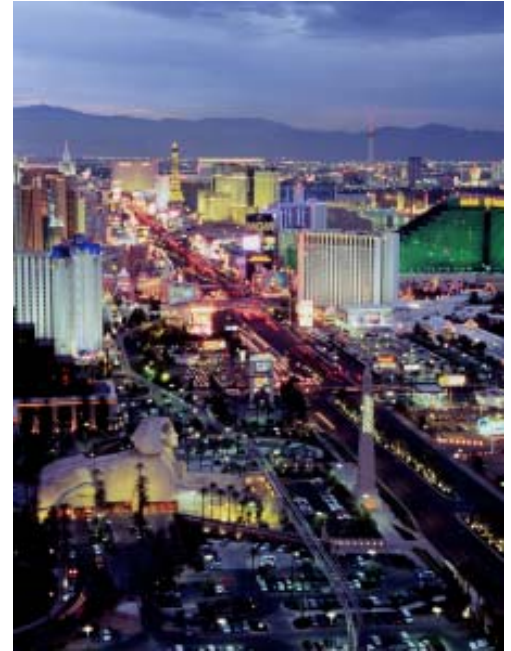




# 5<sup>th</sup> Annual PRINTABLE ELECTRONICS and DISPLAYS Conference & Trade Fair

October 11-13, 2006

Tuscany Suites & Casino  
Las Vegas, Nevada



IMI's 5<sup>th</sup> Annual Printable Electronics and Displays Conference & Trade Fair is *the conference of the year* dedicated to all critical aspects of printable electronics and displays. IMI's 5<sup>th</sup> annual meeting and trade fair is an industry led yearly event that leverages years of past expertise in this rapidly evolving industry. This event is designed to bring together experts and leaders in the areas of printable electronic materials, printing systems and printable electronic and display applications from the US, Asia and Europe.

Electronic and display device manufacture is poised to undergo a renaissance through the utilization of low-cost, high-speed printing technology. Over the last several years, with the advent of such technologies as printable organic semiconductors, high-resolution ink jet printheads and lower cost, robust flexible substrates, just to name a few, manufacture of electronic and display devices by high speed printing is being utilized in commercial environments. This revolutionary shift in manufacturing philosophy will allow for significant cost reductions in existing products like TFT LCDs and hence will allow manufacturers to expand current products into new markets and also develop entirely new, economically viable products such as smart packaging solutions, flexible displays and RFID tags.

IMI's 5<sup>th</sup> Annual Printable Electronics and Displays Conference & Trade Fair will strategically represent all critical materials, printing and application technologies in this emerging field. Areas which will be addressed include printable conductors, semiconductors, dielectrics and resistors, ink jet, offset lithographic, flexographic and gravure printing as well as application and device manufacturing such as printed circuit boards, RFID tags, displays, sensors, smart packaging and membrane keyboards.

This conference and trade fair, pioneered by IMI in 2002 as the first of its kind, will be a worldwide meeting place for "who's who" in this rapidly evolving new industry. It will allow presenters, attendees and exhibitors to meet, learn and promote their technologies, vision, products and services.

The **Trade Fair** is dedicated to bringing together companies who offer goods and services to the industry and end-users or device manufacturers looking to utilize high speed printing as a manufacturing process. The companies represented in the trade fair are true, reliable commercial suppliers of materials, print systems, hardware and support services. IMI's mission in this trade fair is to aid in fostering this entire industry by developing a platform where commercial suppliers and customers can come together and view products and discuss possible business and technical solutions.

#### General and Trade Fair Co-Chairs

Dr. James Caruso, TRED Research  
Dr. John Mills, Plastic Logic

#### Session Chairs

##### Technology Implementation, Applications and Markets

Liisa Hakola, VTT

##### Printable Electronic and Display Materials

Dr. Klaus Kunze, Cabot Corporation

##### Printing Systems and Technology

Dr. Shinichi Nishi, Konica Minolta

#### Conference Speakers

Dr. Gregg Berube, NanoDynamics  
Dr. Linda T. Creagh, Fujifilm Dimatix  
Lawrence Gasman, NanoMarkets  
Mark Hanley, I.T. Strategies  
Dr. Alan Hudd, Xenxia Technology  
Hideo Imai, Seiko Epson  
Dr. Bruce E. Kahn, Printable Electronics Consulting  
Jani-Mikael Kuusisto, Avantone Oy  
Ryosuke Kuwada, E Ink  
Dr. Hiroki Maeda, Dai Nippon Printing  
Dr. J. Devin MacKenzie, Add-Vision  
Jukka Perento, Panipol Oy  
Dr. Michael J. Renn, Optomec  
Dr. John A. Rogers, Univ of Illinois  
Dr. Robert A. Street, PARC  
Dr. Vivik Subramanian, Univ. of California  
Dr. Martin Trocha, Degussa



