

The Future of Nanoplastics

**February 23 and
February 24, 2006**
Hilton Palacio Del Rio,
San Antonio, Texas, US

Assessing the impact of nanotechnology on plastics
Two day Intertech-Pira conference and one day industry forum



Key presentations and case studies from:

- Alcoa Technical Centre
- BMW Technology Office
- Carbon Nanotechnologies Inc
- Cima NanoTech
- Clemson University
- Degussa
- Easton Sports Inc
- Elementis
- Ford Motor Company
- General Motors Corporation
- Georgia Institute of technology
- Hybrid Plastics
- Hyperion Catalysis
- IATA-CSIC
- Imaging Technology International
- Inmat Inc
- Lux Research Inc
- Michigan State University
- NanoBioMatters S.L
- Nanomarkets
- Nanoscience Engineering Corporation
- Nanosonic Inc
- NaturalNano
- Southern Clay Products
- University of California Santa Cruz
- University of Nebraska-Lincoln
- University of North Texas
- Zyvox



Including presentations from:



Media partners:



PLUS!

Don't forget the pre-conference industry forum, **The Future of Nanotechnology for Packaging**, taking place on February 22



Delivering on the promise

The promise of nanotechnology has been much talked about, but the time has come to deliver. Over the last twelve months the number of commercial examples of nanotechnology in plastics has grown exponentially and now industries as diverse as automotive, construction and consumer packaging are racing to embrace the opportunities nanoplastics can offer. But what is driving this increase in commercial applications?

Better processing performance

Developments in nanoscience and lessons learned from early adopters mean nanotechnology is easier to integrate into conventional plastic manufacturing processes.

Processing for nanoscale additives is now better understood and collaborations between plastics companies, chemical companies and the nano industry have yielded exceptional results. This improvement in processing has enabled both plastics suppliers and users to harness all the benefits of nanotechnology without the headaches of disrupted production.

Cost advantages

As oil prices increase, raw material costs are rising sharply for users of plastics. As a result nano-enhanced materials that are lighter, thinner and longer lasting without any compromise in strength or barrier are very appealing. Similarly as nanotechnologies gain more share, economies of scale will inevitably make nanotechnology cheaper as it reaches full commercialization. These two drivers are producing favorable economics for nanotechnology.

Enhanced material performance

Whether you want your material to be stronger, lighter, higher barrier, more UV resistant, more conductive or more heat resistant, nanotechnology seems to have the answers. The use of nanotubes, nanoclays and nanocomposites in plastics offer a wealth of new and improved material performance for an ever widening range of applications.

Small technology growing fast

The growth potential of nanotechnology is well documented with some industry analysts claiming the nanotech market will reach \$1 trillion within the next ten years. What does that mean for plastics? Nanomaterials alone are forecast to be worth \$340 billion a year. At the moment, nanomaterials refers predominantly to metals and minerals but with polymers growing at 56% (Freedonia) a year and the largest end market for minerals being plastics applications, by 2020 nanoplastics will be by far the largest section of the nanomaterial market. Plastic products in the US are also valued at \$148.5 billion (Euromonitor). Bringing high growth nanotech together with high value plastics will offer lucrative future potential for the whole supply chain.

What's on the program?

This new two day program explores the very latest commercial developments in nanoplastics. Our expert speakers from across the plastics supply chain will demonstrate not only the potential nanotechnology offers them, but also some real life applications for both today and tomorrow. The program will explore a variety of end uses with expert views from leading **automotive manufacturers, consumer products companies** and other **end users of plastics**. Hearing from the end users gives you the opportunity to evaluate the real potential of this market beyond the hype. The conference also features manufacturers of plastics demonstrating how they have enhanced plastics performance, giving you a greater understanding of how this technology can add value for your business. Presentations from leading technology providers will give you an exclusive opportunity to compare and contrast the very latest technologies to improve your plastics.

Who should attend?

