Information Management Institute

3rd Annual Engineered Fine & NanoParticles Applications Conference

January 28-30, 2008

Radisson Resort Orlando - Celebration
Kissimmee (Orlando), Florida

IMI's **3rd Engineered Fine & NanoParticle Applications Conference** is dedicated to exploring the technology developments, market trends and needs for products enabled by engineered fine particles. While nanoscale science and technology has potential to provide significant societal benefits in the long run, rapidly growing development and commercialization of products enabled by engineered particles is under way today in a wide range of industries. This first of it's kind conference, initiated in 2005, will provide emphasis on improved manufacturing processes and integration techniques and introduce participants to the near and mid-term opportunities for development of viable products in energy, electronics, chemicals industry, consumer products and other industries. During the three-day meeting, experts from industry, government, academia and investment community will present current market trends and opportunities and provide key insights into the future trends and challenges.

IMI's **3rd Engineered Fine & NanoParticle Applications Conference** will be a worldwide meeting place for who's who in the rapidly evolving engineered fine particles field; a field that is already changing the design, manufacture and functionality of many products. It will allow presenters, attendees and exhibitors to meet, learn and promote their technologies, vision, products and services. The conference will be a meeting place for particle producers, equipment developers, materials developers, processing experts and end users, i.e. all industry sectors with commercial interest in the advancement of engineered fine particle technology in the global economy.

Participants will jointly address the challenges and opportunities associated with implementation of engineered fine particles into new applications and the need to innovate commercially viable solutions. Conference presentations will also address production and processing technologies; R&D and commercialization of emerging applications, markets and implementation issues.

Conference Displays & Suppliers' Forum

IMI's 3rd Annual Engineered Fine & NanoParticle Applications Conference provides the opportunity to have a free display space to exhibit your products, technology or services. Each conference registrant also has the opportunity to give a commercial 10-minute Suppliers' Forum presentation.

IMI will cooperate with all interested parties to provide appropriate space so products can be displayed and demonstrated during the conference breaks and receptions. **There is no fee in addition to the conference registration fee to have a display and/or to give a Suppliers' Forum presentation.**

To reserve your complimentary display space and Suppliers' Forum presentation slot, please register online and check off the box indicating your participation OR complete the registration form on next page and fax to +1-207-235-2226 OR send an email to **al@imiconf.com**

Conference Co-Chairs

Joseph Cross, Nanophase Technologies
Miodrag (Miki) Oljaca, Cabot Corporation

For Latest Program Updates & To Register Online

Visit IMI Web Site
www.imiconf.com

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3rd Annual Engineered Fine & NanoParticles Applications Conference

January 28-30, 2008

Monday, January 28, 2008

11:00 a.m. Conference Registration

2:00 p.m. Opening Session

Trends, Markets & Implementation

WELCOME AND INTRODUCTIONS

Alvin G. Keene, President, Information Management Institute, Inc., Carrabassett Valley, Maine

Conference Co-Chairmen: Miodrag Oljaca, Technology Application Manager, Cabot Corporation, Albuquerque, New Mexico

Joseph E. Cross, President & CEO, Nanophase Technologies, Romeoville, Illinois

NANOMATERIALS COMMERCIALIZATION TRENDS

Dr. Michael Holman, Senior Analyst, Lux Research, New York, New York

- Market Structure, Size & Growth
- Funding Perspectives: Corporate, Government & Venture Capital
- Key Technology Trends
- Challenges & Drivers

NANOTECHNOLOGY ENVIRONMENTAL HEALTH & SAFETY: CURRENT REGULATION & INDUSTRY INITIATIVES

John C. Monica, Jr., Partner, Porter Wright Morris & Arther LLP, Washington, DC

- Uncertain Federal Regulatory Scheme Within Which All Nanoscale Materials Manufacturers & Users Currently Operate
- Insights Into Likely Legal Developments In This Area
- Current Public Perception Regarding Nanotechnology Benefits Vs. Potential EHS Risks
- How These Considerations Should Factor Into Forward Thinking Nano-Business Plans
- Examination Of A Few Of Most Widely Available Voluntary EHS Nanoframeworks To Assist Nano-Businesses In Evaluatoing Program Participation