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## Wednesday, October 11, 2006

9:00 a.m. Registration

10:00 a.m. Opening Session

### WELCOME AND INTRODUCTIONS

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

Conference & Trade Fair Co-Chairs  
Dr. James Caruso, TRED Research, Albuquerque, New Mexico, USA  
Dr. John Mills, Vice President Engineering, Plastic Logic Limited, Cambridge, UK

### TECHNICAL OVERVIEW OF THE EMERGENCE OF PRINTING ELECTRONICS AND DISPLAYS

Dr. Bruce E. Kahn, Printable Electronics Consulting, Rochester, New York, USA

- Printing Techniques (Ink Jet, Flexography, Gravure, Etc.)
- Applications (Displays, Circuits, Antennas, Packaging)
- Inks & Materials
- Future Trends & Opportunities
- Other Technical Issue: Post Processing, Etc.

### PRINTABLE ELECTRONICS: HOW BIG IS THE OPPORTUNITY?

Lawrence Gasman, Principal Analyst & CoFounder, NanoMarkets LC, Richmond, Virginia, USA

- Market Forecasts For Key Application Areas
- Interplay Between Investment & Demand
- An Opportunity For Whom?
- What Could Happen To Slow Down Or Speed Up The Market
- Distinguishing Between Hype & Opportunity

### EXTENT OF PRINTED ELECTRONICS AND DISPLAYS MARKETS NOW & PROJECTED

Mark Hanley, President, I.T. Strategies, Hanover, Massachusetts, USA

- Conductive Chemistry
- Semiconductive Chemistry
- Flat Panel Displays

12:30 p.m. Lunch

## 2:00 p.m. Printing & Deposition Technologies

**Session Chair:** Dr. Shinichi Nishi, General Manager, Konica Minolta IJ Technologies, R&D Division, Tokyo, Japan

### APPLICATION OF INK JET PRINTING TO ELECTRO PACKAGING

Hideo Imai, Assistant Manager, Advanced Technology Development Center, Production Engineering & Development Division, Seiko Epson Corporation, Nagano, Japan

- Technical Requirements and Advantages/ Disadvantages For Digital Vs. Analog Printing For Electronic and Display Applications
- Leading High Resolution, Commercial Ink Jet Printheads & Their Application In Non-Graphic Applications
- Flexographic & Gravure Printing As A Source Of Very Low Cost Electronics
- Commercial Digital Printing Systems For Printed Electronic & Display Fabrication

### DEVELOPMENTS IN MULTI-NOZZLE AEROSOL JET PRINTING

Dr. Michael J. Renn, Senior Scientist, Optomec Inc., Albuquerque, New Mexico, USA

- Printed Electronics Needs High Speed, High Uptime Fine Feature Printing
- Multi-Jet Head Capability For Printing Conductive Inks On Large Format Surfaces Such As Web Lines & Glass Panels
- Test Results Of Silver Nanoparticle Ink Printing From 10 & 50 Element Jet Array
  - Output Consistency Tests
  - Reliability Evaluation
  - Printed Line Tolerance Over 24/7 Operating Conditions
- Multi-Jet Head Technology Targeted For High Throughput Web & Batch Applications Such As FPD Interconnect & Gate Lines Plus Printed Conductors For EMI Shielding, Solar Cells & Via Interconnects

### INTELLIGENT INK JET PRINTING SOLUTIONS

Dr. Linda T. Creagh, Business Development Director, Materials Deposition Division, Fujifilm Dimatix, Inc., Denton, Texas, USA

- Simple Systems For R & D
- New Technology Advances
- Sophisticated Systems For Production
- Ink Jets For Fine Conductive Lines
- Directions For Production Printing

### DEVELOPMENT OF HIGHLY PRECISE PLACEMENT PRINTHEADS FOR PED APPLICATIONS

Dr. Shinichi Nishi, General Manager, Konica Minolta IJ Technologies, R&D Division, Tokyo, Japan

- Development Of DPN Printhead & Driving Circuits
- System Uniformity Of Drop Volume Is +/- 1%
- Drop Placement Accuracy Is +/- 3µm

5:30 p.m. Reception in Exhibit Area

## Thursday, October 12, 2006

8:00 a.m. Continental Breakfast

## 9:00 a.m. Printable Electronic and Display Materials

**Session Chair:** Dr. Klaus Kunze, Senior Materials Development Leader, Cabot Corporation, Printable Electronics and Displays, Albuquerque, New Mexico, USA