This program is designed to provide a high level analysis of the latest technologies and their commercial potential, making it essential for the plastics supply chain, including:

Manufacturers of plastics: understand the potential of nanotechnology and how it can be used to add value to your materials. Senior manufacturing, research and development and technical professionals will all benefit from this program.

Suppliers of additives, chemicals, resins and raw materials to the plastics industry: find out what nanotechnology means for your customers and what opportunities and challenges it represents. Meet with potential customers to discuss their needs and discover how your product development can respond to them. Business development, technical sales and product development staff will benefit most.

Suppliers of nanotechnologies, clays, composites and nanotubes: assess the potential of the plastics industry, where the growth opportunities will be and what customers require. This is an ideal opportunity for managing directors, presidents and senior commercial strategists.

End users of plastics: if you want better cost performance from your plastics, this event will give you some new ideas. Senior technical staff from packaging, automotive and construction industries will find this event highly relevant.

11

reasons you should attend

- Find out how nano-engineering can improve and enhance your plastics
- Assess new end use applications for nanoplastics
- Learn how to incorporate nanotechnology into your plastic manufacturing including revolutionary new dispersion techniques
- Get a unique insight into nanotechnology in packaging at the optional **Future of Nanotechnology for Packaging** industry forum.
- Discover how to improve barrier properties in plastics using nanocomposites
- Understand what nanotubes mean for the plastics industry and their commercial applications today and tomorrow
- Find out how to achieve high performance conductive plastics with nano additives
- Real life case studies from plastics end users will help you evaluate the real potential of the market from the hype
- Understand future trends driving nanotechnology in plastics
- Assess which technologies to put your R&D \$s in and when to do it
- Hear about the latest breakthroughs in nanotechnology here first

Future of Nanotechnology for Packaging

Industry forum – Wednesday February 22, 2006

The array of opportunities for nanotechnology in packaging is exploding. The **Future of Nanotechnology for Packaging** industry forum will demonstrate what nanotechnology can do for your business now. By focusing on the commercially viable rather than the blue sky research, this packaging focused day will give you the tools to capitalise on ground breaking applications and gain competitive advantage. You'll hear hand-picked case studies and details of cutting edge new technologies, showing you how to profit from the latest innovations in nanotechnology.

8.30 Registration and refreshments

Market opportunities and novel applications for nanotechnology in packaging

9.30 Opening remarks from the chair

Dr Susan Selke, Professor, MICHIGAN STATE UNIVERSITY, US

9.40 **Simplifying packaging with nanostructured chemical modifiers.**

- Achieve homogenous filler dispersion via surface modification with nanostructured chemicals
- Bridging the gap between filler and chemical technology
- Affordable nanotechnology for highly filled plastics
- Practical applications in the plastic packaging industry.

Joe Lichtenhan, President and Chief Executive Officer, HYBRID PLASTICS, US

10.05 **New fiber based materials (bifunctional) in packaging applications**

- Imparting mechanical toughness using fibrous scaffold
- Discovering the wealth of opportunities associated with fiber formulation, aroma and flavor delivery (novel consumer experiences) to sequestration of fouling substances
- Molecularly imprinted papers and their application in caffeine removal from liquids
- Opportunities of novel nanofiber technologies and their potential in the field of fiber-doped packaging materials

Dr Gustavo Larsen, Professor, UNIVERSITY OF NEBRASKA-LINCOLN, US

10.40 **Thermal processing-based nanomanufacturing for packaging materials: plastic, metal and glass**

- Microscale and nanoscale thermal processing tools used for processing packaging materials
- Fundamentals of nanoimprint lithography
- Engineering of nanoscale polymer devices and systems for semiconductors, MEMS, and packaging
- Thermal dip pen nanolithography for direct nanoscale deposition of plastic and metal

Dr William King, Assistant Professor of Mechanical Engineering, GEORGIA INSTITUTE OF TECHNOLOGY, US

11.15 Morning refreshments and networking break

Using nanotechnology to enhance barrier properties in packaging

11.30 **Latest developments in nanocomposites for barrier applications, dispersion of nanoclays by superficial fluid processing**

