12TH TAPPI ADVANCED COATING FUNDAMENTALS SYMPOSIUM

Commercialization! From Idea to Product
Join the world’s preeminent paper coating experts as they discuss successes, failures and best practices employed to bring their best laboratory concepts to commercial reality.

September 10-12, 2012
Loews Atlanta • Atlanta, Georgia USA

- Fluid Mechanics of Coating and Printing
- Novel Paper Coatings
- Mechanics of Printing
- New and Emerging Coating Process Technologies
- Nanotechnology in Paper Coating

- Coating Structure Analysis
- Novel Coating Structures
- Heat Transfer Related to Paper Coating
- Commercialization Summary: Future Products and Further Research

www.tappi.org/12ACF

Co-located with the 16th International Coating Science and Technology Symposium (IS CST)

Deluxe Partner:

BYK Additives & Instruments
The 12th TAPPI Advanced Coating Fundamentals Symposium is a presentation and networking forum for paper coating professionals to share their research findings or leading edge developments relating to paper surface treatment, converting and printing operations with the world’s experts.

**WHY ATTEND?**

For over twenty years, the TAPPI Advanced Coating Fundamentals Symposium (ACFS) has been the preeminent forum to present and discuss leading edge, fundamental research in paper coating, surface properties, converting and printing operations. Participants include the world’s leading experts, suppliers, university researchers, paper manufacturers, product development and technical service professionals and printing and graphic arts specialists.

**Non-financial Co-Sponsors:**

China Technical Association of Paper Industry

**SYMPOSIUM LEADERSHIP**

Douglas W. Bousfield
Technical Program Co-Chair
University of Maine

Rajan R. Iyer
Technical Program Co-Chair
BASF

**CONFERENCE PLANNING COMMITTEE:**

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VTT Technical Research Centre of Finland

Lars M. Jarnstrom
Karlstad University

John Kettle
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Anthony V. Lyons
IMERYS

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Sappi Fine Paper N.A.

Janet S. Preston
IMERYS Minerals Ltd.

Joachim Schoelkopf
OMYA Development AG

Nick G. Triantafillopoulos
OMNOVA Solutions

David J. E. Vidal
FPInnovations
KEYNOTE PRESENTATIONS:
WHAT IT TAKES TO COMMERCIALIZE AN INNOVATION

These industry leaders will present case studies on commercialization of breakthrough technologies and products.

Mr. Tony Clinch, Technical Director, Corporate Process Research Laboratory, 3M
Dr Babu DasGupta, Program Director, Industrial and University Cooperative (I/UCRC) and Directorate for Engineering Industrial Innovation, NSF

Mr. Terry L. Stout, Director, Industry Collaborations and Affiliated Licenses, Georgia Tech Research Corporation
Dr. Luigi Sartor, VP of Process Technology, Avery Dennison

ADVANCED COATING FUNDAMENTALS DINNER
Tuesday, September 11, 2012
6:30 – 9:00 pm

Enjoy a memorable evening with your coating colleagues at a historic Atlanta landmark. Built in 1904, Rhodes Hall was originally the residence of Rhodes Furniture founder Amos Rhodes, today it is a house museum and one of the most unique venues in Atlanta. Your evening will include a menu of fine Southern cuisine and a tour of the home.

Transportation and dinner is included with your registration.
Guests are invited to join for $85 per person.
Monday, September 10

07:15 - 08:15  Breakfast

08:15 - 12:00  J1 & J2 - Plenary Session: What It Takes to Commercialize an Innovation (Joint with ISCST)

“Commercialization of Innovation at 3M”
Mr. Tony Clinch, Technical Director, Corporate Process Research Laboratory, 3M

“Overview of Innovation Programs at NSF”
Dr Babu DasGupta, Program Director, Industrial and University Cooperative (I/UCRC) and Directorate for Engineering Industrial Innovation, NSF

“Innovating and Implementing Die Coating Technology Globally”
Dr. Luigi Sartor, VP of Process Technology, Avery Dennison

“Technology Innovation: Get Creative or Go Home!”
Mr. Terry L. Stout, Director, Industry Collaborations and Affiliated Licenses, Georgia Tech Research Corporation

“Commercializing an Emerging Technology for an Emerging Market: How Hard Can It Be?”
Dr. Kurt Schroder, NovaCentrix

12:00 - 13:30  Lunch

13:30 - 15:00  ACF1 - Fluid and Solid Mechanics of Coating, Printing

Session Chair: David Vital, FPIInnovations

“Coating Models for an Analysis of Cracking Behavior Between Folded Paper and Creased Board”
Christophe Barbier, Karlstad University
Peter Rättö, Joanna Hornatowska, Innventia