### MATERIALS AND PRINTING TECHNIQUES FOR HIGH PERFORMANCE ELECTRONICS

Dr. John A. Rogers, Founder Professor of Engineering Departments of Materials Science and Engineering, Electrical and Computer Engineering, and Chemistry, University of Illinois at Urbana-Champaign, USA

- Inorganic Semiconductor Wires
- Single Walled Carbon Nanotubes
- Soft Lithographic Printing Techniques
- Transistor & Circuit Demonstrations

### CHANCES OF NANOPARTICLES FOR PRINTABLE ELECTRONICS & DISPLAYS

Dr. Martin Trocha, Creavis Technologies & Innovations, Degussa, Marl, Germany

- Key Material Specifications For Commercially Viable Printable Electronics & Displays
- Technical Advancements Of Printable Electronic Materials

### NANOSCALE SILVER PARTICLES FOR PRINTED ELECTRONICS

Dr. Gregg Berube, Materials Development Manager, NanoDynamics Inc., USA

- Nanoscale Silver Powder Technology
- Characterization Data
- Appropriateness For Printed Electronics

12:00 Noon Luncheon

## 1:30 p.m. Printable Electronic and Display Materials (cont.)

### PRINTED POLYMER TFT BACKPLANES USING ADDITIVE PROCESSING

Dr. Robert A. Street, Senior Research Fellow, Palo Alto Research Center (PARC), Palo Alto, California, USA

- Additive Printing Offers Most Efficient Materials Usage & Fewest Process Steps
- Challenge: Find Set Of Solution-Based Materials & Printing Processes With Suitable Performance & Features Sizes
- Progress Using Additive Jet-Printing Of Polymer Semiconductors, Nano-particle Metals & Solution-Based Dielectrics To Fabricate Thin Film Transistor Arrays

**Registration Details  
Hotel Information**

All Available on IMI Web Site  
[www.imiconf.com](http://www.imiconf.com)

## LOW COST, PRINTED P-OLED DISPLAYS FOR ENTRY INTO THE FLEXIBLE DISPLAY MARKET

Dr. J. Devin MacKenzie, Senior Research Consultant, Add-Vision, Inc., Scotts Valley, California, USA

- Recent Progress Provides P-OLED's Meeting Several Essential Criteria
- Process Based On Large-Area Printing Of Combination Of Doped Emissive & Air-Stable Cathode Inks
- R&D Progress Has Demonstrated >1000 Hours Lifetime
- Printed White P-OLED Device Lifetimes Have Improved 5-Fold In Past 3 Quarters
- Market Interest & Engagement In Mobile Products & Military Applications Continue To Increase

## DEPOSITION OF WIDE RANGE OF FUNCTIONAL MATERIALS BY LEVERAGING THE ACCURACY & FLEXIBILITY OF INK JET

Dr. Alan Hudd, President & CTO, Xenxia Technology Ltd., Letchworth, Hertfordshire, UK

- Key Material Requirements For Printable Electronics
- Range Of Materials Suitable For Ink Jet Printing
- Evolution Of Ink Jet Printing As A Material Deposition Technique
- XY Integration Challenges For Precise Material Deposition
- Performance & Cost Expectation Moving From Lab To Industrial Production Cells
- Typical Applications
  - Continuous Web Conductive Metal Printing For RFID
  - XY Conductive Metal Printing Of Tracks & Features
  - XY Materials Deposition For Displays
  - XY Material Deposition For Solar Panel Manufacture
  - XY Dielectric and Polyimide Material Deposition
- Outlook and Adoption Of Ink Jet For Printable Electronics

**SUPPLIERS' FORUM:** 5-Minute Presentations Related To Printable Electronics and Displays related Technology, Product or Service Capabilities. Each company exhibiting in the Trade Fair will give a Suppliers' Forum presentation. To reserve your position in the Suppliers' Forum and Trade Fair, please complete and submit the registration form and check off the box indicating your participation in the Trade Fair. **There is no fee in addition to the conference registration fee to have a display in the Trade Fair and to give a Suppliers' Forum presentation.**

5:00 p.m. Reception in Exhibit Area

### TRADE FAIR – FREE DISPLAYS

Trade Fair product demonstrations/displays are COMPLIMENTARY for all conference attendees. 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 charge in addition to the registration fee to have a Trade Fair display. Interested companies should contact Al Keene [al@imiconf.com](mailto:al@imiconf.com) at IMI to ensure that proper arrangements are made for product displays and demonstrations.

