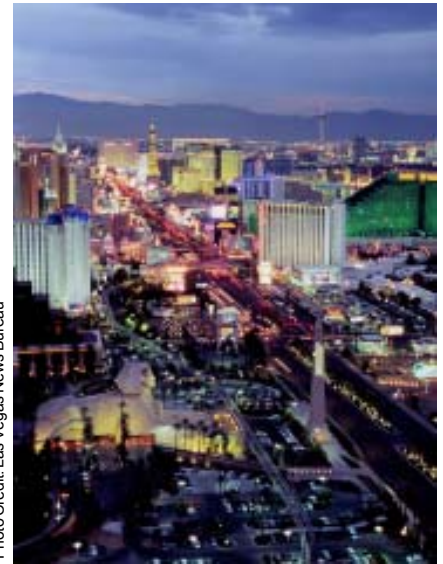


4th Annual Printable Electronics and Displays Conference & Trade Fair

October 26-28, 2005
Tuscany Suites & Casino
Las Vegas, Nevada

Photo Credit: Las Vegas News Bureau



IMI's 4th 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 4th 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 printing presses and low-cost, high reliability 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 4th Annual Printable Electronics and Displays Conference & Trade Fair will strategically represent all critical materials, printing and device/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 device manufacturing applications 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.

Conference & Trade Fair General Chairs

Dr. James Caruso, Cabot Corporation

Dr. John Mills, Plastic Logic

Session Chairs

Dr. Ana Claudia Arias, PARC

Karel Vanheusden, Cabot

Akira Suzuki, Ricoh

Trade Fair Exhibitors (as of 9/12/05)

Add-Vision

Cabot Corporation

Dimatix Materials Deposition Division

Eastman Kodak

imaging Technologies international

I.T. Strategies

Konica Minolta IJ Technologies

Litrex

Nanomarkets

Plastic Logic

Ricoh Printing Systems

Sartomer

Tetenal

Vivalife

Xaar

Xennia Technology

Visit www.imiconf.com for updated list

Conference Speakers

Michael Bisges, arcure Technologies

Dr. Paul Clem, Sandia

Dr. Linda T. Creagh, Dimatix

Robert Detig, ElectroX

Chuck Edwards, Cabot

Eran Elizur, Creo

Feng Gao, DuPont

Lawrence Gasman, Nanomarkets

James Goodrich, Sartomer

Liisa Hakola, VTT Info Tech/Media

Dr. Alan Hudd, Xennia Technology

Steve Jones, Circatex

Dr. Bruce E. Kahn, formerly RIT

Dr. Seong-Jim Kim, Samsung

Dr. J. Devin MacKenzie, Add-Vision

Dr. John Mills, Plastic Logic

Shuichi Morio, Ricoh Printing Systems

Andy Parkinson, Sun Chemical

Dr. Robert A. Street, PARC

Dr. Jie Zhang, Motorola Labs

Dr. Zhihao Yang, Eastman Kodak



4th Annual PRINTABLE ELECTRONICS and DISPLAYS Conference & Exhibition

October 26-28, 2005

Wednesday, October 26, 2005

9:00 a.m. Conference Registration

10:30 a.m. **Markets & Implementation**

WELCOME AND INTRODUCTIONS

Alvin G. Keene, President, Information Management Institute, Inc., Carrabassett Valley, Maine
Conference & Trade Fair General Chairs:
Dr. James Caruso, Product Manager, Cabot Corporation, Printable Electronics and Displays, Albuquerque, New Mexico
Dr. John Mills, Vice President Engineering, Plastic Logic Limited, Cambridge, England

TECHNICAL OVERVIEW OF THE EMERGENCE OF PRINTING ELECTRONICS AND DISPLAYS

Dr. Bruce E. Kahn, Consultant (formerly with RIT), Rochester, New York

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

A ROADMAP FOR PRINTABLE ELECTRONICS

Lawrence Gasman, Principal Analyst and CoFounder, NanoMarkets LC, Richmond, Virginia

