



Digital Printing Summer Camp 2008

July 28-August 1, 2008

Sugarloaf Mountain Hotel
Carrabassett Valley, Maine

Ink Jet Ink Manufacturing Course

Manufacturing Ink Jet Inks for Performance & Reliability - A comprehensive course describing the issues of ink testing, scale up for manufacture and manufacturing technology, led by Dr. Alan Hudd of Xennia Technology.

July 28-29, 2008

UV Ink Jet Ink Printing Course

Want to learn more about formulating UV curable ink jet inks, using and curing them? Expert course leaders James Goodrich of Sartomer, Jason Newell of Nordson UV and Dr. Alan Hudd of Xennia Technology will take you through all of the issues and get you up to speed.

July 30-31, 2008

Printed Electronics Course

Printed electronics is fostering a renaissance in electronic device manufacturing - this timely course, led by Dr. Burce Kahn of Printed Electronics Consulting, covers the printing technologies, materials considerations and implementation challenges/issues that are shaping the electronics industry's future.

July 31-August 1, 2008

INK JET INK MANUFACTURING Course

Manufacturing Ink Jet Inks for Performance & Reliability

July 28-29, 2008



Course Focus

IMI's popular course, "The Ink Jet Academy," provides a good background to the types of ink jet inks and materials that are used in today's ink jet printers. But how are inks actually made? Why does colored water cost up to \$2,000 per liter? Is pigmented ink really more expensive to make than dye-based ink? What is involved in manufacturing advanced ink jet inks?

This course is designed for those wishing to develop, source or commission the development and manufacture of ink jet inks. It will help you understand the issues of development and testing, scale-up for manufacture and the manufacturing processes themselves. As well as being of interest to ink jet technologists, managers will benefit from an understanding of the ink jet ink manufacturing process to set realistic project and revenue plans and to decide whether to manufacture in-house or externally source ink.

Monday, July 28, 2008

12:00 Noon Registration

1:00 p.m. Session 1

Welcome & Introductions

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

Critical Aspects of Ink Jet Systems Design

- Printheads
- Ink
- Ink Systems
- Motion Control

Ink Formulation Considerations for Manufacturing

Creating Robust Material Specifications

- Dyes
- Pigments
- Polymers
- UV Cure
- Functional Materials
- Solvents
- Additives

5:30 p.m. Reception

Tuesday, July 29, 2008

7:00 a.m. Breakfast

8:00 a.m. Session 2

Testing Protocols & Validation for Manufacturing

- Lab Scale
- Pilot Scale
- Scaling Considerations

Quality Control Processes

- Batch to Batch Variations
- Measuring Consistency
- Establishing Processes to Guarantee Quality

Ink Plant Requirements

- Layout
- Equipment Selection
- Manufacturing Practices
- Quality Standards

12:00 Noon Lunch

1:00 p.m. Session 3

Manufacturing Processes

- Mixing Regimes
- Milling Processes
- Filtration Systems
- Degassing
- Purification
- Bottling
- Packaging

Commercial Considerations

- Strategies
- Costs
- Positioning
- Value Chain

5:00 p.m. Adjournment

Course Leader

Dr. Alan L Hudd, CEO, Xennia Technology Limited, Letchworth, Hertfordshire, UK

In 1996, Dr. Hudd founded Xennia Technology; the world's first independent contract ink jet technology house dedicated to the industrial and office inkjet industries. Since then, Dr. Hudd has grown Xennia into a leading player in the rapidly emerging market for industrial inkjet technologies. Under Dr. Hudd, Xennia has developed a unique set of inkjet chemistry, engineering and problem solving capabilities that has resulted in a number of important technology innovations, especially in the field of inkjet dispensing of difficult materials.

Prior to establishing Xennia, Dr. Hudd was for 8 years the Fluids Technology Manager at Domino Printing Sciences, developing a wide range of inkjet inks for diverse applications and is credited with a number of patents and significant innovations within the industrial inkjet industry. He spent almost eight years with the Ministry of Defence and Royal Ordnance in the UK, developing new solid polymer rocket propellants for air to air missiles. Dr. Hudd graduated with B.Sc. Honours degree in Chemistry and Physics, M.Sc and Ph.D research degrees in Polymer Chemistry from Manchester University.

Xennia is the world's leading chemistry driven industrial inkjet integrator. Xennia provides a complete contract R&D service to support the development of a new application. Xennia supplies printers and inks for production line solutions to OEM's and end-users across a range of industrial applications. Xennia is part of the Royal Tencate Group.