- Evolving better nanoclays for better barrier
- Better dispersion within the polymer
- Enhancing nanocomposite performance

Dr Esin Gulari, Chief Technology Officer, NANOSCIENCE ENGINEERING CORPORATION, US

12.05 **Nanocomposite barrier coating for packaging**

- Nanolok nanocomposite barrier coating platform technology
- Barrier coating performance
- Potential for improved products and implications for specific applications

Harris Goldberg, President CEO, INMAT INC, US

12.40 **The business case for nanotechnology in packaging**

- Finding high value applications
- Who is driving nanotechnology in the pack supply chain?
- Consumer considerations

A selection of the day's speakers will be on the panel

PANEL DISCUSSION

1.00 Lunch will be served for speakers and delegates

Exploring nanotechnology in biodegradable plastics

2.05 **Achieving biodegradable plastic packaging**

- Nano additives for biodegradable polymers
- Recent development in biodegradable plastic composites
- Exploration of 'green composites' as an alternative to oil-based polymers.

Michael Riedlinger, President, NATURALNANO, US

2.40 **Enhancing properties of plastics and bioplastics with functional nanoadditives for food packaging applications**

- Second generation nanocomposites: a must for packaging applications
- Functional nanoadditives based on layered structures for enhancing barrier properties
- Nanocomposites: turning biopolymer properties through the use of tailor-made layered and fibrous nanoadditives
- Nanoadditives with enhanced performance in active and bioactive packaging technologies

Dr Jose M. Lagaron, Science Advisor, IATA-CSIC and NANOBIOMATTERS S.L, Spain

3.15 Afternoon refreshments

Nanotechnology developments in printing and inks

3.30 **The role of nanotechnology in conductive inks**

- Metallic nanoparticles to create conductive inks
- New developments for low cost high performance copper nanoparticles
- Printability of nanoinks
- Applications for low cost printed electronics

Bill Faulkner, Director of Business Development, CIMA NANOTECH, US

4.05 **Inkjet and digital nanofabrication**

- Inkjet: a manufacturing and packaging technology
- Current applications for inkjet in electronics, science and life science
- Emerging applications for inkjet in nanofabrication
- The future convergence of inkjet deposition, orientation and patterning with the unique properties of nanoscale materials

Dr Ross N. Mills, CTO and Chairman, IMAGING TECHNOLOGY INTERNATIONAL (ITI), US

4.40 Closing remarks from the chair

4.50 Close of packaging industry forum

Thursday February 23, 2006

8.00 Registration and refreshments

Market developments and end use applications

9.00 Opening remarks from the chair

Karl Kamena, Commercial Manager, SOUTHERN CLAY PRODUCTS, US

9.10 **Opening address: the future of nanoplastics**

- Assessing developments in the last twelve months
- Identifying the most exciting breakthroughs
- Market forecasts for nano-enhanced materials
- Drivers for growth and investment decisions
- Future directions

Lawrence Gasman, Principle Analyst, NANOMARKETS, US

09.45 **Achieving value with nanostructured chemicals**

- Commercial solutions in electronics, medical plastics and packaging
- Market placement of the nanosolution
- Value attributes of the solution versus the nano
- Prediction of markets where a nanosolution is unavoidable

Joe Lichtenhan, President, HYBRID PLASTICS, US

10.20 Morning refreshments

Nanoplastics in action: an end user session

10.40 **What can nanotechnology do for plastic packaging companies?**

- Areas of nanotechnology to watch
- Progress and involvement so far
- Choosing the right applications
- Deriving the benefit

Dr Jimmy Williams, Director of Development, ALCOA TECHNICAL CENTRE, US

11.15 **Examining progress in nanotechnology for automotive applications**

- Examining the challenges and opportunities for integrating nanocomposites into automotive applications
- Developing applications for automotive exteriors
- Applying polyamide nanocomposite barrier layers
- The demands on materials requirements and developing cost-effective alternatives