- Available Opportunities For Printable Electronics in 2006, 2008 & 2010
- Quantitative Projections For Printable Products Including Displays, RFID, Photovoltaics, Sensors, Smart Cards & Novelty Products
- Factors Promoting Printable Electronics' Deployment In Each Key Sector
- Major Factors For Success

12:00 Noon Lunch

1:30 p.m. **Printing & Deposition Technologies**

Session Chair: Akira Suzuki, Ricoh Technology Strategy Center, Corporate Technology Planning Division, Yokohama, Japan

PRINTING ELECTRONICS THE NEW WAY

Dr. Linda T. Creagh, Business Development Director, Materials Deposition Division, Dimatix, Inc., Santa Clara, California

- Ink Jets Successfully Used As Precision Micro Pumps In Variety Of Industrial Applications
- Ink Jets Are Enabling PLED Materials To Be Printed For Display Applications
- Applications Take Advantage of Ink Jet Strengths & Wide Variety Of Substrates & Topographies
 - Purpose-Built "Printers" Don't Contaminate Electronic Fluids
 - Number Of Process Steps Reduced By Directly Printing Features
 - Additive Process
- Yet, Challenges Remain Before Ink Jet Can Reach Full Potential
 - Easy To Use System
 - System Reliability Requires Coordination Of Hardware, Software, Jetting Fluid, Print Engine
 - High Drop Placement Precision
 - Scalability Of Processes
- Introduction Of Dimatix Family Of Products Designed To Tackle The Identified Challenges

EXAMINATION OF INK JET TECHNOLOGY ON PRINTED ELECTRONICS

Shuichi Morio, General Manager, Ricoh Printing Systems, Hiatchinaka-City, Iaraki Japan

- Basic Technology Investigations To Handle Nano-Particle Metal Ink
- Overcoming Difficulties With
 - Line Width Control Stability
 - Adhesion Against Substrate
- Future Directions

CONDUCTIVE NANOIMPRINT PROCESS FOR TFT BACKPLANE PRODUCTION

Michael Bisges, Co-Founder and CTO, arccure technologies gmbh, Lippstadt, Germany

- How To Imprint Conductive Structures/Patterns In The Micron & Nanometer Range?
- Physical Properties Of Imprinted TFT-Nanostructures With The Coni Process
- Materials Used & Required Properties
- Advantage Of The Roll-To-Roll Process & What Production Performance Can Be Achieved
- Status & Future Challenges

PRINTING CONDUCTIVE LAYERS

Andy Parkinson, Marketing Manager, Sun Chemical, Bath, UK

- Where & Why Are Conductive Layers Important?
- Printing Techniques: Makes Sense To Have Flexo, Screen, Rotary Screen & Gravure
 - Advantages & Disadvantages Of Each Technique
 - Type Of Layer Produced
 - Requirements
- RFID Applications As Case Study
- Cost Projections Including Gaps In The Model
- Challenges Ahead & Future Prospects
 - Key Areas Where Technical Gaps Exist
 - Gaps To Customers Ultimate Desire, e.g. Printing RFID Or Entire Circuits Directly On Boxes

ELECTROKINETIC IMAGING OF LIQUID TONERS: A NOVEL ELECTROSTATIC IMAGING PROCESS

Robert Detig, Electrox Corporation, Denville, New Jersey

- Process For Depositing Liquid Toner In Which Electrophoresis Is Used To Fill Cavities Of Masked Substrate With Functional Toner
- Requirements for Substrate, Mask Material & Toner
- Core Particles Coated So Functional Materials Can Be Minerals, Metals, Solders, Glasses, Ceramics, Etc.
- Process Can Produce Micron Thick Ink Layers To Microstructures
- Applications In Electronics Manufacture, Fuel Cells, Displays, Medical Devices, Batteries, Etc.