To Register Online

Visit

www.imiconf.com

UV Ink Jet Ink Printing Course

July 30-31, 2008

Course Focus

As ink jet printing continues to make technology advancements in product functionality, cost performance, print quality and color printing capabilities, the interest in utilization of UV-based ink jet systems is expanding rapidly. IMI's UV Ink Jet Course is designed to provide thorough coverage of basic UV chemistry, curing, issues critical to UV-based ink jet systems implementation and how UV technology has been implemented in current products and applications.

While UV inks provide instant drying; enable a wide choice of substrates; result in good end use properties (adhesion, durability, flexibility, etc.) and enable good printhead reliability – potential users must understand basic UV chemistry; UV ink components; ink formulation issues; hardware development criteria, health & safety issues, etc. to effectively and successfully implement UV ink jet systems.

As UV ink jet printing continues to expand; IMI's UV Ink Jet Course provides a unique opportunity to obtain information and insights critical to UV ink jet printing technology implementation.

Wednesday, July 30, 2008

8:00 a.m. Registration

8:30 a.m. **UV Chemistry**

Welcome & Introductions

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

Session Leader

James Goodrich, Manager, Graphic Arts, Sartomer Company, Exton, Pennsylvania

Mr. Goodrich earned his B.S. in Chemistry and a minor in Polymer Science from Pennsylvania State University in 2000. His work is concentrated on the UV/EB ink market with a focus on design and application of new energy-curable raw materials for the paste, liquid and digital markets.

- Basics of UV Curing Chemistry
 - Safety & Handling Issues
 - Mechanisms: UV Photopolymerization
 - Advantages of UV Curing Systems
- UV Chemistry for Ink Jet Systems
 - Monomers
 - Oligomers
 - Photoinitiators
- Models of UV Ink Jet Systems
 - Adhesion
 - Cure
 - Pigment Dispersion

12:30 p.m. Lunch

1:30 p.m. **UV Curing**

Session Leader

Jason Newell, Product Manager - Inkjet, Nordson UV, Slough, UK

Mr. Newell, a graduate in Mechanical Engineering, has been working with Nordson UV since 2000. Over the past seven years, he has gained much experience working on and leading the development of different types of UV system technologies with many major OEM's. He has worked on successful development and implementation of UV equipment ranging from compact laboratory systems to industrial XY machines and large single pass applications with high powered UV technology. He currently leads Nordson UV's growing engineering group responsible for UV ink jet development and applications.

- Curing Technologies: Operation & Differences
 - Mercury Arc
 - Xenon Discharge
 - Fluorescent Lamps
 - Excimer Lamps
 - Lasers
 - Microwave
 - LED's (UV & Visible)
 - Electron Beam
- Challenges with UV Curing Equipment on Ink Jet Printing Machines
- Oxygen Inhibition & Inerting
- Requirements for High Speed, Single Pass Applications
- Examples of Bulbs, Reflectors, Lamp Heads, Shutters, Etc.

5:30 p.m. Reception

Thursday, July 31, 2008

7:00 a.m. Breakfast

8:00 a.m. **UV Product Implementation & Applications**

Session Leader

Dr. Alan L Hudd, CEO, Xennia Technology Limited, Letchworth, Hertfordshire, UK

(See Page 2 for biographical details)

- Understanding Ink Jet Printing Process for UV Curable Materials
- UV Ink Formulation Challenges & Role of Substrate
 - Controlling Dot Quality at Speed
 - Application Process Development (pre & post treatment)
 - Pigment Dispersions
 - Ink Jet Properties
 - Current Limitations
- UV Ink Jet Hardware Configurations
 - Review of Suitable Printheads
 - Integration Issues
 - System Reliability
 - Current Integrators
- Commercial UV Ink Jet Systems: Implementation, Performance & Applications
- UV Ink Jet Applications: Requirements, Opportunities & Challenges
 - Commercial Printing
 - Electronics
 - Product Decoration
 - Coatings
 - Manufacturing
 - Others
- Future Trends in UV Ink Jet

12:00 Noon Adjournment

Printed Electronics Course

July 31-August 1, 2008

Course Focus

Electronic device manufacturing is poised to undergo a renaissance through the utilization of relatively low-cost, high-speed printing technologies. Over the last several years, the development of new materials and technologies such as printable organic semiconductors, high-resolution ink jet printheads and lower cost, robust flexible substrates, have made the manufacture of electronic and display devices by high speed printing in commercial environments possible. This revolutionary shift in manufacturing philosophy will enable significant cost reductions in existing products, will allow manufacturers to expand current products into new markets and will also foster the development of entirely new, products and technologies such as smart packaging solutions, flexible displays and RFID tags.

