



Digital Printing *Summer Camp*



Grand Summit Resort Hotel Sugaloaf/USA October 2000. Photo: Warren Marr

Papers for Digital Printing

A 1 1/2 day in-depth course describing paper-making and coating, the parameters of papers and coatings and the requirements for electrophotography and ink jet printing, led by Alan Winslow of Weyerhaeuser

Ink Jet Academy

Theory of Ink Jet Technology

A 1 1/2 day comprehensive course describing the latest advances in ink jet and ink technologies, led by Mike Willis of Pivotal Resources & Alan Hudd of Xennia Technology



Surface Tension, Wetting & Capillarity

A 1 1/2 day course describing in detail the issues surrounding the wetting of printhead materials and substrates, led by Professor Abraham Marmur, Technion - Israel Institute for Technology

IMI

IMI runs the largest and most comprehensive conference and seminar program in the digital printing industry. Each year over 2,000 industry technical and management personnel from over 600 companies attend approximately 20 programs covering ink jet, thermal, laser, high speed digital printing, textile, industrial and other forms of digital printing.

The Courses

IMI brings together three of the most acclaimed technical courses currently offered in the industry. Each has been prepared and is presented by acknowledged leaders in their field. These are proven courses previously presented to major vendors within the digital printing industry. Completely up to date, there is simply no better information available.

The location

Sugarloaf/USA is a major Eastern ski resort and summer recreational area located in Carrabassett Valley in the western mountains of Maine. Celebrating their 50th year of operation, Sugarloaf/USA offers a wide range of summer activities including golfing, hiking, mountain biking, fly fishing, swimming, white water rafting, canoeing or just relaxing in a beautiful, natural environment.

Summer Camp Overview

IMI brings together three of the top courses available for digital printing. Last year's Summer School in the UK was a great success and this year we offer the same courses in the USA including an updated Ink Jet Academy.

Conferences are a great way of staying up to date, but the IMI Summer Camp is designed differently. Here, in the relaxed atmosphere of beautiful Maine we offer courses to give you a deeper grounding in some of the key technologies for today's digital printing industry.

Papers for Digital Printing should appeal to all of those who need an understanding of what paper manufacturers and coaters can do to optimize print quality - for electrophotographic printers such as the Indigo and Xeikon products, or for desk-top ink jet products.

The Ink Jet Academy has been running for 3½ years and well over 800 have attended the course so far. Both technical and marketing staff will appreciate the broad introduction to ink jet printhead and ink technology offered at The Ink Jet Academy.

Surface Tension, Wetting & Capillarity focuses on the all important solid/liquid/air interfaces that contribute to the behavior of both ink in printheads and ink on substrates. Think of it as an advanced ink jet course.

We urge you to take advantage of this unique opportunity to expand your knowledge of digital printing and so look forward to welcoming you to the IMI Summer Camp in beautiful Maine.

Alvin Keene
Information Management Institute



Gary Pearl Photo

Useful web sites

Sugarloaf/USA
www.sugarloaf.com

Town of Carrabassett Valley, Maine
www.carrabassettvalley.org

Sugarloaf Area Chamber of Commerce
www.sugarloafareachamber.org

The Stanley Museum
www.stanleymuseum.org

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

State of Maine
www.state.me.us

Maine Tourism
www.visitmaine.com
www.maineattraction.com

Week at a glance

	8 am	9 am	10 am	11 am	12 noon	1 pm	2 pm	3 pm	4 pm	5 pm	6 pm	7 pm	
Mon 30th					Registration			Papers for Digital Printing				Reception & Dinner	
Tues 31st	Breakfast	Papers for Digital Printing				Lunch	Papers for Digital Printing			Registration			Reception & Dinner
Weds 1st	Breakfast	Ink Jet Academy				Lunch	Ink Jet Academy						Reception & Dinner
Thurs 2nd	Breakfast	Ink Jet Academy				Lunch	Surface Wetting, Tension & Capillarity						Reception & Dinner
Fri 3rd	Breakfast	Surface Wetting, Tension & Capillarity				Lunch	Surface Wetting, Tension & Capillarity						

Papers for Digital Printing

Monday 30th - Tuesday 31st July 2001

1.5 day course
meals included

Ink, paper and printer are all synergistic components of any imaging system. Imaging systems will only work as well as the lowest performing member of this triad. Paper's role in any printing process is to pass through the printer without affecting reliability and to provide a surface which yields the highest possible image quality to enhance communications.

