NANOCOMPOSITES 2005
Commercial Applications; Business Opportunities; Scientific Discoveries

August 22-24, 2005
Crowne Plaza Union Square
San Francisco, California, USA

Organizing Committee:
Max Alexander, Wright Patterson AFB
Lajos Balogh, University of Michigan
Fengge Gao, Nottingham Trent University
Amos Golovoy, AG Research
Tom Hughes, Applied Sciences, Inc.
Rachel Jakubiak, Wright Patterson AFB
Sadhan Jana, University of Akron
**CONFERENCE PROGRAM**

**Monday, August 22, 2005**

**08:00 Continental Breakfast**

**SESSION 1: Nanofibers, Nanoparticles, Nanotubes, and Nanofillers**
Moderator: Max Alexander, Wright Patterson AFB

- **08:30 SHAPE-CONTROLLED SYNTHESIS OF METALLIC NANOSTRUCTURES FOR NANOCOMPOSITES**
  Ben Wiley (speaker), Jingyi Chen, Yugang Sun and Younan Xia, Xia Group, University of Washington

- **09:00 NOVEL CONTINUOUS NANOFIBERS FOR NEXT GENERATION STRUCTURAL SUPERNANOCOMPOSITES**
  Yuris A. Dzenis, University of Nebraska

- **09:30 PREDICTION OF ELECTROSPUNNING PARAMETERS FOR TARGETED NANOFIBER DIAMETER**
  Sinan Onur Yordem, Melih Papila (speaker) and Yusuf Menceloglu, Sabanci University (Turkey)

- **10:00 PLASMA DEPOSITION OF ULTRATHIN FILMS ON NANOPARTICLES AND NANOTUBES FOR NOVEL ENGINEERING APPLICATIONS**
  Donglu Shi, University of Cincinnati

- **10:30 Coffee break**

- **11:00 FABRICATION AND FREQUENCY DEPENDENT PROPERTIES OF POLYMER NANOCOMPOSITES CONTAINING CORE/SHELL MAGNETIC NANOPARTICLES**
  Christy Vestal, Universal Technology, AFRL/MLBP

**SESSION 2: Novel Manufacturing Methods, Materials, and Processing**
Moderator: Sadhan Jana, University of Akron

- **11:30 FABRICATION AND CHARACTERIZATION OF PETI-330/MULTI-WALLED CARBON NANOTUBE COMPOSITES**
  Sayata Ghose, NASA Langley Research Center

- **12:00 NANOCOMPOSITES DESIGN BY NANOFILLER-POLYMER REACTIONS AND BY NOVEL BLENDING**
  Sadhan C. Jana (speaker), Asim Pattanayak, Guillermo Jimenez, and Dhawal Dharaiya, University of Akron

- **12:30 Lunch**

- **02:30 SURFACTANT-FREE AND WATER EXPANDABLE POLYSTYRENE/CLAY NANOCOMPOSITES BY INVERSE EMULSION/SUSPENSION POLYMERIZATION**
  Jiong Shen (speaker), Xia Cao and L. J. Lee, Ohio State University

- **03:00 METAL MATRIX NANO-COMPOSITE MATERIALS PROCESSED VIA CRYOGENIC MILLING**
  Patrick B. Berbon (speaker), DDG Cryogenics, and Clifford C. Bampton, The Boeing Company

- **03:30 ORIENTATIONS OF MICROCELLS, NANOCLAY, AND CRYSTALS IN MICROCELLULAR INJECTION MOLDED PA6 NANOCOMPOSITES**
  Mingjun Yuan and Lih-Sheng Turng (speaker), University of Wisconsin-Madison

- **04:00 Coffee Break**

- **04:30 A NEW APPROACH TO IMPACT MODIFICATION OF NYLON/ORGANOCLAY NANOCOMPOSITES**
  Roger Avakian, Chief Technology Officer, PolyOne Corporation

**SESSION 3: Medical and Biomaterials Applications of Nanocomposites**
Moderator: Lajos Balogh, SUNY Buffalo

- **05:00 BIODEGRADABLE NANO COMPOSITES FOR BONE REGENERATION**
  Peter X. Ma, University of Michigan, Ann Arbor, MI

- **05:30 MEDICAL DEVICE APPLICATIONS OF PVC/EVA-CO NANOCOMPOSITES**
  D. C. McConnell (speaker), C. Y. Lew, G. M. McNally, The Queen's University of Belfast

- **06:00 POSTER PRESENTATIONS & Cheese and Wine Reception**
Tuesday, August 23, 2005
08:30 Continental Breakfast

SESSION 4: Properties, Reinforcement, Fire Retardancy and Rheology
Moderator: Fengge Gao

09:00 SCALE-EFFECTS IN TOUGHENING MECHANISMS IN MICRO AND NANO-REINFORCED COMPOSITES
Alan J. Lesser, University of Massachusetts, Amherst

09:30 POLYMERIC NANOCOMPOSITES ENABLED BY CONTROLLED ARCHITECTURE MATERIALS
John W. Longabach (speaker), James Nelson, Ryan Marx, and Terri Shefelbine, 3M

10:00 FACTORS THAT CONTROL ANISOTROPY / ISOTROPY OF LCP-NANOCOMPOSITES
Jouni Enqvist (speaker), VTT Processes, and Maarit Enqvist, Tampere University of Technology (Finland)