“Modeling of Lateral Thickness Variation in a Liquid Curtain with Edge Guide”
Yingfeng Shen, Annaleena Kokko, VTT Technical Research Centre of Finland

“Prediction of Forces on Paper During Half Tone Dot Printing”
Harrison Gates, Douglas W. Bousfield, University of Maine, Orono

15:00 - 15:30  Break

15:30 - 17:00  ACF2 - Novel Paper Coatings

Session Chair: Joachim Schoelkopf, Omya Development, AG
“Conductive Surfaces on Coated Papers by Flexographical Printing”

Dimitar Valtakari, Roger Bollström, Martti Toivakka, Jarkko J. Saarinen,
Abo Akademi University, Finland; Mikko Tuominen, Hannu Teisala, Jurkka Kuusipalo,
Tampere University of Technology, Finland

Jun Uozumi, Jarkko J. Saarinen, Hokkai-Gakuen University, Sapporo, Japan

The Effects of Coating Structure and Water-Holding Capacity on the Oxygen-Scavenging
Capacity of Enzymes Embedded in the Coating Layer”

K. Johansson, C. Johansson, L. Järnström, Karlstad University, Karlstad, Sweden
H. Christophliemk, Tampere University of Technology, Tampere, Finland
L. J. Jönsson, Umeå University, Umeå, Sweden

“Development of Biocompatible Flexible Films with Very High Barriers Properties Against
Water, Grease and Gases Using Smart Reacto-Chromatogenic Nanoparticles”

Daniel Samain, BT3 Technologies

17:00 - 18:30 J3 - Poster Session (Joint with ISCST)

Tuesday, September 11

07:15 - 08:15 Breakfast

08:15 - 11:30 J4 - Mechanics of Printing (Joint with ISCST)

Session Chairs: Mikhail Pekurovsky, 3M Company, Satish Kumar, University of Minnesota

“Thin-Film Models of Liquid Displacement on Chemically Patterned Surfaces for
Lithographic Printing Processes”

S. K. Kalpathy, L. F. Francis, S. Kumar, University of Minnesota

“Dewetting Flow by Inter-Surface Force during Hydrophobic Patterning”

K. Miyamoto, Fuji Film Corporation

“Controlled Destabilization of Liquid Coatings on Partially Wetting Substrates using Laminar Air-jets”

Eindhoven University of Technology

“Short Time Spreading and Wetting of Offset Printing Liquids on Model Calcium
Carbonate Coating Structures”

H. Koivula, M. Toivakka and P. Gane, Abo Akademi University, Alto University
and Omya Development AG

“Web Tension Formation and Web Deformation in Printing Process”

M. Parola, J. Sorvari and J. Ketoja, VTT Technical Research Centre of Finland

“Motion and Arrest Shape of Liquid on Cold Solid Targets”

F. Tavakoli and H. P. Kavehpour, University of California, Los Angeles

“The Dynamics of Three-Dimensional Liquid Bridges with Pinned and Moving Contact Lines”

S. Dodds, M.S. Carvalho and S. Kumar, University of Minnesota and PUC-Rio
“Liquid Transfer in Gravure Printing Processes: A New Numerical Approach to Study the Effect of Cavity Shape”

D. Campana and M. S. Carvalho, PUC-Rio

“Reduced-order Modeling Techniques for Understanding Printing and Coating”

S. A. Roberts, K. Tjiptowidjojo and P. R. Schunk, Sandia National Lab and University of New Mexico

J5 - New and Emerging Coating Process Technologies (Joint with ISCST)

(11:45 - 13:15) Lunch

13:30 - 15:00 ACF3 - Coating Structure Analysis

Session Chair: Al Osgood, Sappi Fine Paper, N.A.

“Contact Angle and Related Measurements - Insights into Paper Surface Characterization”

Arne Krolle, Paper coating, BYK Chemie, Wolfgang Bauer, Graz University of Technology

“Comparative Study of Coating Structural Characteristics for Spray and MSP Coated Papers”

Ailee Ho, Ning Yan, University of Toronto

“Characterization of Thin Pigment Coating Layers Produced by Foam Coating”

Eija Kenttä, Karita Kinnunen, Tuomo Hjelt, VTT Technical Research Centre of Finland

15:00 - 15:30 Break

15:30 - 17:00 ACF4 - Drying and Heat Transfer Fundamentals

Session Chair: Tony Lyons, Imerys Pigments, Inc.

