, nanostructured fibers and nanoparticles	Processing and characterization
Value-chain building and manufacturing scale-up	Nano workplace health and safety issues

The keynote will be presented by Dr. Wade Adams, Director of the Center for Nanoscale Science and Technology, Rice University, Houston, TX. His co-authors are Dr. Richard Smally and Amy Jaffe, Rice University. His presentation will be "Nanotechnology and Energy: Be an Engineer – Save the World!" With the explosive energy requirements needed by our universe, revolutionary breakthroughs in the physical sciences and engineering, particularly in nanotechnology, are needed. Learn about the magnitude of the challenge, the people / workforce issues and ideas on how to organize some solutions to this increasing problem.

This impressive presentation will be followed by three days of sessions and a roundtable. All sessions will be held at the Washington State Convention Center. See inside for further information on the session topics and speakers.



Special Presentation – Monday, October 31 • 2:00 p.m. – 5:00 p.m.

If you are new to the industry or want to make sure you fully understand what nanocomposites is all about, you will also want to register for our special tutorial:

Nanocomposites Technology

We will define nanotechnology and its uniqueness/capabilities as an "enabling" technology allowing the introduction of unusually small amounts of nanomaterials in polymer systems resulting in the formation of a "nanocomposite" exhibiting multifunctional performance characteristics. The discovery of new nanoscaled materials such as nanoclays, carbon nanofibers, Polyhedral Oligomeric Silsesquioxanes (POSS®), carbon nanotubes, and others offer the promise of a variety of new composite, adhesive, coating and sealant materials with unique properties not necessarily available with conventional materials.

- Types of nanoparticles used in polymeric matrices
- Polymer matrices consisting of thermoset, thermoplastic, and elastomer resins
- Use of WAXD, TEM, and SEM analyses to assess dispersibility
- Characteristics that polymer nanocomposites (PNC) exhibit:
- Description of various nanoparticles: nanoclays, carbon nanofibers, POSS, carbon nanotubes, silica, alumina, TiO₂, and others
- Transformation of polymer matrix resins into PNC's: ablatives, coatings, fiber-reinforced composites, electronics, carbon-carbon composites, fire resistant materials, etc.
- Technology: Current status, trends, new developments, economics, commercial applications

A separate registration fee of \$150.00 is required.

As a registered delegate, you can attend any of the nanotechnology sessions, the nano roundtable AND any of the SAMPE Fall Technical Conference sessions and exhibits all of which will also be presented at the Washington State Convention Center. For a complete list of all sessions, exhibits and receptions visit our website: www.sampe.org or call us at 626.331.0616 ext. 610 for a brochure or further information.

Housing

If you need housing, a block of rooms is being held at the Renaissance Seattle Hotel. See our website or contact the Renaissance at 800.278.4159 (toll free) or 206.583.0300. Our group rate is \$149 (single/double) and our Group Code is AMPAMPA. You must reserve your room by October 3 to get this group rate.

How to Register

It's easy! Go to the SAMPE web page, www.sampe.org, to Events, then hit 2005 Fall Technical Conference, Seattle. Go to the last line "Event Pre-Registration Form", complete the form and submit.

Questions?

Call Priscilla at 626.331.0616 ext. 610.



Nanocomposites for the Materials & Process Industry

MONDAY, OCTOBER 31

Tutorial

2:00 p.m. - 5:00 p.m.

Nanocomposites Technology*

Joseph H. Koo, University of Texas, Austin, TX and Dr. Louis Pilato, Pilato Consulting, Bound Brook, NJ

*Additional registration fee is required.

TUESDAY, NOVEMBER 1

9:00 a.m.

Nanotechnology Keynote Address

Nanotechnology and Energy: Be an Engineer-Save the World!

Dr. Wade Adams, Director of the Center for Nanoscale Science and Technology, Rice University, Houston, TX; Co-authors: Dr. Richard Smalley and Amy Jaffe, Rice University, Houston, TX

10:00 a.m. Oral Presentations Only

Nanotechnology: Global vs. Regional Nanotechnology Development

Moderator: Dr. James D. Holbery, Pacific Northwest National Laboratory, Richland, WA

The purpose of this panel is to address nanotechnology development utilizing regional "cluster" capabilities. It will address the benefits of collaborative locally, regionally, nationally, and globally, and address the merit of nanotechnology development for currently established, locally entrenched industries versus development for industry "at-large".