This combination of materials and technologies is broadly classified as **Printed Electronics**. Understanding the fundamentals is a prerequisite to any product development. IMI's **Printed Electronics Course** offers a one and one-half day course covering the basic printing technologies, materials considerations and implementation challenges/issues that are shaping the future of the electronics industry.

Printed Electronics is opening up new markets and opportunities for hardware manufacturers, materials suppliers, media developers, consumables manufacturers, systems integrators and others. Whether just entering the Printed Electronics market, or branching out in current electronics industry segments can present considerable technical challenges and barriers to commercial success. Getting up to speed has not been easy. Until now.

IMI's **Printed Electronics Course** provides a useful, practical background to anyone entering the Printed Electronics arena or seeking an efficient update. The program and format offer the opportunity to obtain an expert start in the Printed Electronics field, to get an update, or to open up exciting new opportunities.

Thursday, July 31, 2008

12:00 Noon Registration

1:00 p.m. Session 1
Printing Processes & Their Uses in Printed Electronics

Welcome & Introductions

[Alvin G. Keene, President, Information Management Institute, Inc., Carrabassett Valley, Maine, USA](#)

Printed Electronics Technology & Market Overview

Printed Processes for Printed Electronics: Status, Pros & Cons

- Offset Lithography
- Gravure
- Flexography
- Screen Printing
- Ink Jet
- Electrophotography
- Thermal Transfer
- Other Processes and Technologies

Key Applications Areas & Status

- Displays
- Circuits
- Antennas
- Packaging
- Solar Cells
- Sensors
- Signage
- Others

5:30 p.m. Reception

Friday, August 1, 2008

7:00 a.m. Breakfast

8:00 a.m. Session 2
Materials Role in Printed Electronics Applications

Material Classes

- Organic
- Inorganic
- Hybrid Materials
- Polymer
- Nano

Economic Considerations

- Materials Costs
- Processing Costs
- Functionality vs. Printability
- Impact of Substrates & Quality Requirements
- Cost – Benefit Performance

Printable Electronic Material Functions & Applications Examples

- Conductors
- Semiconductors
- Dielectrics
- Sensor Materials
- Memory
- Luminescent Materials
- Liquid Crystals
- Color Filters
- Battery Materials
- Piezoelectric Materials
- Encapsulation
- Barrier Materials

12:00 Noon Lunch

1:00 p.m. Session 3
Printed Electronics Implementation & Challenges

Key Materials Issues, Needs & Implications

- Conductivity
- Mobility
- Dielectric Constant
- Curing Conditions
- Stability (Chemical & Dimensional)
- Encapsulation
- Toxicology
- Recycling
- Others

Challenges, Issues & Opportunities for Printed Electronics

- Drivers & Barriers To Implementation
- Challenges In Attaining Commercialization: Printing, Materials & Both
- Why Aren't We All Getting Rich?
- How I Can (Help) Make You Rich
- Trends & Opportunities

A Vision for the Future

4:00 p.m. Adjournment

Course Leader

[Dr. Bruce E. Kahn, Printed Electronics Consulting, Rochester, New York](#)

See Next Page for complete biographical

Printed Electronics Course Leader

**Dr. Bruce E. Kahn, Printed Electronics Consulting,
Rochester, New York**

Dr. Kahn is a consultant specializing in the multidisciplinary fields of printed electronics, organic electronics, nanotechnology, smart packaging, and Radio Frequency Identification (RFID). In addition to helping companies and governmental organizations, he writes books, articles and reports, and conducts training sessions and workshops.

Prior to founding Printed Electronics consulting, Dr. Kahn was a Professor at the Rochester Institute of Technology, where he started the Printable Electronics research program. Dr. Kahn's research group pursued the investigation, assessment, and development of the use of printing techniques (particularly high volume printing processes) and materials for the fabrication of electronic devices. Their work produced (both small and production scale) and characterized antennas for Radio Frequency Identification (RFID) tags, and assessed the process capabilities of a number of different printing techniques used for patterning conductive features. Dr. Kahn has developed and applied technology for printing chemical sensors. His group printed RFID antennas directly onto corrugated cardboard substrates, and investigated the affects of environment and conditioning on the electrical conductivity.

Dr. Kahn is currently investigating other techniques for patterning functional organic materials, such as liquid dispensing, and has created working organic transistors using this technique.