The rapidly growing digital printing technologies of electrophotography and ink jet demand media properties and characteristics that are often quite different from the more traditional forms of printing; such as offset and rotogravure. An understanding of paper media, properties, and performance as required by electrophotographic and ink jet printers is essential background knowledge for hardware manufacturers, paper makers, ink and toner manufacturers participating in these technologies.

There are significant challenges to providing high quality paper media for current and future digital printing technologies. This course will provide a better understanding of those challenges as well as a brief look into the future.

Monday, 30th July 2001

11.00 am - 2.00 pm Registration

2.00 pm Opening session

Welcome & Introductions

Alvin G. Keene, President
Information Management Institute, Inc.

SESSION 1 INTRODUCTION

PAPERMAKING PROCESS BASICS

- Forestry
- Pulping/bleaching
- Refining
- Forming
- Drying
- Coating
- Finishing

DIGITAL PRINTING OVERVIEW TRENDS AND DIRECTIONS

PAPER'S ROLE IN DIGITAL PRINTING

KEY PAPER PROPERTIES FOR DIGITAL PRINTING

- Electrophotography
- Ink jet

5.00 pm Adjournment

6.30 Reception & Dinner

Tuesday 31st July 2001

7.30 - 8.00 am Breakfast

8.00 am Session 2

PAPER PROPERTIES CRITICAL TO DIGITAL PRINTING

OPTICAL / AESTHETIC PROPERTIES

- Brightness
- Whiteness
- Opacity
- Colour
- Smoothness
- "Feel"
- Stiffness, caliper, basis weight
- Permanence

FUNCTIONAL PROPERTIES (PRINT TECHNOLOGY DEPENDENT)

Physical/Core properties

- Basis weight
- Stiffness
- Caliper
- Grain orientation
- Moisture content
- Formation
- Pore structure
- Cleanliness
- Dimensional stability

Surface properties

- Surface energy/chemistry
- Smoothness
- Electrical resistivity
- Surface friction

UNIFORMITY – A KEY CHARACTERISTIC

PRINT QUALITY AND THE ROLE OF PAPER

Key print quality attributes

- Contrast
- Edge sharpness
- Solid noise
- Tone reproduction

MANUFACTURING PAPER FOR OPTIMAL IMAGE QUALITY

- Electrophotography
- Ink jet
- Engineering paper for digital printing
- New sizes & formats
- More rapid development cycles
- New surface treatments & materials

12.00 noon Lunch

1.00 pm Session 3

NEW CHALLENGES AND OPPORTUNITIES FOR DIGITAL PRINTING PAPERS

PAPER MULTIFUNCTIONALITY

NEW PRINTING TECHNOLOGIES

- Impact on paper characteristics
- Structure & surfaces

COOPERATION BETWEEN INK, PRINTER, HARDWARE MANUFACTURERS

PAPER DISPLACEMENT BY DIGITAL INFORMATION TECHNOLOGIES

4.00 pm Adjournment

ALAN T. WINSLOW

Alan Winslow is a 27-year veteran of the Weyerhaeuser Company, located in Tacoma, Washington, USA. He is currently the team leader of the Printing Technologies and Support Team at the Weyerhaeuser Technology Center.

This team is responsible for printing research and is involved in basic research, product development and technology implementation across both traditional and digital printing platforms as it relates to paper products: containerboard, bleached paperboard,

newsprint and fine paper.

Mr. Winslow's current interests include paper surface characterization, image quality evaluation, ink jet, electrophotographic and offset paper development, plus future trends in traditional and electronic printing technologies.

He holds both a BS in physics and a BS in chemistry from the University of Puget Sound and an MS degree in forest product engineering from the University of Washington.

Ink Jet Academy

Theory of Ink Jet Technology

Wednesday 1st - Thursday 2nd August 2001

1.5 day course
meals included



THE THEORY OF INK JET TECHNOLOGY

THE INK JET ACADEMY provides a program and format to get an expert start in the ink jet field, to get an update or to open up new ink jet fields.