BIG CHANGES COMING FOR SMALL PARTICLE PATENTS

Robert M. Siminski, Patent & Trademark Attorney, Harness, Dickey & Pierce, P.L.C., Troy, Michigan

- Landmark 2007 Case Law Decisions Will Greatly Influence Patent Examiners Review Process
- Monumental Patent Examination Procedure Changes Likely In U.S.
- Examples based on Fine/Nanoparticle Patents
- How these Decisions & Changes are likely to Affect Future Fine & NanoParticle Patents

5:30 p.m. Reception in Display Area

Tuesday, January 28, 2008

7:30 a.m. Continental Breakfast

8:30 a.m. Session 2

Technologies and Materials

FUNCTIONALIZING THE SURFACE OF NANOPARTICLES FOR REAL WORLD PRODUCTS

Dr. Steffen Pilotek, Director, Business Development PARTEC, Buhler Inc., Austin, Texas

- Huge Nanoparticle Innovation Potential As Nano-additives Requires Excellent State Of Dispersion
- Chemomechanical Processing In Agitator Bead Mills: Concurrent Chemical & Mechanical Action
- Milling Chamber As A Reaction Vessel Where Complex Chemical Reactions Can Be Conducted Under Well Defined Mechanical Conditions In The Wet Phase
- Concept Of Using Volume-Adapted Surface Modifiers For Nanoparticles
  - Influence Of The Size, Type & Quantity Of Surfactants Used
  - Kind Of Dispersions That Can Be Manufactured In This Process
- Many Applications In Coatings, Plastics, Electronics, Optics, Consumer Goods, Ceramics, Specialty Chemicals & Other Product Formulations

NANOPARTICLE SURFACE MODIFICATION TECHNOLOGIES & OPPORTUNITIES FOR NANOPARTICLE BASED PRODUCTS

Dr. Richard W. Brotzman, Vice President R & D, Nanophase Technologies, Romeoville, Illinois

- Market Realities
  - Application Success Is Higher With Customer Application Collaboration
  - No One Wants Nanoparticles In The Powder State
  - One Type Of Nanoparticle Will Not Provide Solutions To All Applications
  - Commercial Quality & Quantity Are Required To Participate
  - Market Success Requires Nanoparticles, Surface Engineering & Dispersing Capability
- Commercial Scale Surface Treatment Methods
- Relationship Between Surface Treatment, Dispersion & Product Format
- Market Successes In Personal Care, Polymer Additives & Coatings And Textiles
- BUT High Quality Surface-Treated Nanoparticles In Dispersed Format Is Not Enough
- Dispersions Must Be Tailored For Specific Formulations To Achieve The Efficacy Required For Market Success
- Example:New Family Of Formulated, Nano-Alumina Based Dispersions For Coating Applications: Enables The Scratch Resistance Of Water-Based Paints To Be Equal Or Better Than Oil-Based Paints

CHARACTERIZATION OF NANOPARTICLES USING LIGHT SCATTERING TECHNIQUES

Mehmet (Matt) Kozan & M. Pinar Mengue, Department of Mechanical Engineering, University of Kentucky, Lexington, Kentucky

- Light Scattering Is Powerful Characterization Tool For Determining Shape, Size & Particle Size Distribution
- Thorough Light Scattering Analysis On Effect Of Geometry On Aggregation Rates & Resulting Structure Morphology
- Effect Of Solvent Rheology On Degree Of Aggregation & Change In Time
- Application Of Techniques For WO_3 Nanoparticles For Electronic Devices; EPLS Measurements & Numerical Computations To Detect Individual Particle Shapes; Aggregation & Breakage Properties Of Commercial TiO_2 Powders Used In Glass Coatings & Others

