INTERTECH pira

Tuesday, March 24 – Thursday, March 26, 2009
Hilton Miami Downtown, Miami, FL, US
www.pgs2009.com

"Very worth attending. If you work with phosphors then this will get you up to speed quickly."
Nanoco Technologies

"An excellent way to meet the best people in the phosphors industry."
Nichia America

Book online and view up to the minute conference information at: **www.pgs2009.com**

Plus!

Don't miss the pre-conference seminars on Tuesday, March 24, 2008:
Luminescent Materials: Their properties, their optical characterization and their applications
and
Applications of Luminescent Materials

early bird registration offer

Book through February 13, 2009 and save 10% on your registration
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More than 120 delegates in 2008
Twenty expert presentations and two intensive pre-conference seminars
View the full program inside ▸▸

Phosphor Global Summit 2009

reasons to attend

- Hear **Osram** discuss future trends for the LED phosphors market
- Learn about the new yellow phosphor for LEDs from **Mitsubishi Chemical**
- Gain a thorough understanding of conversion phosphors for solid-state lighting applications from **Merck**
- Glean insight from **Ube Industries** on the phosphor materials for thermostructural ceramics
- Get up to date on important intellectual property issues in the phosphor industry from **Wolf Greenfield**
- Hear **GE Lumination** discuss novel phosphor blends for white light with violet LED chips
- Network with key players and colleagues at the only event dedicated exclusively to the phosphor community!

what's on the agenda

Samsung will examine the key issues concerning phosphors for LED applications and their optical and thermal stability

Philips will discuss their innovative work on the crystal structures and luminescence properties of phosphors

Dow Corning will talk about advanced silicone materials for LED packaging and technical the implications for phosphors

Rhodia will detail their latest work with phosphor recycling as a novel source of rare earths

The **US Department of Energy** will examine the opportunities offered for phosphors by their solid state lighting program while outlining the most pertinent research needs

The latest research findings from a number of prominent universities including the **University of Georgia**, the **Polish Academy of Science**, **Applied Sciences Muenster** and **Utrecht**

about the conference

The phosphor industry is experiencing a period of rapid change characterized by deep technological shifts, industrial reorganization in manufacturing operations and emerging environmental concerns. However, the phosphor market remains strong as total phosphor demand by volume is expected to reach 15,244 tons by 2015.* The primary drivers for growth are the expansion of key end-use applications including flat panel displays, solid-state lighting and fluorescent lighting.

While LEDs remain the preeminent end-use market several alternative applications continue to develop including light medical therapies, anti counterfeiting, and optical labels. At **Phosphor Global Summit 2009** you will receive a comprehensive update on current research and market trends while also gaining insight concerning the future of the industry.

Prominent leaders from industry and academia will meet to examine existing and new market opportunities for phosphors while considering how to maintain growth in the established areas. Key issues including patent acquisition and disputes relevant to the phosphor industry the latest approaches to phosphor recycling as the source of rare earths will be emphasized in this year's program.

The conference will be divided into five sessions covering LED applications, patent policies and market overview, LED packaging requirements and recent R&D advances. Two additional pre-conference seminars on luminescent materials properties and applications will enhance your conference experience.

New suppliers need superior technologies to break into the market and this timely event is the world's premier forum for discussing the latest technical advances, market trends and the best way forward in the industry. Covering the latest LED applications, this is your chance to discover the latest developments in these swiftly evolving markets. You will not want to miss this perennial must-attend event.

*The Future of Phosphors, Market Report, Pira International

Who should attend?

- Materials Scientists
- R&D Specialists
- Design & Application Engineers
- Lamp Manufacturers & Recyclers
- Technical Directors
- Display Manufacturers
- Product Developers
- Program Managers
- Business Development Directors
- Sales & Marketing Executives

Co-Chaired by:

Kathryn Conway, Principal LED CONSULTING

Dr Thomas Juestel, Professor, UNIVERSITY OF APPLIED SCIENCES MUENSTER

pre-conference seminars

Luminescent Materials: Their properties, their optical characterization and their applications

Tuesday, March 24, 9:00 am – 12:00 pm

In this seminar, physical properties of luminescent materials will be discussed in relation to their application in devices. It will be shown not only how luminescent materials determine the performance of the products in which they are applied, but also how product requirements and new developments drive research on luminescent materials. This seminar will also address characterization methods with an emphasis on optical tools.