Understanding the fundamentals is a prerequisite to any development. The Ink Jet Academy offers a one and one-half day course covering the basic theory of all the diverse types of ink jet technology in use today. Learn how the printheads work, what materials are used in their fabrication and the theory of operation. Learn about inks and media used, how they are formulated and the supply and support systems used. This course assumes a basic scientific knowledge and will provide a useful background to anyone entering the ink jet industry or seeking an efficient update of ink jet technology.

Tuesday 31st July 2001

3.00 pm -5.00 pm Registration

6.30 pm Reception & Dinner

Wednesday 1st August 2001

7.30 am -8.00 am Breakfast

8.00 am Opening session

Welcome & Introductions

Alvin G. Keene, President

Information Management Institute, Inc.,
Kingfield, Maine, USA

Dr Alan Hudd, Xennia Technology Ltd

Dr Chris Evans, Xennia Technology Ltd

Mike Willis, Pivotal Resources Ltd

INTRODUCTION

- Why ink jet?
- Course overview
- Types of ink jet technology
- Brief history

DESK-TOP INK JET

- Drop on demand technologies
- Thermal ink jet
- Piezo ink jet
- State of the art
- Markets & applications

INDUSTRIAL INK JET

- Industrial drop on demand
- Continuous ink jet
- Applications
- Market development
- Printer OEMs

COURSE LEADERS

Mike Willis, Managing Director,
Pivotal Resources Limited,
Cambridge, England

Mr. Willis founded Pivotal Resources, a consultancy in the digital printing industry, in 1995. He has experience in a wide range of technologies and markets including drop-on-demand and continuous ink jet printing, electrophotographic technology, greyscale and color reproduction methods and light sensitive materials.

Prior to founding Pivotal Resources, Mike was Director of Electronic Printing at Meta Generics. Mr. Willis was a founder member of Xaar - a spin-off company from Cambridge Consultants Ltd., where Mr. Willis spent ten years working in a number of roles, culminating as Group Leader of Nonimpact Printing. Before that, he spent six years at Gestetner Ltd., developing photocopier processes.

Mr. Willis graduated from the Polytechnic of Central London with an Honours degree in Photographic Sciences.

Dr. Alan L Hudd, Managing Director,
Xennia Technology Limited,
Royston, Hertfordshire, England

In 1996, Dr. Hudd co-founded Xennia Technology, the world's first independent contract ink jet technology house dedicated to developing new ink jet inks for both the industrial and office ink jet industries.

In 1987, Alan joined Domino Printing Sciences and spent eight years as the Fluids Technology Manager, developing a wide range of ink jet ink for diverse applications and is credited with a number of patents and significant innovations within the industrial ink jet industry. Prior to Domino, 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.

Dr. Chris Evans, Technical Director,
Xennia Technology Limited
Royston, Hertfordshire, England

Dr. Evans joined Xennia Technology in 1998 as Projects Manager and is responsible for all aspects of their ink jet ink and applications development programs.

From 1996 Chris was Laboratory Manager of Imation's European Research Centre, playing a key part in the development of DryView™ Medical Imaging film, and Matchprint™ Laser color proofing material together with various ink jet media. Chris joined 3M in 1984, working as a polymer chemist at their UK research laboratory on a range of products, including magnetic recording tapes, ink jet and color proofing media and electrophotographic materials. He holds over 8 patents on polymer materials for use in dispersion formulation.

Dr. Evans graduated with a BA Honours degree in Natural Sciences and a Ph.D. in organic chemistry from Cambridge University, UK and is a Fellow of the Royal Society of Chemistry.

INK TECHNOLOGY

- Evolution of ink jet inks
- Ink jet ink formulations
- Ink properties
- Ink types
- Aqueous-based
- Oil-based
- Solvent-based
- Phase change
- UV curable

12.00 noon - 1.00 pm Lunch

DOD PRINthead DESIGNS AND VENDORS

- Thermal ink jet
- Piezo ink jet
- Moving wall technology

MATERIALS FOR INK JET INKS

- Critical materials
- Colorants
- Polymers
- Solvents and additives
- Vendors
- Ink distribution chain