Dr. Kahn has a Ph.D. in Chemistry from the University of Nebraska, and a S. B. in Chemistry from the University of Chicago. He is the author of over 75 publications, including the books *Developments in Printable Organic Transistors*, (Intertech-Pira, 2005), *Printed and Thin Film Photovoltaics and Batteries*, (IDTechEx, 2007), and *Printed Displays* (IDTechEx, 2008). He is a frequent lecturer and author, and regularly teaches workshops in the US and abroad.



THE LOCATION

Sugarloaf is a major eastern ski resort and summer recreational area located in Carrabassett Valley in the western mountains of the State of Maine. Celebrating over 50 year of operation, Sugarloaf offers a wide range of summer activities including golf, hiking, mountain biking, fly fishing, swimming, white water rafting, canoeing or just relaxing in a beautiful, natural environment. It is a great place to combine your learning experience at IMI's **Digital Printing Summer Camp 2008** and a family vacation where you can experience the wonders of nature and healthy outdoor activities such as:

Golf

The Sugarloaf Golf Club is the number one rated course in Maine and Golf Digest rated the course one of the top 75 resort courses in the United States. Designed by Robert Trent Jones, Jr., the 18-hole course is known for its quality of play and scenery. It plays through the valley with mountains overhead and winds over and around the Carrabasset River.

The awe-inspiring 18-holes that make up the Sugarloaf Golf Club & Golf School have proven, for so many golfers, an unforgettable experience. An experience punctuated by the rugged, demanding terrain that is the hallmark of mountain golf.

www.sugarloaf.com/GolfCourse/index.html

Hiking

Hiking opportunities abound in the Western Maine Mountains. You can hike the 4,237 foot summit of Sugarloaf right outside the hotel or to one of the surrounding mountains in the Bigelow Range. You can also connect with the Appalachian Trail www.matc.org and the newly opened Maine Huts & Trails system www.mainehuts.org. Hiking trails for all abilities provide wilderness beauty on many miles of alpine terrain.

Mountain Biking

Sugarloaf maintains mountain bike trails featuring some of the choicest single track in New England, wide open dirt roads, the historic Narrow Gauge Railroad bed (don't worry-the tracks and ties have been removed) along the picturesque Carrabasset River and a trail network that has supported some of the biggest mountain bike races in the Northeast.

White Water Rafting

The Kennebec River is one of the most popular whitewater rafting runs in the country. It combines a beautiful wilderness setting with Class 5 rapids and narrow passages. A full day Kennebec trip is a great family or group adventure for ages 12 and up. Trips can be arranged with numerous rafting companies. www.raftmaine.com

Moose Watching

Maine's infamous moose love the Carrabasset Valley. Hotel staff can direct you to spots where you will have a good chance of seeing moose or you can join organized "Moose Cruises." At the very least, you'll enjoy great wilderness scenery and the setting sun over Crocker Mountain.



Just for For the Kids

Sugarloaf offers **Outdoor Adventure Camp July 7-August 15, 2008** for kids **ages 4 to 13**. Camp hours are Monday-Friday, 9 AM - 3:30 PM. Campers may participate for single days, or by the week. Reservations are required to ensure appropriate staffing levels. Same-day enrollment will depend on space availability in each age group. For activities, fees and registration info, visit:
www.sugarloaf.com/EventsActivities/camp.html

Planning Your Supplemental Recreation

We could go on about fly fishing, canoeing, swimming in a crystal clear mountain stream, relaxing wilderness picnics, etc. but we think you get the idea that combining some outdoor, wilderness related activities with IMI's **Digital Printing Summer Camp 2008** would be fun and easy to do. Most of these activities can be done on your own or you can make arrangements by contacting Sugarloaf at +1-207-237-2000.

When you register for one or more of the courses at IMI's **Digital Printing Summer Camp 2008**, we will provide you with an information package covering summer activities and recreational opportunities at Sugarloaf and in the adjacent areas.

Useful Web Sites for Sugarloaf/USA Area Information

Sugarloaf Resort - www.sugarloaf.com

Town of Carrabassett Valley, Maine - www.carrabassettvalley.org

The Stanley Museum - www.stanleymuseum.org

University of Maine at Farmington - www.umf.maine.edu

State of Maine - www.state.me.us

Dress for IMI's **Digital Printing Summer Camp 2008** will be casual - **you'll be in Vacationland!**



Getting to Sugarloaf

To access all this wonderful natural beauty, it is obvious that Sugarloaf is not located in an urban center! However, it is closer than you think.