The seminar starts on a basic level but will also address the frontiers of the field. It is very suitable for both academic and industrial researchers to deepen their insight in luminescence and luminescent materials but also for executives, doing research strategy and research planning, as the seminar will clearly outline future directions.

Prof Dr Cees Ronda
Professor and Research Fellow, Technology Program
Philips Research Laboratories Aachen

Dr Ronda received his PhD Degree in solid state chemistry in 1986 from the State University of Groningen in the Netherlands. In 1986, he joined Philips Research in Eindhoven, the Netherlands and he went to Philips Research Aachen, Germany, in 1989. He was appointed Research Fellow in 2001 and in 2005, he received the prestigious Pannenborg Award for outstanding scientific contributions to Philips Research. Dr Ronda has conducted materials research for Philips Lighting, Philips Components and Philips Medical systems and his work has resulted in more than 35 US patents and more than 50 publications. He holds part-time professorships at Utrecht University, the Netherlands and Zhejiang University, China.

Applications of Luminescent Materials

Tuesday, March 24, 2:00 pm – 5:00 pm

This seminar will provide an overview of the various applications of luminescent materials. Topics covered will include Fluorescent lamp phosphors, LED phosphors, Display phosphors, X-ray phosphors and scintillators. The seminar will address current and emerging technical and scientific issues in the field of luminescent materials. The seminar is designed for those who are new to this field and for those who need a refresher course in the area of luminescent materials.

Dr Alok Srivastava
Researcher
GE Global Research

Dr Srivastava received his PhD in inorganic and solid state chemistry in 1986 from Polytechnic University of New York. In 1989 he joined GE Global Research in Niskayuna, New York. He has conducted research in collaboration with GE Consumer Products-Lighting, GE Health Care and GE Energy on luminescent materials for fluorescent lamps, LED lighting and novel scintillator materials. For his pioneering research to achieve the first demonstration of quantum splitting in oxide phosphors, he was awarded the First Centennial Outstanding Achievement Award of the Luminescence and Display Materials Division of The Electrochemical Society. He is the former Chairman of the Luminescence and Display Materials group of The Electrochemical Society. He serves on the editorial board of Optical Materials.

Conference agenda

Wednesday, March 25, 2009

8:00 Registration and refreshments

8:45 Opening remarks from the Co-Chairs
Kathryn Conway, Principal
LED CONSULTING
Dr Thomas Juestel, Professor
UNIVERSITY OF APPLIED SCIENCES MUENSTER

Patent Policies

9:00 **Patent Issues in the Phosphor Industry**

- Patent basics
- Notable patent and disputes in solid state lighting - lessons learned
- Strategic patent considerations for phosphor companies

Robert Wallat, Shareholder
WOLF GREENFIELD

Phosphors Color the World of LEDs

9:35 **Color Converters for LEDs**

- Conversion efficiency
- How to apply
- Coping with non-ideal materials
- Binning

Dr Gerd O Mueller, Chief Scientist, Advanced Labs
PHILIPS LUMILEDS LIGHTING COMPANY
Co-Author: Regina Mueller-Mach

10:10 Morning refreshments

10:30 **A New Yellow Phosphor for LEDs**

- Luminescent properties
- Crystal structure
- Synthetic method
- Application to white LEDs

Naoto Kijima, Senior Researcher - Solid State Lighting and Display Project Research and Development Division
MITSUBISHI CHEMICAL GROUP

11:05 **Investigations on Eu^{2+} Doped $MSi_2O_2N_2$ LED Phosphors**

- $MSi_2O2N_2:Eu^{2+}$ LED phosphors (M = Ca, Sr, Ba)
- Crystal structures and luminescence properties
- Performance of green-emitting $SrSi_2O2N_2:Eu^{2+}$ pcLEDs
- Host-lattice modification of MSi_2O2N_2