DOD PRINthead DESIGN CONSIDERATIONS

- Drop ejection frequency
- Crosstalk
- Life
- Drive voltages
- Temperature control
- Drop placement accuracy
- Considerations for page arrays

5.00 pm Session closes

6.30 pm Reception & Dinner

Thursday, 2nd August 2001

7.30 - 8.00 am Breakfast

8.00 am Session 3

INSTRUMENTATION FOR INK JET DEVELOPMENT

- Reliability
- Jet characteristics
- Quality control

MEDIA

- Paper & coatings
- Drying mechanisms
- Light & waterfastness
- Non-paper media

PRINT QUALITY

- The 3 factors affecting print quality
- Fundamental parameters
- Technologies to improve print quality

SYSTEM DESIGN ISSUES

- Resolution & nozzle pitch
- Filling/bubble removal
- Improving image quality
- Photo printing techniques
- Housekeeping
- Ink supply and replacement

FUTURE DEVELOPMENTS

- Evolution Of current technology
- New developments
- Status and developments of Ink Technology

12.00 noon Adjournment
Lunch

2001 International Digital Printing Directory

Information Management Institute, Inc. is pleased to announce the 2001 Edition of its International Digital Printing Directory.

IMI's 2001 Edition International Digital Printing Directory contains contact information and descriptions of more than 350 companies in the digital printing industry. The names of these companies can be viewed on IMI's web site:
<http://imi.maine.com>.

Available now for \$500, each subscriber to the 2001 Edition International Digital Printing Directory receives:

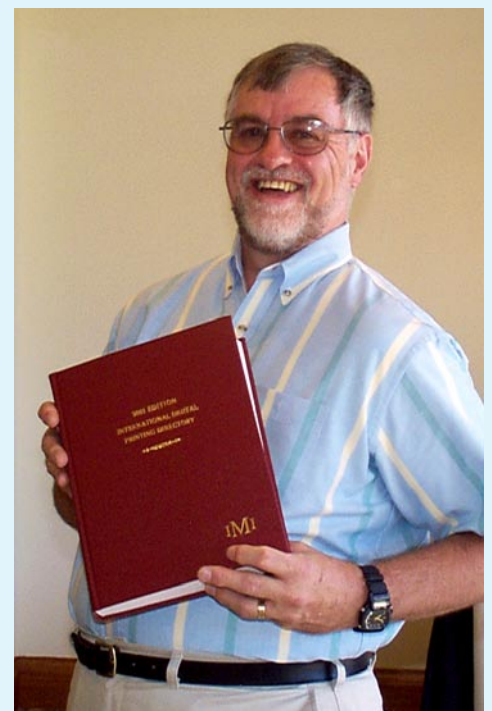
- One copy of the hard bound 2001 Edition International Digital Printing Directory

- One copy of the 2001 Edition International Digital Printing Directory Addendum to be published by September 2001

- Use of IMI's Inquiry Service through which IMI will research companies not currently included in the directory.

To order the 2001 Edition International Digital Printing Directory, either:

- visit IMI's web site at <http://imi.maine.com>
- or submit payment of \$500 to Publications Dept., Information Management Institute, Inc., RR1 Box 2030, Kingfield, ME 04947 USA



Al Keene, President of IMI with the 2001 International Digital Printing Directory

1.5 day course
meals included

Surface Tension, Wetting & Capillarity

Thursday 2nd - Friday 3rd August 2001

This course will present the concepts and measurement techniques that are required in order to understand how surface tension, wetting and capillarity affect printing processes. The first goal will be to develop the understanding of surface tension and interfacial tension, which are essential properties of the materials involved in printing systems (eg. ink, plastic substrates, paper). Then, the various modes of wetting and capillary penetration, which are basic processes underlying most printing operations, will be discussed.

Intended audience

This course is directly relevant to anyone working in the fields of ink jet ink formulation and development, substrate development - such as papers, films, coatings and metal and glass substrates - and the design and development of ink jet printheads.