12:00 Noo Luncheon

1:30 p.m. Session 3

Development, Commercialization & Implementation

INK JET PRINTING FINE PARTICLES

Dr. Alan L. Hudd, CEO, Xennia Technology Ltd., Letchworth, Hertfordshire, UK

- Understanding Ink Jet Process as a Technique to Dispense a Range of Particles
- Creating Stable Dispersions for Ink Jet Printing
- Range of Materials & Properties that can be Ink Jet Printed
- Using Ink Jet to Manufacture Fine Particles
- Using Ink Jet as a Process to Manufacture Products Using Fine Particles
- Typical Applications

CARBON NANOTUBES: EMERGING MARKET APPLICATIONS & TECHNICAL CHALLENGES

Dr. John Oliver, President, Innov8 Solutions, Calgary, Alberta, Canada

- Carbon Nanotubes: History, Unique Properties, Production Methods & Economics
- Patent Scene
  - Who's doing What & Why
  - Leading IP Players
- Market Window of Opportunity: Projected Market Growth in Composites, Electronics, Field Emission Displays & Energy
- Technical Challenges
  - Product Quality
  - Ink/Composite Dispersions
  - Device Fabrication

INCORPORATING NANOMATERIALS INTO WET-LAID NONWOVENS TO PRODUCE COMPOSITE MATERIALS

John McMahon, VP Sales & Marketing, Knowlton Technologies, Watertown, New York

- The Wet-Laid Nonwoven Process & How it can be Used
- Utilization of Nanomaterials in Wet-Laid Nonwoven Products

- Nano-Fibrids of Natural & Synthetic Nano-Polymeric Materials to Enhance Tensile Strength, Burst Strength Management & Internal Shear Strength Improvements
- Solid Binder" Nano-Technologies to Enhance Automotive Drive-Train Composites (without Use of Tradtional – harder to manage – "Beater-Add Tecnologies
- Processing Nano-Reagent Reactive Dye Particles to Provide Advanced Protection in Chemical Warfare Applications
- Utilization of Nano-Materials in Improved Potable Water Media to Improve Water Supply Safety, Reduce Potable Water Infrastructure Requirements & Raise Waterborne Pathogen Protection
- Carbon Nano-Film Processing Technique Research for Potential Role in Aerospace Component Surface Solutions, Military Aircraft Damage Detection& Other Military Applications
- Processing Technology to Harness Nano-Silica for Fire Protection Enhancement

- Fast Track Prototyping to Evaluation New Product Opportunities

SUPPLIERS' FORUM: 10-Minute Presentations Related To Engineered Fine Particle Technology, Product or Service Capabilities. The Suppliers' Forum is open to all Conference Registrants

5:30 p.m. Reception in Display Area

Wednesday, January 30, 2008

7:30 a.m. Continental Breakfast

8:30 a.m. Session 4
Development, Commercialization & Implementation (cont.)

NANO-CATALYST DESIGN FOR DIESEL EMISSION CONTROL
Johnatan Woo, Nanostellar Inc., Redwood City, California

- Diesel Emission Control & The Rational Catalyst Design Concept
- Standard Pt Diesel Emission Control Technology
- Computational Modeling of a Pt Surface
  - Quantum Mechanical Calculations Of CO Covered Metal Surfaces
  - Pt Surface Modification Vis Promoter Addition
- Experimental Data For Representative Promoted-Pt Nano-catalysts
  - Reaction Kinetics Of Pt & Promoted-Pt
  - Laboratory Reaction Measurements & Activity Characteristics
  - Vehicle Test Results
- Nanoparticle (Catalyst) Size Control
  - Characterization Of Nanoparticles
  - Size Dependent CO & NO Oxidation Measurements

ENGINEERING SAFE NANOPARTICLES FOR USE IN COMPOSITES
Prof. Vicki Colvin, Professor, Departments of Chemistry and Chemical & Biomolecular Engineering, Rice University, and Director, Center for Biological & Envirnomental Nanotechnology, Houston, Texas