Dr. Andreas Tuecks, Solid State Lighting
PHILIPS TECHNOLOGIE GmbH

11:40 **Some Issues on Phosphors for LED Application**

- Luminous characteristics for BLU and illuminations
- Optical and thermal stability

Dr Chulsoo Yoon, Principal Engineer
SAMSUNG ELECTRO-MECHANICS

12:15 Lunch will be served for speakers and delegates

1:30 **Phosphor Materials Making the Best Use of Our Thermostructural Ceramics**

- A new particle-free and resin-free system composed of transparent, binary single crystals
- Plate material for an incandescent white LED
- Yellow phosphor material with excellent durability

Dr. Toshihiro Ishikawa, Research Fellow, Director (Fellow of ACerS), Inorganic Specialty Research Laboratory, Corporate Research & Development
UBE INDUSTRIES LTD

2:05 **Phosphor-Converted Solid-State Lamps with a High Number of Rendered Colors**

- Number of rendered colors versus the general rendering index
- Number of rendered colors for common lamps
- Phosphor wavelengths for white light-emitting diodes with the entire Munsell palette (1269 colors) rendered

Prof. Arturas Zukauskas, Director, Institute of Materials Science and Applied Research
VILNIUS UNIVERSITY

2:40 **Luminescence Properties of YAG:Ce Nanoparticles Treated with HMDS and SiO_2**

- Cerium doped $Y_3Al_5O_{12}$ (YAG:Ce) powders for white light LEDs with blue emission chips
- Shifting emission peak to red and reducing the concentration quenching effect
- A flux is often adopted for the better diffusion of precursors

Yung-Tang Nien, Postdoctoral Researcher, Center for Micro/Nano Science and Technology
NATIONAL CHENG KUNG UNIVERSITY

3:15 Afternoon refreshments

3:35 **Phosphor Blends for White Light with Violet LED Chips**

- Warm white blends
- Neutral white blends
- Daylight blends
- Visual studies

Dr. Emil Radkov, Phosphor Technology Manager
GE LUMINATION LLC

4:10 Closing remarks from the Co-Chairs

4:30 **Networking reception**
All speakers and delegates are invited to a relaxed and informal drinks reception to network and discuss the day's proceedings

Thursday, March 26, 2009

7:30 Registration and refreshments

8:00 Opening remarks from the Co-Chairs
Kathryn Conway, Principal
LED CONSULTING
Dr Thomas Juestel, Professor
UNIVERSITY OF APPLIED SCIENCES MUENSTER

Overview

8:10 **Phosphor Recycling: Dream or new source of rare earths?**

- Phosphor market estimations
- Recycled phosphor market and future trends
- Rare earth recycling

Jean-Pierre Cuif, Phosphors Business Manager
RHODIA

8:45 **U.S. DOE Solid-State Lighting Program Opportunities for Phosphors**

- Overview of DOE solid-state lighting program
- Summary of phosphor project portfolio
- Phosphor research needs
- How to become involved

Joel Chaddock, Solid-State Lighting (SSL) Project Manager, National Energy Technology Laboratory
US DEPARTMENT OF ENERGY

Meeting LED Packaging Requirements

9:20 **Future Trends of the LED Phosphors Market**

- Major trends of LED applications
- Resulting requirement profiles for LED-phosphors
- Derived future LED phosphors market figures & possible success factors

Dr. Joerg Strauss, Director R&D Phosphors
OSRAM

9:55 Morning refreshments

10:15 **Advanced Silicone Materials for Led Packaging: A study on silicone-phosphor interactions**

- Properties and advantages of advanced silicones for LED packaging, from gel to resin
- Compatibility studies on phosphors-silicones:
  I: rheological properties, cure properties
  II: methods to determine settling rates
  III: optical performances in relationship to settling