THERMAL TRANSFER PRINTING FOR LARGE-AREA ORGANIC ELECTRONICS

Feng Gao, Senior Chemist, CR&D, DuPont, Wilmington, Delaware

- Thermal Transfer Printing Technology
- Thin Film Transistors
- Materials Set
- E-Paper Display
- Progress & Outlook

6:30 p.m. Reception in Exhibit Area

Thursday, October 27, 2005

7:30 a.m. Continental Breakfast

8:30 a.m. **Printable Electronics and Display Materials**

Session Chair: Dr. Karel Vanheusden, Strategic Programs Manager Cabot Corporation, Printable Electronics and Displays, Albuquerque, New Mexico

COMPARISON OF PRINTABLE ELECTRONICS TO CONVENTIONAL ELECTRONICS MANUFACTURING PROCESSES

Chuck Edwards, General Manager, Printable Electronics and Displays, Cabot Corporation, Albuquerque, New Mexico

- New Electronic Inks Are Enabling Electronics Manufacturing Processes
- New Materials & Process Evaluated For Performance & Cost Vs. Conventional Processes
- Relative Strengths & Weaknesses Of Digital Vs. Analog Processes
- Performance Comparison Of Photolithography, Ink Jet & Analog Printed Electronics
- Costs & Considerations By Application (RFID, FPD, PCB, Etc.)

LASER PATTERNED COATABLE CONDUCTORS FOR LOW COST PRINTABLE ELECTRONICS AND DISPLAYS

Dr. Zhihao Yang, Principal Scientist, Kodak Research Laboratories, Eastman Kodak Company, Rochester, New York

- Most Critical Issue In Fabricating Printed Electronics & Displays: Printing High Resolution & Highly Conductive Patterns On Substrates In Cost Effective Way
- Technology Using Low-Cost Laser Printing Systems To Produce High Resolution (<5 μ) Conductive Metals Patterns With High Speed & Potential Roll-To-Roll Process Capability
- Properties & Performance Of Metal Nanoparticle Based Inks Used In The Process

MATERIAL REQUIREMENTS FOR PRINTED TRANSISTORS AND CIRCUITS

Dr. Jie Zhang, Principal Staff Engineer, Physical Realization Research Center, Motorola Labs, Schaumburg, Illinois

- Electronic Functional Inks
 - Functional Properties: Conductivity, Resistivity, Dielectric Properties, Mobility, on/off ratio, etc.
 - Rheological Properties
 - Mechanical/Process Requirements & Manufacturing Methods
 - Microelectronic Manufacturing
 - Graphic Arts Printing: Screen, Ink Jet, Litho, Flexo & Gravure
- Printable Electronic Fabrication
 - Inks & Fabrication Process
 - Printed Electronic Device Performances
- Advance Materials Systems & Applications

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ELECTRONIC MATERIAL INK DEVELOPMENT FOR PEN-DISPENSE & AEROSOL DEPOSITION

Dr. Paul Clem, Principal Member of Technical Staff, Microsystem Materials Department, Sandia National Laboratories, Albuquerque, New Mexico

- Direct Printing Method Overview: Ink Jet, Microaerosol Spray, Pen-Dispense
- Electronics Applications: 2D & 3D PCB's & Integrated Packages, Novel 3D Geometries For Electronics & RF Device Integration and Direct Printing Of Integrated Passive Components (RLC)
- Photonic Applications: Photonic Crystals & Negative Index Materials and Phosphor & Quantum Dot Deposition
- Materials Development: Conductors, Crossover Dielectrics, High Dielectric Constant Materials & Superconductors
- Areas For Future Research & Scale-Up

12:30 p.m. Luncheon

1:30 p.m. **Printable Electronics and Display Materials (cont.)**

UV & EB CHEMISTRY FOR PRINTABLE ELECTRONICS APPLICATIONS

James Goodrich, Senior Applications Chemist - Graphic Arts, Sartomer Company, Inc., Exton, Pennsylvania

- UV & EB Technology Have Been Enabling Chemistry For Many Recent Innovations Such As DVD's, Fiber Optics & Digital Printing: Will Printable Electronics Be Next?
- Basics Of UV & EB Chemistry: Health & Safety Concerns, Basic Property To Functionality Relationships, Monomer & Oligimer Chemistry
- Where Can UV & EB Chemistry Play A Part In Evolution Of Printable Electronics?