Dr Azita Khalili, Advanced Engineering Materials, BMW TECHNOLOGY OFFICE, US

11.50 **Polymer nanocomposite applications in the automotive industry**

- Current automotive applications
- Technical advances required for future applications

Paula D. Fasulo, Staff Specialist, Research and Development, GENERAL MOTORS CORPORATION, US

12.25 **Practical applications of nanotechnology in sporting goods**

- Assessing the potential of nanotechnology
- Enhancing performance through the use of nanotechnology
- Suitable applications and possibilities
- Changing the game: future potential for nanotechnology in sporting goods

Larry Carlson, Vice President, Research and Development, EASTON SPORTS INC and Lance Criscuolo, North American Sales Manager, ZYVEX, US

1.00 Lunch will be served for all speakers and delegates

Friday February 24, 2006

Production challenges and processes

- 2.10 Nano-modified high performance polymers in challenging technical applications**
- Nano-reinforced polymer compounds
 - Carbon nanotube modified polymer compounds
 - Applications for nano-modified high performance polymers
- Dr Georg Oenbrink, Senior Vice President, Innovation Management, DEGUSSA, Germany**

- 2.45 Efficient dispersion and alignment of nanoplatelets with chaotic blenders**
- New smart blending technology developed where additives such as inorganic platelets are dispersed by chaotic motions
 - Nanoplatelets controllably localized within multiple layers and aligned or dispersed
 - How the occurrence of nanoplatelet orientation up stream of dies can lead to extrusions of essentially any form (e.g. tubing, sheet or film) to be produced
 - Chaotic blenders: the structures in novel materials that have been produced

Dave Zumbrennen, Professor, Laboratory for Advanced Plastic Materials & Technology, CLEMSON UNIVERSITY, US

- 3.20 Exfoliation processes and technology**

- Enhancing clay performance
- Manipulating platelet sizes
- Technical challenges in exfoliation
- Future possibilities

Speaker TBC, Controlled Architecture Materials Project Leader, 3M, US

- 3.55** Afternoon refreshments

Creating barrier strength through nanotechnology

- 4.15 Nanoclays: nanotools for enhancing polymer formulations**
- Nanoclays with nano dimensions can markedly alter host polymer properties
 - Commercial applications are evolving based on synergies with other functional additives
 - Improving dispersion and exfoliation requires equipment and processing techniques
 - If at first you don't succeed, try again
- Karl Kamena, Commercial Manager, SOUTHERN CLAY PRODUCTS, US**

- 4.50 Creating high barrier coatings using nanoclay fillers**

- Models for estimating barrier properties
- Implications for understanding potential improvements to barrier properties

Harris Goldberg, President and CEO, INMAT INC, US

- 5.25 A new breakthrough in high barrier plastics and improving plastics performance**

- Improving plastics performance
 - Novel new barrier properties enabled through nanotechnology
 - Case studies and applications
 - Future possibilities and directions for further research
- Robert Van Doren, Research and Development Manager, ELEMENTIS, US**

- 6.00** Closing remarks from the chair

6.10 Drinks reception

An ideal opportunity to meet with colleagues and discuss the day's proceedings in a relaxed and informal environment

- 8.00** Registration and refreshments

Achieving higher performance plastics

- 8.30** Opening remarks from the chair
Lawrence Gasman, Principle Analyst, NANOMARKETS, US

- 8.40** **Exploring the business case for nanoplastics**
- Fitting property improvements to the application
 - Cost benefit analysis for nanoplastic performances
 - Assessing current commercial viability
 - Comparisons with conventional technology solutions
- Dr Lebyz Gonzáles, Materials Research and Advanced Engineering, FORD MOTOR COMPANY, US**

END USER PERSPECTIVE

- 9.15** **Carbon nanotube technology in conductive polymer applications**

- Introducing carbon nanotube technology
- Commercially successful nanotube-polymer dispersions
- Performance characteristics
- Applications

Mark Hyman, Business Development Manager, HYPERION CATALYSIS, US

- 9.50** **Commercial applications of tubular fullerenes (Buckytubes) in nanoplastics**