10:30 Coffee Break

11:00 INVESTIGATION ON PROPERTIES OF POLYETHYLENE/MONTMORILLONITE NANOCOMPOSITES
INFLUENCED BY GAMMA IRRADIATION, Yuan Hu (speaker), Hongdian Lu, Lei Song, and Weicheng Fan, State
Key Lab. of Fire Science, and Zuyao Chen, University of Science and Technology of China (China)

11:30 THE STRUCTURE OF CHARS FORMED FROM CLAY/POLYMER NANOCOMPOSITES
Fengge Gao (speaker), Yalan Li, and Steve Moloney, Nottingham Trent University (UK)

12:00 CHEMORHEOLOGY AND PROPERTIES OF A THERMOSET PU/CLAY NANOCOMPOSITE SYSTEM
Dae Su Kim (speaker) and Jin-Tae Kim, Chungbuk National University (Korea), and Daren Martin and Peter
Halley, The University of Queensland (Australia)

12:30 Lunch

SESSION 5: Characterization Techniques of Nanocomposites
Moderator: Rachel Jakubiak, Wright Patterson AFB

02:30 NONDESTRUCTIVE SENSING AND STRESS TRANSFER MECHANISMS OF CARBON NANOTUBE,
NANOFIBER AND NI-NANOWIRE/EPOXY COMPOSITES USING ELECTRO-MICROMECHANICAL TECHNIQUE
Joung-Man Park (speaker), Jin-Kyu Jung, Sung-Ju Kim, Jae-Rock Lee, Tae-Wook Kim, and George Hansen
The University of Utah, 2 Gyeongsang National University (Korea), 3 Korea Research Institute of Chemical
Technology, 4 Korea Institute of Machinery and Materials, 5 Metal Matrix Composites (U. S. A.)

03:00 NEW METHOD FOR DETERMINING THE QUALITY OF SMECTITE CLAY/PLASTIC NANOCOMPOSITES
Robert Klein (speaker), Technical Manager, and Wouter IJdo, Elementis Specialties

03:30 NANO-PARTICLE REINFORCED POLYMERIC COMPOSITES: NANOSCALE CHARACTERIZATION AND
EFFECTIVE MECHANICAL PROPERTIES, T. Ramanathan (speaker) and Cate Brinson, Northwestern University

04:00 Coffee Break

SESSION 6: NANOPHOTONIC MATERIALS, STRUCTURES, AND DEVICES
Moderator: Rachel Jakubiak, Wright Patterson AFB

04:30 FABRICATION OF POLYMER-BASED PHOTONIC CRYSTALS
Peng Yao, Shouyuan Shi, Caihua Chen, Garret J. Schneider, Ahmed Sharkawy, Eric Kelmelis, Vice President (speaker),
and Dennis W. Prather, EM Photonics, Inc

05:00 APPLICATION OF NANOMATERIALS FOR DEVELOPMENT OF COLORED POLYMERIC COMPOSITES OF
HIGH STABILITY FOR UV-IRRADIATION, B. Gorelik (speaker), I. Baumberg, O. Berezin and M. Voskobojnik,
ELAM EL Industries (Israel)

05:30 NANOPHOTONIC STRUCTURES FROM HOLOGRAPHIC POLYMER DISPERSED LIQUID CRYSTALS
Rachel Jakubiak (speaker), Dean P. Brown, Vince P. Tondiglia, Lalgudi V. Natarajan, Richard L. Sutherland, Timothy
J. Bunning and Richard A. Vaia, Wright Patterson AFB
Wednesday, August 24, 2005
08:30 Continental Breakfast

SESSION 7: Emerging Commercial Applications and New Markets
Moderator: Tom Hughes, Applied Sciences, Inc.

09:00 COMMERCIAL DEVELOPMENTS IN NANOPOLYMER COMPOUNDS
George Zollos (speaker), Marketing Manager, and David Jars PolyOne Corporation

09:30 NANOCOMPOSITES: A CHALLENGE FOR APPLICATION AND MARKET
Joachim Grossmann, Süd-Chemie AG

10:00 COMMERCIAL NANO IMPACT MODIFIERS FOR EPOXY AND ENGINEERING POLYMERS
Sheng Hong, Arkema Inc.

10:30 Coffee Break

11:00 NANOSTRUCTURED MATERIALS FOR AEROSPACE POWER AND PROPULSION APPLICATIONS
Michael A. Meador, Chief, Polymers Branch, NASA Glenn Research Center

11:30 NANOADDITIVES- A SMART WAY TO IMPROVE POLYMER PERFORMANCES
Thomas Sawitowski, Head of Nanotechnology Department, BYK-Chemie GmbH (Germany)

12:00 NEW DEVELOPMENTS IN NANO-ENHANCED RESIN SYSTEMS
Arthur W. Fritts, President, NanoSperse LLC

12:30 Lunch

02:00 NOVEL NANOCOMPOSITE FIBRES FOR TECHNICAL TEXTILE APPLICATIONS
Bronwyn L. Fox¹, Mark G. Looney (speaker)², and Kevin Magniez¹²¹ Deakin University, ²CSIRO, (Australia)

02:30 MULTIFUNCTIONAL NANOCOMPOSITES FOR MEETING SPACE ELECTROMAGNETIC COMPATIBILITY
REQUIREMENTS, Edward Silverman, Northrop Grumman Space Technology

03:00 OPPORTUNITIES OF NANOCOMPOSITES FOR AUTOMOTIVE APPLICATIONS
Dr. Suresh Shah, Senior Technical Fellow, Delphi Corporation

03:30 Conference Adjournment