Dr. Eric Vanlathem, Physicist,
European Senior Application Engineer Electronics Industry
DOW CORNING

10:50 **LED Applications of Conversion Phosphors**

- Phosphor materials and their characteristics
- Phosphor slurries and their combination with LED packages
- Optical LED device characterization

Dr. Holger Winkler, AT-G Solid State Lighting
MERCK
Co-authors: Dr. Ralf Petry, Dr. Tim Vosgröne, Dipl. Ing. Andreas Benker, Stefan Tews and Peter Barnekow
MERCK

11:25 **Color Conversion in Chip-on-Board and Surface-Mount Devices: Progress and Challenges**

- Technology overview
- Color uniformity and no binning
- High temperatures/currents
- Alternative encapsulation materials

Dr. Wolfgang Oberleitner, Network Manager
LEDON LIGHTING JENNERSDORF GmbH

12:00 Lunch will be served for speakers and delegates

Phosphors, from the Lab to the Future

1:00 **Thermal Quenching in Luminescent Materials**

- Thermal quenching - A misleading term
- Fundamentals of thermal quenching
- Thermal quenching in lighting devices
- Examples and solutions

Dr. Uwe Happek, Professor of Physics
UNIVERSITY OF GEORGIA

1:35 **Luminescence Properties of Transparent Nanoceramics Doped with Rare-Earth Ions**

- Transparent nanoceramic oxides composed of grains with <30 nm average size
- Structure and morphology of the nanoceramics
- The effect of the sintering condition on the structural properties
- Diode-pumped luminescence experiments, applications of doped nanoceramics for white light sources.

Wieslas Strek, Polish Academy of Science
Co-Authors: R. Fedyk, D. Hreniak, W. Lojkowski, W. Strek, H. Matysiak, E. Grzanka, S. Gierlotka, P. Mazur

2:10 **Up-and-Down Conversions to Visible Lights in Transparent Ceramics, Thin Films, Nanoparticles, and Nanocomposites**

- Tunable color converters
- Material processing technologies
- Converting efficiency enhancement

Xiaomei Guo, Materials Engineer and
Dr. Kevin Li, VP and Senior Scientist of Materials
BOSTON APPLIED TECHNOLOGIES
Co-Authors: Lai Qi and Yanyun Wang

2:45 Afternoon refreshments

3:10 **AC-Electroluminescence From Thick Films - Mechanisms and New Developments**

- Binders and dielectrics for AC-EL films
- Nanocomposites and AC-EL
- High temperature resistant structures and corrosion
- Future trends

Michael Bredol, Professor
UNIVERSITY OF APPLIED SCIENCES MÜNSTER

3:45 **Photon Management for Solar Cells: Up and down they go**

- Efficient 1 VIS _ 2 IR downconversion with lanthanides
- Senstized upconversion with lanthanides
- Upconversion with quantum dots
- Quantum dot based solar concentrators

Andries Meijerink, Professor
UNIVERSITY UTRECHT, Netherlands

4:20 Closing remarks from the Co-Chairs and end of conference

The venue

The **Hilton Miami Downtown** is an alluring property featuring the finest in downtown Miami accommodations, where engaging colors, sharp lines, and modern design elements welcome leisure and business travellers. The venue is just minutes away from the best that downtown Miami has to offer - from South Beach nightlife and NBA action at American Airlines Arena to Bayside Marketplace, the city's best food, fun, and shopping.

Accommodation

Speakers and delegates are responsible for booking their own travel and accommodation. A limited number of rooms have been reserved for speakers and delegates wishing to stay at the **Hilton Miami Downtown** at a special rate of **$189** plus taxes. Rooms must be reserved no later then **March 2, 2009** to take advantage of this special rate. Whenever possible, accommodations should be reserved early as rooms cannot be guaranteed and rates are subject to change after this date. To book your accommodations, please contact the hotel directly at **+ 1 305 374 0000**. (Please state you're attending the IntertechPira **Phosphor** conference to get the preferential rate).