Thursday, 2nd August 2001

11.00 am - 1.00 pm Registration

1.00 pm Opening session

Welcome & Introductions

Alvin G. Keene, President

Information Management Institute, Inc.,

Professor Abraham Marmur

Technion - Israel Institute of Technology

SESSION 1 SURFACES AND INTERFACES

SURFACE TENSION AND INTERFACIAL TENSION

- Models of interfaces
- Units and typical values
- Temperature dependence

SHAPES OF DROPS AND BUBBLES

- The Young-Laplace equation
- Applications of the Young-Laplace equation
- Very small drops and bubbles

SURFACE TENSION MEASUREMENT

- Force methods
- Maximum bubble pressure
- Shape methods

5.00 pm Adjourment

6.30 pm Reception & Dinner

Friday, 3rd August 2001

7.30 am -8.00 am Breakfast

SESSION 2 WETTING ON SURFACES

CONTACT ANGLES -

THEORY & MEASUREMENT

- Contact angles on ideal surfaces
- Contact angle on real surfaces
- Contact angle measurement

CONTACT ANGLE HYSTERESIS

- The hysteresis concept
- The mechanism of contact angle hysteresis
- Implications to measurement

DYNAMIC WETTING PHENOMENA

- Phenomenology
- Kinetics of wetting
- Wetting by liquid mixtures
- Wetting by surfactant solutions
- Wetting of rough surfaces

12.00 noon - 1.00 pm Lunch

1.00 pm

SESSION 3 WETTING IN POROUS MEDIA

LIQUID PENETRATION INTO CAPILLARIES

- Mechanism of penetration
- Height of rise and kinetics of penetration
- Penetration of small drops

LIQUID PENETRATION INTO POROUS MEDIA

- Height of rise
- Penetration of small drops into paper

CHARACTERIZATION OF POROUS MEDIA

- Kinetics of horizontal flow
- Kinetics of vertical flow

3.00 pm Adjourment

Professor Abraham Marmur
Department of Chemical Engineering
Technion - Israel Institute of Technology
Haifa, Israel

Professor Abraham Marmur received his Ph.D. in 1974 from the Technion - Israel Institute of Technology. Then he spent two years as a post-doc at the State University of New York at Buffalo. Later he was a visiting associate professor at the University of Wisconsin - Madison, and a visiting scientist at the IBM Almaden Research Center.

Professor Marmur has been working in the field of interfacial phenomena and wetting for over twenty five years. He has published many papers on the theory and practice of wetting processes, and has been consulting for major companies involved in the design and utilization of ink jet printing systems.

He has also participated in many international conferences and has been active in lecturing on interfacial phenomena in universities and industrial sites in many countries. In addition, Professor Marmur was an editor of Reviews in Chemical Engineering, and was on the advisory committee of Journal of Colloid and Interface Science and Journal of Adhesion Science and Technology.

Professor Abraham Marmur
Department of Chemical Engineering
Technion - Israel Institute of Technology
32000 Haifa, Israel
TEL. & FAX: + 972 4 829 3088
E-MAIL: marmur@tx.technion.ac.il

Sugarloaf USA, Maine

If outdoor recreation interests you, the following information highlights some of the opportunities available to you:

Golf

The Sugarloaf Golf Club is the number one rated course in Maine and Golf Digest has rated the course one of the top 75 resort courses in the United States, “top 10 for memorability” and a “top 10 for aesthetics”. 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.



Gary Pearl Photo

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.

Carrabasset Valley Recreation Program

The municipal recreation program offers a state-of-the-art “Anti-Gravity” facility with skate park, climbing wall, etc. plus a day camp program for children open to area visitors.

Hiking

Hiking opportunities abound in the Western Maine Mountains. You can hike the 4,237 foot summit of Sugarloaf from right outside the hotel or to one of the surrounding mountains in the Bigelow Range. You can also connect with the Appalachian Trail. Hiking trails for all abilities provide wilderness beauty on many miles of alpine terrain.

Mountain Biking

Sugarloaf/USA maintains over 50 miles of mountain bike trails featuring some of the choicest single track in New England, wide open dirt roads, the historic Narrow Gauge Railroad bed along the picturesque Carrabasset River (don't worry-the tracks and ties have been removed) and a trail network that has supported one of the biggest mountain bike races in the East – The Widomaker Challenge.