Panelists:

Prof. Debes Bhattacharya, University of Auckland, New Zealand
Alex Kawczak, V.P., BioProducts and Nanostructured Materials
Skip Rung, President and Executive Director, Oregon Nanoscience and Microtechnologies Institute, (ONAMI)
Representative from the Canadian National Institute for Nanotechnology (NINT)

1:00 p.m. Oral Presentations Only

Nanotechnology: Leading Edge Research in Nanotechnology

Moderator: Keith L. McIver, Boeing Phantom Works, Huntington Beach, CA

An invigorating panel discussion on Nanotechnology's "not so distant future" and the impact to industry, and our lives. Panelists, consisting of industry leaders, politicians, educators and innovative thinkers, will provide their thoughts on the future of nanotechnology in the market place and the impact it will have on our lives.

Panelists:

Dr. Fabio Salamanca-Buentello, University of Toronto Joint Centre for Bioethics, Ontario, Canada
Dr. Alan Sellinger, Senior Scientist/Deputy Cluster Manager, Molecular and Performance Materials, A-STAR, Institute of Materials Research and Engineering, Singapore
Dr. Tom Cellucci, COO and Founder of Zyvex Inc and NNI author
John Martin, Manager, Washington State Technology Center, Seattle, WA

1:00 p.m.

Nanomaterials/Nanocomposites: Part 1: High Temperature Applications and Resins

Chairs: Tom Hughes, Applied Sciences, Cedarville, OH and Prof. Chuck Zhang, Florida State University, Tallahassee, FL

Nanostructured Materials for Aerospace Power and Propulsion Applications, M.A. Meador, S.G. Campbell, L. Capadona, N. Leventis, M.A. Meador, B. Nguyen, NASA Glenn Research Center, Cleveland, OH

Flammability Studies of Polymer Nanostructured Materials, J.H. Koo, University of Texas, Austin, TX; L. Pilato, KAI Inc, Bound Brook, NJ

High Temperature Resin/Carbon Nanofiber Composites Using Dry Mixing Techniques, S. Ghose, National Research Council/NASA Langley Research Center, Hampton, VA; K.A. Watson, National Institute of Aerospace, Hampton, VA; D.C. Working, J. Siochi, J.W. Connell, NASA Langley Research Center, Hampton, VA; J.M. Criss, M&P Technologies, Marietta, GA

Polyimide-Carbon Nanofiber Composites for High Temperature Applications, M. Coleman, X. Li, J. Makpar, University of Toledo, Toledo, OH Control of Nanoclay Dispersion via Nanoscale Phase-Separation Between Epoxy Resin and Reactive Rubber, S. Poovarodom, S. Sangari, J. Seferis, University of Washington, Seattle, WA

Effects of Processing and Interface Morphology on Carbon Fiber Modified Interlayer Toughened Polyanomatrix Composites, L. Lu, S.S. Sangari, J.C. Seferis, University of Washington, Seattle, WA

5:00 p.m. – 7:00 p.m.

Welcome Reception • Renaissance Hotel

Food, music, fun, socializing.

Mix, mingle and network with your SAMPE delegates in the ballroom of the beautiful Renaissance Seattle Hotel. A no host bar will be provided along with some tasty morsels to satisfy your palate.

WEDNESDAY, NOVEMBER 2

8:00 a.m.