Conference fees

The conference fee includes entry to the conference sessions and the exhibition, full documentation, lunch and refreshments. However, fees do not include delegate travel and accommodation. All credit card orders are processed at that day's £/E/$ exchange rate at the time the transaction goes through. PLEASE NOTE: Credit card details will be necessary if your booking is made less then ten days prior to the start of the conference, or if your invoice remains unpaid at the start of the event. Please see step three for further details.

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 Michael Robert at +1 207 781 9631 or michael.robert@pira-international.com

Note

IntertechPira does not accept liability for any loss of or damage to the personal effects of delegates attending the conference. IntertechPira 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 IntertechPira 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. IntertechPira can do nothing further to assist in this process.

Your event organizer

IntertechPira provides events, training, online information and publications across a wide range of contemporary 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

IntertechPira's Phosphor Global Summit 2009 offers a unique opportunity to showcase your products and services all while accessing a high level network of industry leaders who are shaping the water reuse strategies of today and tomorrow. Depending on your goals and the level of sponsorship, a benefits package can be designed to target a narrow audience or a broad group and may include event recognition as well as publicity, marketing and promotional opportunities and complimentary event passes. For more information on our many exhibition opportunities that meet your business goals, please contact Brian Santos at: +1 207 781 9618 or brian.santos@pira-international.com

upcoming events

LEDs Asia

March 31 – April 2, 2009
Eaton Hotel, Kowloon, Hong Kong

Featuring twenty speakers and two pre-conference workshops, this dynamic expansion on IntertechPira's renowned LEDs conference series will provide a detailed assessment of the Asian hub of electronic research and development. Focusing specifically on the market dynamics and latest innovations of the LED industry in Asia this conference will provide a perfect forum to network and discuss the best way forward in this vibrant market.

10th annual LEDs

October, 2009
San Diego Convention Center, San Diego, CA

Celebrating its 10th year, the industry's leading forum dedicated to the advance of LED markets and technology will draw over 500 participants and 60 exhibitors to sunny California. Drawing annual contributions from industry leaders such as OSRAM, Philips Lumileds, Nichia, Cree, Toyoda Gosei, Samsung, and many more this event will provide you with abundant opportunities to meet and network with a who's who of the LED industry.

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2008 Attendees included:

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PHOTONICS SPECTRA

What previous attendees had to say about Phosphor Global Summit...

"Excellent conference for people in the phosphor business"
Osram Sylvania

"For phosphors this is the place to be!"
Philips

Plus!

Don't miss the pre-conference seminars on Tuesday, March 24, 2008:
Luminescent Materials: Their properties, their optical characterization and their applications
and
Applications of Luminescent Materials

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IntertechPira
19 Northbrook Drive
Portland, ME 04105, US

Register now!

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Phosphor Global Summit 2009 Conference Registration

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2 Event options and fees

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Choose your payment package:

Conference fee (through February 13th)	$1349 ☐
Conference fee (after February 13th)	$1499 ☐
Seminar 1: Luminescent Material Properties	$499 ☐
Seminar 2: Luminescent Material Applications	$499 ☐
Both seminars (save $199)	$799 ☐
Academic/Gov't rate*	$899 ☐
Conference proceedings (For those who cannot attend)	$999 ☐

Exhibition packages:

Tier 1 package Exhibit table + delegate registration**	$2800 ☐
Tier 2 package Exhibit table only**	$1800 ☐

* Academic rate for full time students and teaching staff at universities only. Early bird offer does not apply. Government officials please provide ID.
** For more information on our many exhibition and sponsorship opportunities that meet your business goals, please contact Brian Santos

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For further information on the conference please contact:

Booking Inquiries:	Michael Robert/T: +1 207 781 9631/F: +1 207 781 2150 E: michael.robert@pira-international.com
Conference Producer:	Barbara Rojas/T. + 1 207 781 9608/F. + 1 207 781 2150 E: barbara.rojas@pira-international.com
Sponsorships and Exhibits:	Brian Santos/T: +1 207 781 9618/F: +1 207 781 2150 E: brian.santos@pira-international.com
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