- Interface between "Dry" Side of Inorganic Nanostructures & "Wet" Side of Biology Offers Enormous Opportunities – Including New Types of Nanomaterials
- We Use a Carefully Selected Group of Model Nanoparticles in our Studies & Focus on Natural Processes that Occur in Aqueous Systems
- We Characterize Size & Surface-dependent Transport, Fate & Facilitated Contaminant Transport of these Engineered Nanomaterials
- We Consider the Unintended Environmental Implications of Water Soluble Nanomaterials
- Biological Interactions of Nanoparticles with Cellular Systems
  - Classic Water-suspendable Nano-C_{60} Nanocrystal is Apparently Cytotoxic to Various Cell Lines
  - Closely Related fully Hydroxylated, $C_{60}(OH)_{24}$, is Non-toxic, thus Producing
  - Similarly, Functionalized Single-walled Carbon Nanotubes are Non-toxic to
  - More Specifically, as the Functionalization Density of the SWNT Increases, the Nanotube Becomes More Inert to Cultures

12:00 Noon Adjournment

REGISTRATION INFORMATION: 3rd Annual Engineered Fine & NanoParticle Applications Conference

Registration Fees: $1095 per registrant
$995 for each additional registrant from same company when registered as a group.

The registration fee includes attendance at all sessions, all scheduled program functions and the program reference binder/CD. Cancellations will receive a 100% refund if made 72 hours prior to the start of the program. Substitutions may be made at any time. Cancellations made less than 72 hours prior to the start of the program will be charged a $300 cancellation fee, but will receive a copy of the conference binder/CD.

To register, submit the registration form with payment to Susan Meldrum, Conference Administrator, Information Management Institute, Inc., 1106 Valley Crossing, Carrabassett Valley, ME 04947 USA. You may reserve space by calling +1-207-235-2225, sending a fax to +1-207-235-2226 or by sending an email message to **imi@imiconf.com** or visiting our web site **www.imiconf.com**

REGISTRATION FORM

☐ **3rd Annual Engineered Fine & NanoParticle Applications Conference**
January 28-30, 2008

☐ **Check here to reserve a free display space and a 10-minute Suppliers' Forum presentation.**

NAME _____

JOB TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE_____ ZIP_____

COUNTRY _____

PHONE _____ FAX:_____

EMAIL_____

☐ I Want to Pay by Credit Card ☐ Please Invoice Me

Radisson Resort Orlando-Celebration Information

IMI's **3rd Engineered Fine & NanoParticle Applications Conference** is being held at the Radisson Resort Orlando-Celebration located in Kissimmee, Florida. Hotel reservations are the responsibility of each meeting registrant. **Early booking is advised** as the reduced rate is guaranteed only until January 7, 2008. Phone +1-800-333-3333 (Radisson Central Reservations) or +1-407-396-7000 (Hotel direct) and reference "**INFOMG**" to receive the special group rate of $114 (including resort service fee) for single or double occupancy.

You can make your hotel reservations online - go to hotel website **www.radisson.com/kissimmeefl** and

1. Select your desired arrival and departure dates and hit "Go" which will take you to the next page
2. Fill in "**INFOMG**" in the "Promotional Code" field under "Search for Special Rates" and then hit "Search" which will take you to the IMI Rates where you can make your selection and complete the reservation process.

The Radisson Resort Orlando – Celebration is located on 20 acres of beautiful tropically landscaped grounds just 1.5 miles from Walt Disney World Resort. Guests can unwind at a giant free-form swimming pool with waterfalls and a water slide. The Radisson Resort Orlando - Celebration also offers another heated pool, a kids' wading pool, lighted tennis courts, sand-based volleyball, a playground, a game room, jogging areas and a fitness center. In addition, the Radisson Resort Orlando - Celebration provides shuttle service to Disney World, Sea World and Universal Studios.

Adjacent to Radisson Resort Orlando - Celebration is Celebration Golf Club, an 18 hole championship caliber course designed by Robert Trent Jones, Sr. and Jr. and located within the natural wetland environment.

All checks should be in U.S. dollars drawn on a U.S. bank and made payable to Information Management Institute, Inc.
An invoice with bank transfer details for IMI's U.S. or European bank account will be provided upon request.

The Radisson Resort Orlando - Celebration address is

Radisson Resort Orlando - Celebration
2900 Parkway Boulevard
Kissimmee, Florida 34747
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