Nanomaterials/Nanocomposites, Part 2: Multifunctional Materials, Nanostructured Fibers and Nanoparticles

Chairs: Dr. Darrell Marchant, ERC, Inc., Edwards AFB, CA and Dr. Lisa Viculis, Cytec Engineered Materials, Anaheim, CA

Multifunctional Sandwich and Carbon Fiber Structures Using SWNT Buckypapers Nanocomposites, B. Wang, Z. Liang, C. Zhang, Florida A&M University/Florida State University, Tallahassee, FL; P. Funchess, L. Kramer, Lockheed Martin Missiles and Fire Control, Orlando, FL (Restricted Paper-ITAR)

Multi-Functional Nano-Composite High-Temperature Resin Matrix Composites – Properties and Processing – An Update, R. Vaidyanathan, J. Campbell, C. Bisch, Advanced Ceramics Research, Tucson, AZ; S. Yarlagadda, University of Delaware, Newark, DE; E.V. Barrera, J. Zhu, Rice University, Houston, TX; K. Lozano, University of Texas Pan American, Edinburg, TX (Restricted Paper-ITAR)

Long Carbon Nanotube Fibers – Processing, Properties, and Some Application Concepts, A. Bogdanovich, 3Tex Inc, Cary, NC

Structure and Properties of Vapor Grown Carbon Nanofiber Reinforced Polyacrylonitrile Nanofiber by Co-Electrospinning, H. Lam, F. Ko, Drexel University, Philadelphia, PA

The Role of Nanostrands in Conductive Composites, G. Hansen, Metal Matrix, Midway, UT

Graphite Nanoplatelet Reinforced Epoxy Composites: The Effect of Exfoliation and Surface Treatment, O. Choi, H.T. Hahn, S. Gilje, R.B. Kaner, University of California, Los Angeles, CA

Improving Composites Properties by Acrylic Block Copolymers, N. Passade-Boupat, L. Gervat, F. Gensous, Arkema, Lacq, France

1:00 p.m.

Nanomaterials/Nanocomposites, Part 3: Processing and Characterization

Chairs: Prof. Maria Coleman, University of Toledo, Toledo, OH and Dr. Gwen Gross, The Boeing Company, Seattle, WA

Determination of Nanocomposite Morphology and Physical Properties of POSS/Fluoropolymer Blends, J. Mabry, D. Marchant, L. Moody, A.F. Research Laboratory, Edwards AFB, CA

Characterization of Nanoreinforced Phenol-Resorcinol-Formaldehyde Composites, J.H. Koo, University of Texas, Austin, TX; F. Ghorso, L. Shea, Shea Technology, Reno, NV; L. Pilato, KAI Inc, Bound Brook, NJ

Conductive Long Fibre Reinforced Thermoplastics by Using Carbon Nanofibres, F.W.J. van Hattum, C. Leer, J.C. Viana, University of Minho, Guimaraes, Portugal

The Influence on Mechanical Property of the Epoxy Foam Matrix Structural Differentiations, K. Ishiguro, S.S. Sangari, J.C. Seferis, University of Washington, Seattle, WA

Effects of Nanoclay on the Performances of VARTM Composites, R. Peila, S.S. Sangari, J.C. Seferis, University of Washington, Seattle, WA

Permeability Measurements in Epoxy-Nanoclay Modified Composites, S. Martinez Vilariño, D. Hui, L. Daniel, University of New Orleans, New Orleans, LA

1:00 p.m. Oral Presentation Only

Roundtable Technology Discussions

This is an open forum, and will be hosted by an expert in the field to help you—discuss and perhaps solve your technical problems. Feel free to bring a sample and show others what you can do or need help with.

- Processing Challenges
Prof. Donald Klosterman, University of Dayton Research Institute
- Nanotechnology/Nanocomposites
Dr. Samra Sangari, University of Washington

THURSDAY, NOVEMBER 3

8:00 a.m.

Nanomaterials/Nanocomposites, Part 4: Processing and Characterization

Dr. Samra S. Sangari, University of Washington, Seattle, WA

Production and Assessment of Carbon Nanofibre/Polyamide Composites by Tailored-Shear Extrusion, F.W.J. van Hattum, C. Leer, A. Gaspar-Cunha, C.A. Bernardo, University Minho, Guimaraes, Portugal

Microstructural Analysis Nylon 11 Nanocomposites, J.H. Koo, D. Ho, D. Lao, K. Ngyuen, J. Cheng, University of Texas, Austin, TX; L. Pilato, G. Wissler, M. Ervin, KAI Inc, Austin, TX

B-Stage Control of Swelling in Layered Silicate Epoxy Polyanomers, J.P. Killgore, S.S. Sangari, J.C. Seferis, University of Washington, Seattle, WA