- Buckytube properties and benefits
- Conductivity, toughness, dimensional stability
- Buckytube applications
- Case studies
- Conductive polymer compounds
- Advanced composite coatings
- Buckytube products

David Karohl, Director of Business Development, CARBON NANOTECHNOLOGIES INC, US

- 10.25** **Metal rubber: a revolutionary new nanomaterial**

- Self assembly to create novel new materials
- Electrically conductive elastomeric nanocomposite
- Performance and applications

Dr Rick Claus, President, NANOSONIC INC, US

- 11.00** Morning refreshments

- 11.20** **Antimicrobial plastics achieved through nanoadditives**

- Available nanoparticles for anti microbials
- Applications and markets for antimicrobial plastics
- Achievements and possibilities for antimicrobials in packaging
- Future opportunities

Mark Bunger, Senior Analyst, LUX RESEARCH INC, US

- 12.05** **Explore the opportunities in biodegradable nanocomposite foams**

- Blending biodegradable materials
- The properties of base resins
- Understanding nanocomposite foam
- Foaming and properties of the foamed and unfoamed materials

Nandika Anne D'Souza, Associate Professor, UNIVERSITY OF NORTH TEXAS, US

- 12.40** **New self healing nano-particle material (NPM) for micro and opto-electronic packaging applications**

- Advanced nanoparticle material and their applications
- Exploring on self healing ability to restore dimensions and initial structure
- Incorporating NPM-based optical silica fibers
- The achieved results demonstrated from the research

Dr E.Suhir, Professor, UNIVERSITY OF CALIFORNIA SANTA CRUZ, US

- 1.15** Closing remarks from the chair

- 1.25** Close of conference: lunch will be served for delegates and speakers

Your expert speakers include:



Dave Zumbrennen

Dave Zumbrennen is the Warren H. Owen-Duke Energy Professor in the Department of Mechanical Engineering at Clemson University. He proposed that important structured materials can be controllably manufactured by inducing chaotic motions in melts (i.e., materials evolved from chaos).

This has led to smart blending technology now being adopted by industry. He performs research and teaching focusing on polymer processing, chaotic advection, structure-property relations for polymer blends and composites, and computational modeling of multi-component flows. He is a recipient of the Presidential Faculty Fellow Award from the White House and National Science Foundation and is the founding research leader for new processes of the NSF Center for Advanced Engineering Fibers and Films. He received his doctoral and master's degrees from Purdue University and his bachelor's degree from the University of Minnesota. He was formerly a nuclear-trained U.S. naval officer and served aboard submarines.



Karl Kamena

Karl Kamena is Commercial Manager, CLOISITE® Nanoclays, Southern Clay Products. He has been involved in nanoclay/polymer developments since 1996, and is an enthusiastic supporter of nanotechnology. Kamena was previously a Business Development

Director with Omni Tech International, a technical and business consulting firm specializing in the chemical and plastics industries. From 1996-1999 he was Sales and Marketing Manager with Nanocor. Karl spent the first part of his career with The Dow Chemical Company in a variety of positions. Experiences ranged from product development and project management to business, marketing, public policy issues management and government affairs. Kamena graduated from the University of Massachusetts with a degree in Chemical Engineering.

Your event organizer

Intertech-Pira provides events, training, online information and publications across a wide range of zeitgeist issues and disruptive technologies affecting industry. Our 100% independent products are provided globally 24/7 and delivered by teams of independent experts at sites in Portland, US and London, UK through 20 specialized industrial platforms. Our core competencies are information on: research and product development, globalization and new markets; production methods; regulatory and compliance.

Exhibition and sponsorship opportunities

The Future of Nanoplastics will provide suppliers of nanotechnology with a unique platform to showcase products and services to an audience of decision makers including: plastics manufacturers, end users and suppliers to the plastics industry

During the refreshment and lunch breaks you will be able to network with potential clients to demonstrate how your technologies and services can enhance their products. If you have the latest nanotechnology to launch - a hosted drinks reception or luncheon could provide the perfect opportunity to unveil it. Alternatively, if you simply wish to highlight and underline your position in the market then there are many packages that can be tailored to meet the specific objectives and requirements of your organization.