“Liquid Retention in Porous Coatings: Effect of Pore Geometry and Material Interactions on Drying Efficiency”

Philip M. Gerstner¹, Hai Zhang, Petri Ronkainen, Patrick A.C. Gane², Aalto University, Aalto, Finland

¹University of Plymouth, Plymouth, UK

²Omya Development, AG

“Elucidating the Mechanisms of Liquid and Vapour Transport During the Drying of Porous Coatings”

J. Songok, M. Toivakka, Abo Akademi, Åbo/Turku, Finland

D. Bousfield, University of Maine, Orono

C. Ridgway, P. Gane¹, Omya Development, AG

¹Aalto University, Aalto, Finland

“Effects of Coating Formulation on Coating Thermal Properties and Coated Paper Print Quality in Xerography”

Chong Liang, Mascoma Canada Inc.

Ning Yan, University of Toronto, Toronto, Canada

David Vidal, Xuejun Zou, FPInnovations

18:00 - 20:00 Advanced Coating Dinner
Wednesday, September 12

07:15 - 08:15  Breakfast

8:00 - 9:30  ACF5 - Nanotechnology in Paper Coating

Session Chair: Nick Triantafillopoulos, OMNOVA Solutions Inc.

“Size-Selective Absorption into Pigmented Coating Structures: Suspension Starch Polymer vs. Nanofibrillar Cellulose”

Cathy J. Ridgway, Patrick A.C. Gane,

1Aalto University, Aalto, Finland

“The Effects of Nano-fibrillated Cellulose as a Coating Agent for Screen Printing”

Hitomi Hamada, Kenji Tahara, Asuka Uchida, Research Institute, National Printing Bureau of Japan 6-4-20 Sakawa, Odawara, Kanagawa 256-0816, Japan

“Laser Marking of Double Coated Board”

Anthony Hiorns, Janet Preston, Imerys Minerals Ltd
Jon Morgan, Lee Metters, Domino UK

9:30 - 10:00  Break

10:00 - 11:30  ACF6 - Binder Technology

Session Chair: John Roper, Dow Chemical USA

“Binder Depletion During the Coating Process and its Influence on Coating Failure – a Detailed Analysis of the IGT Dry Pick Test”

J.S.Preston, J.C.Husband, S.Booth, Imerys Minerals Ltd

“ATR-IR Spectroscopy for Studying the Effect of Drying on Binder Migration”

Ritwik Chattopadhyay, Douglas.W.Bousfield, Carl.P.Tripp, University of Maine, Orono

“Coating Microstructures: Binder Distributions”

C. Dahlström and T. Uesaka, Mid Sweden University, Sundsvall, Sweden

11:30 - 12:30  ACF7 - Commercialization Summary: Future Products and Research

Session Chairs: Douglas W. Bousfield, University of Maine, Orono, Rajan Iyer
### REGISTRATION FEES

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All Fees are in US Dollars.

* Member rates apply for members in good standing of TAPPI, Indian Paper Manufacturers Association, CTAPI, Japan TAPPI, TAGA and Zellcheming

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**Cancellation Policy:**
If you need to cancel, your full registration fee will be refunded if TAPPI’s Member Connection receives written notification (fax acceptable at +1.770.446.6947 by August 10, 2012. Please note: There will be a 50% refund for all written cancellations made after August 10, 2012 but no later than 5 business days prior to the start of the conference, September 6, 2012. Understandably, after this time, no refunds can be issued. Substitutions, however, will be accepted any time without a penalty.

**Refund:**
- 100% - Cancellation received by August 10, 2012
- 50% - Cancellations received after August 10, 2012 and no later than September 6, 2012.
- NO REFUND - Cancellations received after September 6, 2012.

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**Hotel Information:**
Loews Atlanta Hotel
1065 Peachtree Street NE, Atlanta, GA 30309
+1.404.745.5000 or 1.888.575.6397
http://www.loewshotels.com/en/Atlanta-Hotel

Be sure to identify yourself as an attendee of the TAPPI Advanced Coating/ISCST Symposium to receive the special rate of $169, single and double occupancy, per night, plus tax. Reservations should be made by August 11, accepted on a space and rate available basis. You can reserve a room with a credit card or check (in U.S. dollars). A first night deposit is required at the time of reservation. Room reservations cancelled prior to 72 hours before arrival will receive a full refund of first nights deposit. No-shows will be charged the first night room deposit.