Thermoplastic Polyester Nanocomposites from Cyclic Precursors, R.P. Dion, D.H. Bank, M.S. Paquette, Dow Chemical Company, Midland, MI

Thermally Conductive Short-Fiber Carbon Composites Containing Carbon Nanofibers, D. Klosterman, N.A. Gagliardi, M. Galaska, T. Whitney, T. Gibson, University of Dayton Research Institute, Dayton, OH

Synthesis and Characterization of L-Arginine H3PO4 Nano-Crystals with Non-Linear Optical Properties, J. Hernández, A. Duarte Moller, Centro de Investigacion en Materiales Avanzados, Chihuahua, Mexico

A New RVE Approach to Determine Elastic Constants of CNT Based Nanocomposites, N. Shukla, MMNIT, Motilal Nehru Regional Engineering College, Allahabad, India

8:00 a.m. Oral Presentations Only

Nanotechnology: Value-Chain Building and Manufacturing Scale-Up of Nano Industry

Moderator: Russell G. Maguire, Boeing Commercial Aircraft, Seattle, WA

This panel will discuss issues associated with bringing nanotechnology advances

in materials and processes to application and production readiness and what preparations are needed in end-user industries for the scientific advent of these new capabilities.

Panelists:

- Brian Rice, University of Dayton Research Institute, Technology Spinoffs
- Tom Hughes, Applied Sciences Inc (ASI), COO
- Art Fritts, NanoSpense, CEO
- Dr. Gwen Gross, The Boeing Company, Nano expert
- Chris Lundberg, NanoRidge, President
- Marnie Rutkofs, Zyvex, Marketing
- Dr. Tia BensonTolle, A.F. Research Lab

1:00 p.m. Oral Presentations Only

Nanotechnology: Workplace Nano Health & Safety

Moderator: Paul E. Rempes, Boeing Phantom Works, St. Louis, MO

Will your nano workplace remain safe? Ask SAMPE's panel of nano environmental, health and safety (EHS) experts. Learn about the latest Guideline, Regulatory and Standard developments from NIOSH, OSHA, EPA and other authoritative sources.

Panelists:

- Larry Reed, Deputy Director, Division of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health (NIOSH)
- Dr. William Perry, Director, Office of Chemical Hazards (Non-Metal), Directorate of Standards and Guidance, Occupational Safety and Health Administration (OSHA)
- Jim Willis, Director, Chemical Control Division, Office of Pollution Prevention & Toxics, Environmental Protection Agency
- Dr. Vicki Colvin, Director, Center for Biological & Environmental Nanotechnology (CBEN), Intl Council on Nanotechnology, Rice University
- James Le Quynh, Chairman, ASTM International Sub-committee E56.03, Nanotechnology Environmental & Occupational Health and Safety and CEO, Organic Metals, Inc.
- Dr. John McGinness, Member, E56.03 and Chief Scientist, Organic Metals, Inc.
- Chris Phoenix, Director of Research, Center for Responsible Nanotechnology (CRN), affiliated with World Care

SAMPE Fall Technical Conference October 31 – November 3, 2005 Washington State Convention Center

Concurrent with SAMPE's Nanoconference is the SAMPE Fall Technical Conference. For four days, we will address the theme, "Materials and Processing Technologies for Revolutionary Applications". Technical sessions will focus on advance materials and processes in composites, manufacturing, adhesives, finishes, structural engineering, and inspection. Tutorials, panel discussions and keynote speakers will cover resin infusion, overview of materials, test methods design and analysis.

Also, our exhibit floor will showcase dozens of exhibitors with applications for:

Adhesives	Advanced Composites
Aerospace	Aircraft
Defense	Fastening Systems
Infrastructure	Nanotechnology
Recreation Equipment	Transportation

...and more!!

For all attendees, there is a Welcome Reception on Tuesday night at the Renaissance Hotel and the Wednesday evening dinner and talk at Seattle's Museum of Flight.

Your badge for the Nanoconference will admit you to all Fall Technical Conference sessions and the exhibits at no additional charge.

For complete information, go to www.sampe.org or call Priscilla at 626.331.0616 ext 610.