For those flying into the Northeastern U.S., we recommend flying into one of the following airports and renting a car so that you can enjoy the wonderful scenic auto routes throughout New England as you travel to Sugarloaf.

Portland International Airport, Portland, Maine – 2 ½ hour drive

Bangor International Airport, Bangor, Maine – 2 ½ hour drive

Manchester Airport, Manchester, New Hampshire – 3 ½ hour drive

Logan International Airport, Boston, Massachusetts – 4 hour drive

For those of you located in the Northeastern U.S. or once you've rented your car, you will want to plan your trip to and from Sugarloaf to pass by such places as L.L. Bean in Freeport, Maine, the Old Port Waterfront District of Portland, Maine, numerous small coastal and lake communities and many of the other attractions of Maine – that's why it says "Vacationland" on our license plates.

Again, when you register for one or more of the courses at IMI's **Digital Printing Summer Camp 2008**, we will provide you with an information package with detailed directions and options for enhancing your trip, whether it be just for a brief visit or more extended vacation.

Don't Miss IMI's Other Upcoming Programs

Visit www.imiconf.com for details & updates

Digital Printing Summer School 2008

Ink Jet Academy: Theory of Ink Jet Technology

July 8-9, 2008

Surface Tension, Wetting & Capillarity

July 8-9, 2008

Ink Jet Ink Manufacturing

July 10-11, 2008

Piezo Printhead Technology

July 10-11, 2008

London, UK

Ink Jet Academy: Theory of Ink Jet Technology

November 10-11, 2008

UV Ink Jet Printing Course

November 10-11, 2008

16th Annual European Ink Jet Printing Conference

November 12-14, 2008

Lisbon, Portugal

5th Annual Security Printing Conference

November 17-19, 2008

Baltimore, Maryland

Ink Jet Academy: Practice of Ink Jet Technology

November 17-20, 2008

Letchworth, UK

12th Annual Toner & Toner Chemicals Conference

Winter, 2009

Dates & U.S. Location to be Announced

18th Annual Ink Jet Printing Conference

Winter, 2009

Dates & U.S. Location to be Announced

20th Annual Thermal Printing Conference

Spring, 2009

Dates & U.S. Location to be Announced

REGISTRATION INFORMATION: IMI's Digital Printing Summer Camp 2008



Registration Fees:

\$1095 per registrant per course

\$995 for second person and each additional registrant from same company to same course or for same registrant to additional courses when registered as a group.

The registration fee for each course includes attendance at all course sessions, all scheduled meals shown in the program agenda, coffee breaks and the course reference binder and 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 conference will be charged a \$300 cancellation fee.

To register for IMI's **Digital Printing Summer Camp 2008**, submit the registration form below 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

Ink Jet Ink Manufacturing Course
July 28-29, 2008

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July 31-August 1, 2008

Mr.____ Ms.____ Miss____ Mrs.____ Dr.____

NAME _____

JOB TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

COUNTRY _____

PHONE _____ FAX: _____

EMAIL _____

Invoice Me

Send Credit Card Authorization Form

HOTEL INFORMATION

IMI's **Digital Printing Summer Camp 2008** is being held at the Sugarloaf Mountain Hotel located at the Sugarloaf Ski Area base village. The 120 rooms and suites offer modern comfort in natural splendor and appeal of the Western Maine Mountains.

Hotel reservations are the responsibility of each registrant. **Early booking is advised as the reduced rate is guaranteed only until July 7, 2008.** Phone +1-800-843-5623 or +1-207-237-2000 (Ask for Sugarloaf Mountain Hotel Reservations) to make hotel reservations.

To receive the special meeting rate of \$89 (single or double occupancy) in alcove room or \$99 (single or double occupancy) in superior queen room, you must refer to the Information Management Institute, Inc. group.

Reservation agents can also provide information on suites and condominium accommodations available throughout the resort.

All Sugarloaf Mountain Hotel rooms are air conditioned. Complimentary high speed internet access is available in the Sugarloaf Mountain Hotel. The Sugarloaf Sports and Fitness Center, outdoor pool and tennis courts are also available for guest use at no additional charge. Outdoor recreation possibilities such as golf, hiking, canoeing, mountain biking, rafting, moose watching, etc. abound in the area.

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.



The Sugarloaf Mountain Hotel address is

Sugarloaf Mountain Hotel
5092 Access Road
Carrabassett Valley, Maine 04947
Phone: 207-237-2222 Fax: 207-237-2874