To find out how **The Future of Nanoplastics** can enhance your company's profile please contact Caroline Potapa, Exhibition and Sponsorship Sales Manager on T:+44 1372 802101 E: carolinep@pira.co.uk

PLUS - Free CD!

A CD-Rom of all presentations will be sent free of charge after the conference. You'll get the maximum benefit from the proceedings by having the information permanently available back at the office, all at no additional cost!



Conference registration form

The Future of Nanoplastics

Two day Intertech-Pira conference

February 23 and February 24, 2006

Hilton Palacio Del Rio, San Antonio, Texas, US

The Future of Nanotechnology for Packaging

Pre-conference industry forum – February 22, 2006

Step 1 Your details

Title:.....First Name:.....Surname:.....

Organization:.....Position:.....

Company business:.....

Address:.....

.....ZIP code:.....

Telephone:.....Fax:.....

Email:.....

Purchase Order No:.....

Step 2 Event options and fees

Conference fee (Feb. 23 and 24):	\$1499 <input type="checkbox"/>	£839 <input type="checkbox"/>	€1239 <input type="checkbox"/>
Packaging industry forum (Feb. 22):	\$899 <input type="checkbox"/>	£499 <input type="checkbox"/>	€739 <input type="checkbox"/>
Conference + packaging day (Feb. 22, 23, and 24):	\$1999 <input type="checkbox"/>	£1119 <input type="checkbox"/>	€1659 <input type="checkbox"/>

Pira members save 10% – enter your 9 digit membership number here:.....

VAT at the prevailing rate will be charged as applicable.

Step 3 Payment method

Check/banker's draft (made payable to Pira International) Invoice my company

Charge my credit card: Visa MasterCard American Express

Card number:.....Expires:.....

Cardholder name and address:.....

.....

Banker's information for credit transfer payments

US Dollar A/C: Key Bank	Account No: 191424005327
Swift Code (BIC): KeyB_US_33	ABA No: 011200608

Signature:.....Date:.....

Pira Reg. No. 3858209 Pira VAT No. 677 3667 81

Brochure registration code:

Step 4 How to book

Post this form to: **Pira International, 19 Northbrook Drive, Portland, ME 04105, US**

Fax this form back to: **+1 207 781 2150**

By phone on: **+1 207 781 9602**

Online at: **www.piranet.com**

Conference information



The venue

This premier hotel in San Antonio, Texas is ideally located along the famous San Antonio River Walk, and just 20 minutes from San Antonio International Airport. Delegates will be surrounded by the Texas culture and attractions including the Alamo, located only two blocks away. Each room features Spanish décor that reflects the local area along with a private balcony for panoramic views of the city.

Hilton Palacio del Rio, 200 South Alamo Street, San Antonio, Texas, United States 78205
www.hilton.com Tel: +1-210-222-1400 Fax: +1-210-270-0761

Accommodation

Delegates are responsible for organizing their own travel and accommodation. A limited number of rooms have been reserved for conference delegates wishing to stay at the Hilton San Antonio Airport at a reduced rate of \$159.00 per person per night. Wherever possible accommodation should be reserved by **January 31, 2006** as rooms cannot be guaranteed and rates are subject to change after this date. To book your accommodation please contact the venue directly. Bookings can be made online at

www.palaciodelrio.hilton.com quoting the code "PIRA2", or by phone on 1-800-HILTONS, quoting the hotel and the conference.

Conference fees

The conference price includes full documentation, lunch, and refreshments. However, fees do not include delegate travel and accommodation.

Cancellations

Cancellations will be accepted and fees will be refunded (less 20% handling charge) only if made in writing and received ten working days before the event. Bookings cannot be cancelled or fees refunded thereafter. Substitutions may be made at any time, please notify Chandra Leister.