White Water Rafting

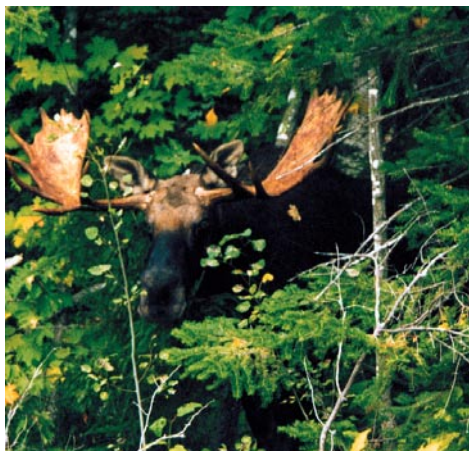
The Kennebec River is one of the most popular whitewater rafting runs in the country. It combines a beautiful wilderness setting with Class 5 rapids and narrow passages. A full day Kennebec trip is a great family or group adventure for ages 12 and up. Trips can be arranged with numerous rafting companies and Sugarloaf/USA has an exclusive partnership with Northern Outdoors, a premiere whitewater outfitter.



Gary Pearl Photo

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.



Come and see me in Maine!

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 would be fun and easy to do. Most of these activities can be done on your own or you can make arrangements by contacting Lynn Sundelin at Sugarloaf/USA at 207-237-2000.

When you register for one or more of the courses at IMI's DIGITAL PRINTING SUMMER CAMP we will provide you with an information package covering summer activities and recreational opportunities at Sugarloaf/USA and in the adjacent areas.



Gary Pearl Photo

Getting to Sugarloaf/USA

To access all this wonderful natural beauty, it is obvious that Sugarloaf/USA 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/USA.

Portland International Airport, Portland, Maine – 2½ hour drive
Bangor International Airport, Bangor, Maine – 2½ hour drive
Manchester Airport, Manchester, New Hampshire – 3½ 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/USA 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, 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.



Digital Printing Summer Camp

REGISTRATION INFORMATION

Papers for Digital Printing Registration Fee: \$895 per registrant

Ink Jet Academy Registration Fee: \$995 per registrant

Surface Tension, Wetting & Capillarity Registration Fee: \$895 per registrant

Note: A \$100 discount will be given to additional registrants to the same course OR the same registrant for multiple courses.

The registration fee for each program includes attendance at all that program's sessions, scheduled meals and breaks plus the program reference binder.

Cancellations will receive a 100% refund if made 48 hours prior to the start of the conference. Substitutions may be made at any time.

NOTE: Hotel reservations are the responsibility of each registrant.

To receive the special meeting rate of \$80 for single or double occupancy, you must identify yourself as a registrant to IMI's DIGITAL PRINTING SUMMER CAMP. EARLY BOOKING IS ADVISED as the reduced rate is guaranteed only until July 9, 2001. Phone +1-800-527-9879 to make hotel reservations.

To register for the Digital Printing Summer Camp courses, submit the registration form with payment to

Susan Rundlett, Conference Administrator
Information Management Institute, Inc.
RR1 Box 2030
Kingfield, ME 04947
USA

You may reserve space by calling 207-235-2225 or sending a fax to 207-235-2226 or via email to imi@somtel.com
You may also register on-line at IMI's web site <http://imi.maine.com>

Check courses desired!

REGISTRATION FORM

- Papers for Digital Print, July 30-31, 2001
- Ink Jet Academy, August 1-2, 2001
- Surface Tension, Wetting & Capillarity, August 2-3, 2001

NAME

TITLE

COMPANY

ADDRESS

CITY STATE ZIP

COUNTRY

PHONE FAX:

EMAIL

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 U.S. or European bank account will be provided upon request.

The Sugarloaf Grand Summit Hotel

The DIGITAL PRINTING SUMMER CAMP is being held at the Sugarloaf Grand Summit Hotel located at the Sugarloaf/USA base village in Carrabassett Valley, Maine. 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. To receive the special meeting rate of \$80 for single or double occupancy, you must identify yourself as a registrant to IMI's DIGITAL PRINTING SUMMER CAMP. EARLY BOOKING IS ADVISED as the reduced rate is guaranteed only until July 9, 2001. Phone +1-800-527-9879 to make hotel reservations.

All Sugarloaf Grand Summit Hotel rooms are air conditioned, equipped with TV and VCRs, and the hotel has its own health club facility. An outdoor pool and tennis courts are also available for guest use.