## Friday, October 13, 2006

8:00 a.m. Continental Breakfast

### 9:00 a.m. Applications, Commercialization & Implementation Issues

Session Chair: Liisa Hakola, Research Scientist, VTT Technical Research Center, Espoo, Finland

### APPLICATIONS FOR PRINTED ELECTRONICS: THE WORLD OF CONSUMER BRAND MARKETING

Jani-Mikael Kuusisto, Head of Marketing and Sales, Avantone Oy, Finland

- Emerging Applications Areas For Printed Electronics: Printing & Packaging Perspective
- Evolving World Of Consumer Brand Marketing
- Opportunities For Printed Electronics

### E INK: CURRENT TECHNOLOGY DEVELOPMENT STATUS AND ITS MARKETS & APPLICATIONS

Ryosuke Kuwada, Vice President Sales & Marketing, E Ink Corporation, USA

- Technology Update: New Ink, Color & Flexible Display
- Applications & New Market Development Status
  - E-Book
  - Watches
  - USB
  - Signs
  - And More

## TOWARD PRINTED RFID: MATERIALS, PROCESSES AND DEVICES

Dr. Vivik Subramanian, Association Professor, EECS, University of California, Berkeley, California, USA

- Requirements For Printed RFID
- Materials Needs Based On Requirements
- Where Are We & What Is Left To Solve?

### POLYANILINE BASED SOLUTIONS FOR PRINTED ELECTRONICS AND OTHER CONDUCTIVE APPLICATIONS

Jukka Perento, Managing Director, Panipol Oy, Finland

- Panipol Conductive Ink & Coating Technology & Solutions
- Application Case Studies: Printed Electronics & ESD
- Latest Innovations In Panipol ICP Technology

### PRINTED FLEXIBLE OLEDs

Dr. Hiroki Maeda, R&D Centre Organic Devices Laboratory, Dai Nippon Printing, Japan

- Printing Technology For Organic Thin Films
- Performance Of Printed Devices
- Roadmap Toward Plastic Electronics

1:00 p.m.

Adjournment

## Don't Miss IMI's Other Fall 2006 Programs

IMI Programs at Tuscany Suites-Las Vegas, NV

### 2nd Ink Jet Technology Integration Symposium

October 9-10, 2006

### Paper-Like Displays Course

October 15-16, 2006

### 3rd Paper-Like Displays Conference

October 16-18, 2006

### 2nd Engineered Fine Particle Applications Conference

October 18-20, 2006

IMI Europe Programs In conjunction with photokina  
Koelnmesse, Cologne, Germany

### Picture-Taking with Mobile Imaging Devices

September 28, 2006

### Picture-Making with Mobile Imaging Devices

September 28, 2006

IMI Europe Programs at Fira Palace Hotel-Barcelona, Spain

### UV Ink Jet Printing Course

October 23-24, 2006

### Ink Jet Academy: Theory of Ink Jet Technology

October 23-24, 2006

### 14th Annual European Ink Jet Printing Conference

October 25-27, 2006

Visit [www.imiconf.com](http://www.imiconf.com) or [www.imieurope.com](http://www.imieurope.com) for program and registration details

## REGISTRATION INFORMATION: IMI's Printable Electronics Program

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](mailto:imi@imiconf.com) or visiting our web site [www.imiconf.com](http://www.imiconf.com)

### REGISTRATION FORM

**5th Annual Printable Electronics and Displays Conference & Trade Fair**  
**October 11-13, 2006**

**Check here to reserve a free display space in the Trade Fair and a 5-minute Suppliers' Forum presentation.**

NAME \_\_\_\_\_

JOB TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

COUNTRY \_\_\_\_\_

PHONE \_\_\_\_\_ FAX: \_\_\_\_\_

EMAIL \_\_\_\_\_

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### TUSCANY SUITES RESERVATION INFORMATION

**IMI's Fall 2006** programs are being held at Tuscany Suites & Casino, Las Vegas, Nevada. Hotel reservations are the responsibility of each meeting registrant. To receive the special meeting rate of \$89 (\$109 for Friday & Saturday nights) for single or double occupancy – **YOU MUST Reference "IMI Fall" Group Code 1175 FN when making your reservations. Early booking is advised** as the reduced rate is guaranteed only until September 8, 2006. Phone +1-877-887-2261 or +1-702-8933 to make hotel reservations.

The Tuscany Suites & Casino is a totally suite property conveniently located just off the Las Vegas Strip on 27 acres of plush landscape, pools and gardens. Just a short taxi ride from the McCarran International Airport, the Tuscany Suites & Casino offers spacious guest suites featuring many deluxe amenities - all in a lovely setting to provide a great sense of relaxation and privacy.

Recreational amenities at the Tuscany Suites & Casino include a lagoon style pool, fitness center and casino. The Tuscany Suites & Casino plus the Las Vegas area provide an excellent opportunity to extend your visit into a memorable vacation experience. Dress for this program will be casual.

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.