Note

Intertech-Pira does not accept liability for any loss of or damage to the personal effects of delegates attending the conference. Intertech-Pira reserves the right to cancel, defer or modify the event proceedings without prior notice.

Visas

Delegates requiring visas should request a visa invitation letter from Intertech-Pira at the time of registering for the event, ensuring sufficient time is left for applications to be completed. Delegates are then responsible for contacting the relevant / appropriate embassy themselves. Intertech-Pira can do nothing further to assist in this process.

For further information on the conference please contact:

Conference Manager:	Ciaran Little T: +1 207 781 9606 F: +1 207 781 2150 E: ciaran@pira-international.com
Conference Co-ordinator:	Chandra Leister T: +1 207 781 9602 F: +1 207 781 2150 E: chandral@pira-international.com
Marketing:	Tim Warren T: +44 (0) 1372 802180 F: +44 (0) 1372 802243 E: timw@pira.co.uk
Exhibition and Sponsorship:	Caroline Potapa T: +44 (0)1372 802101 E: carolinep@pira.co.uk

Pira International, Cleve Road, Leatherhead, Surrey KT22 7RU, UK

+44 (0)1372 802243

+44 (0)1372 802101

www.piranet.com

The Future of Nanoplastics

Two day Intertech-Pira conference and one day industry forum

February 22 – February 24, 2006 Hilton Palacio Del Rio, San Antonio, Texas, US

Key benefits for you and your team:

- Find out about the latest nanotechnologies with commercial applications for today and tomorrow
- Hear from end users in packaging, automotive and sporting goods about their current applications for nanoplastics
- Network with leaders in the nanoplastics field at the conference and drinks reception
- Plus! Don't miss our comprehensive industry forum on nanotechnology in packaging



Intertech-Pira
19 Northbrook Drive
Portland, ME 04105, US

Presorted Standard
U.S. Postage
Paid
Portland, ME
Permit No.7

Time sensitive material

For further information visit www.piranet.com



Speakers at **The Future of Nanoplastics** include:

Dr Susan Selke
MICHIGAN STATE UNIVERSITY, US

Joe Lichtenhan
HYBRID PLASTICS, US

Dr Gustavo Larsen
UNIVERSITY OF NEBRASKA-LINCOLN, US

Dr William King
GEORGIA INSTITUTE OF TECHNOLOGY, US

Dr Esin Gulari
NANOSCIENCE ENGINEERING CORPORATION, US

Michael Riedlinger
NATURALNANO, US

Dr Jose M.Lagaron
IATA-CSIC and NANOBIO MATTERS S.L, Spain

Bill Faulkner
CIMA NANOTECH, US

Dr Ross N. Mills
IMAGING TECHNOLOGY INTERNATIONAL (ITI), US

Dr Jimmy Williams
ALCOA TECHNICAL CENTRE, US

Dr Azita Khalili
BMW TECHNOLOGY OFFICE, US

Paula D. Fasulo
GENERAL MOTORS CORPORATION, US

Larry Carlson
EASTON SPORTS INC, US

Lance Criscuolo
ZVEX, US

Dr Georg Oenbrink
DEGUSSA, Germany

Dave Zumbrunnen
CLEMSON UNIVERSITY, US

Dr James Nelson
3M, US

Karl Kamena
SOUTHERN CLAY PRODUCTS, US

Harris Goldbert
INMAT INC, US

Robert Van Doren
ELEMENTIS, US

Lawrence Gasman
NANOMARKETS, US

Dr Lebzy Gonzáles
FORD MOTOR COMPANY, US

Mark Hyman
HYPERION CATALYSIS, US

David Karohl
CARBON NANOTECHNOLOGIES INC, US

Dr Rick Claus
NANOSONIC INC, US

Mark Bunger
LUX RESEARCH INC, US

Nandika Anne D'Souza
UNIVERSITY OF NORTH TEXAS, US

Dr E.Suhir
UNIVERSITY OF CALIFORNIA SANTA CRUZ, US