ROLE OF FUNCTIONAL POLYMERS IN INK JET FOR PRINTED ELECTRONICS

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

- Review Of Functional Polymers
 - Types & Performance
 - Advantages & Disadvantages
- Evolution Of Printed Electronics & Predicted Timescales Of Early Applications
- Range Of Pioneering Applications
 - Conductive Tracks
 - Displays
 - Paper Like Displays
 - Solar Cells
 - Batteries

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 making certain to 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.

6:00 p.m. Reception in Exhibit Area

Friday, October 28, 2005

7:30 a.m. Continental Breakfast

8:30 a.m. **Applications, Commercialization & Implementation Issues**

Session Chair: Dr. Ana Claudia Arias, Member of Research Staff, Electronic Materials and Devices Laboratory, Palo Alto Research Center, Palo Alto, California

REALIZING THE POTENTIAL OF PRINTED ELECTRONICS WITH A LOW COST, HIGH FUNCTIONALITY APPROACH TO FLEXIBLE EMISSIVE DISPLAYS

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

- Fundamental Issues Hampering Commercialization Of Organic Electronics Applications
 - Availability Of Materials & Toolsets
 - Inherent Performance Strength Of Organics
 - Maturity, Capability & Yields Of Manufacturing Processes Vs. Applications
 - Markets Available To Proposed Organic Electronics Applications
- Evaluation of Attractive Organic Electronics Commercialization Opportunity For Low-Information Content Displays Using Low Cost Fabrication Process Based On Screen Printing & Patterning Of All Conductive & Emissive Materials
- Future Development Work & Commercial/ Technical Roadmap Towards Market Entry

DIGITAL PRINTING OF ELECTRONICS USING MASSIVELY INTEGRATED INK JET PRINTING

Steve Jones, Chairman, Circatex Group Ltd, South Shields, England

- Design Community Needs High Technology, Rapid Response Service (Service Driven But Cost Competitive Solution)
- Possible To Envisage Production Process Where Entire Electronic Circuit/Assembly Is Digitally Printed
- Economics & Viability Triggers For Commercial Success
- Modern Electronics Is About Routine Precision Between CAD Design & Finished Product Measured In Microns: Where Are These Production Machines?
- Proof Of Concept Ink Jet Machine That Will Allow Boundary Conditions To Be Explored
 - Two-off 40,000 Nozzle Grey-Scale Heads To Print 700 mm Wide Panels With Feature Postional Accuracy Of Better Than 10 Microns In Less Than A Second
 - 1000 mm Wide Area Can Be Scanned With Smaller Head To Investigate Electronically Active Inks

INK JET PRINTING FOR MAKING LOW COST DISPLAYS & CUSTOMIZED ELECTRONICS

Liisa Hakola, Research Scientist, VTT Information Technology/Media, Espoo, Finland

- Ink Jet Is Only Non-Impact Printing Method With No Contact Between Printhead & Substrate
- Enables Glass, Plastics, Paper & 3D Substrates
- Consecutive Samples Can Be 100% Different Enabling Mass Customization
- Low Ink Consumption Results In Less Consumption Of Expensive Conductive Inks
- Ink Jet Can Make Printed Display Elements & Electronic Components Cost Effectively & Flexibly

SCALABLE MANUFACTURING PROCESS & APPLICATIONS FOR FLEXIBLE ACTIVE MATRIX DISPLAYS

Dr. John Mills, Vice President Engineering, Plastic Logic Limited, Cambridge, England

- Manufacturing Process For Flexible High Information Content Active Matrix Backplanes Compatible With Low Cost Plastic Substrates
- Transistor Performance, Feature Sizes & Conductivities To Enable 800 x 600 Displays At 100 PPI Driving Gray Scale Electrophoretic Media
- Process Development On 350mm x 350mm Prototype Line
- Scalability To Larger Display Sizes & Higher PPI Enables More Flexible Display Products
- Markets & Applications

12:00 p.m. Luncheon

1:00 p.m. **Applications, Commercialization & Implementation Issues (cont.)**

JET-PRINTED POLYMER AND a-Si TFT BACKPLANES FOR FLEXIBLE DISPLAYS

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

- Jet-Printing Has Potential To Reduce Display Manufacturing Cost & Enable Roll-To-Roll Processing
- Combination Of Additive & Subtractive Jet-Printing Processes Provides Flexibility In Materials Choice & Fabricated Structures
- New Materials & Processes Must Be Developed (Particularly For Additive Printing) & Validated On Prototype Arrays
- Results Of Printing Small Prototype Displays With Amorphous Silicon & Polymer Semiconductor TFT Arrays On Glass & Flexible Plastic Substrates

INK JET PRINTING TECHNOLOGY & MORPHOLOGICAL CONTROL FOR DISPLAY APPLICATIONS

Dr. Seong-Jin Kim, Project Leader, Samsung Advanced Institute of Technology, Suwon, Korea

- Ink Jet Technology As Candidate For Low Cost Manufacturing Route
- Combination Of Ink Jet Printing Physics, Materials & Process Development Is Required For Manufacturing Process
- Results Of Display Printing Application Work

LASER DIRECT IMAGING: MULTI-PURPOSE TOOL IN MANUFACTURING DISPLAYS & PRINTABLE ELECTRONICS

Eran Elizur, Director, Business Development, Creo, Inc. Burnaby, British Columbia, Canada

- Laser Direct Imaging Process & Role As
 - Manufacturing Tool
 - Complementary System To Improve Spatial Accuracy Of Ink Jet Systems
 - Post Processing Tool
 - Mask Creating Tool
- Trends & Developments

4:00 p.m. Adjournment



IMI 2004 Printable Electronics & Displays Conference Participants

REGISTRATION INFORMATION: IMI's Printable Electronics Programs



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 for any of these programs, 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

4th Annual Printable Electronics and Displays Conference & Trade Fair

October 26-28, 2005

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 _____

TUSCANY SUITES RESERVATION INFORMATION

IMI's Fall 2005 programs are being held at Tuscany Suites Hotel & Casino, Las Vegas, Nevada. Hotel reservations are the responsibility of each meeting registrant. To receive the special meeting rate of \$99 for single or double occupancy – **YOU MUST Reference GROUP NUMBER1103N9 when making your reservation. Early booking is advised** as the reduced rate is guaranteed only until October 3, 2005. Phone +1-877-887-2261 or +1-702-8933 to make hotel reservations.

The Tuscany Suites Hotel 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 Hotel 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 Hotel include a lagoon style pool, fitness center and casino. The Tuscany Suites Hotel & Casino plus the Las Vegas area provide an excellent opportunity to extend your visit into a memorable vacation experience. Dress for IMI's programs 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.

TRADE FAIR – FREE DISPLAY OPPORTUNITY

IMI's Printable Electronics & Displays Trade Fair will feature the world's first, true commercially oriented boutique trade fair for the printed electronics and displays industry. The Trade Fair will feature suppliers of materials, print hardware, print systems and support services to the printable electronics and displays industries. Each Trade Fair participant also has the opportunity to give a 5-minute Suppliers' Forum presentation.

IMI will cooperate with all interested parties to provide appropriate space so products can be displayed and demonstrated at the Trade Fair during the conference breaks and receptions. **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.**

To reserve your position in the Trade Fair and Suppliers' Forum, please register online and check off the box indicating your participation in the Trade Fair OR complete and the registration form above and fax to +1-207-235-2226 OR send and email to al@imiconf.com

Don't Miss IMI's Other Fall 2005 Programs

Other IMI Programs at Tuscany Suite-Las Vegas, NV

1st Ink Jet Technology Integration Symposium
October 24-25, 2005

1st RFID Technology Integration Symposium
November 14-15, 2005

Paper-Like Displays Course
November 14-15, 2005

3rd Paper-Like Displays Conference
November 16-18, 2005

IMI Europe Programs in Lisbon, Portugal

UV Ink Jet Course
November 7-8, 2005

Ink Jet Academy: Theory of Ink Jet Technology
November 7-8, 2005

13th Annual European Ink Jet Printing Conference
November 8-11, 2005

Visit www.imiconf.com or www.imieurope.com for program and registration details