

Symposium Schedule

Networking Session

(afternoon of Sunday, September 10)

A networking session will be held on Sunday afternoon. The networking session is a forum for people interested in collaboration to showcase areas of interest in which collaboration is actively being sought. This collaboration may take the form of direct industrial support, joint research proposals, internships, etc. As such, the networking session presentations are intended to be far less formal and are not expected to be as fully developed as presentations at the technical sessions.

SUNDAY, September 10, 2006

- 12 Noon Registration
- 4:00 PM Networking Session
chair: E.J. Lightfoot
- 6:00 PM Welcome Reception

MONDAY, September 11, 2006

- 7:30 AM Complimentary Continental Breakfast - Exhibit Hall
General Session Room #1
- 8:30 AM SESSION 1: Continuum and Molecular Approaches
to Dynamic Contact Lines
co-chairs: Paul Steen (Cornell University) and
Ramon Cerro (University of Alabama in Huntsville)
- 8:45 AM The Physics of Moving Wetting Lines – a Personal View
T.D. Blake
Retired
- 9:10 AM Wetting Dynamics Using Large-Scale Molecular Dynamics
J. De Coninck
CRMM/UMH
- 9:35 AM Mesoscale Modeling of Dynamic Wetting Phenomena
M.C.T. Wilson
University of Leeds
- 10:00 AM Break
- 10:20 AM Dynamic Wetting and Beyond
Y.D. Shikhmurzaev
University of Birmingham
- 10:45 AM Modeling and Computer Simulation of Dynamic Wetting
L. Schwartz, R. Eley, V. Roy
University of Delaware
- 11:10 AM Dynamic Wetting by Soluble Surfactant Solutions
S. Garoff, E. Rame
Carnegie Mellon University
- 12 Noon Luncheon - John A. Tallmadge Award for Contributions to
Coating Technology & poster preview I

General Session Room #1

- 2:30 PM SESSION 2: Dynamic Contact Lines
panel discussion moderator: Paul Steen (Cornell University)
co-chairs: Steven Weinstein (Eastman Kodak) and
Leonard Schwartz (University of Delaware)
PANEL DISCUSSION: Continuum and Molecular Approaches to
Dynamic Contact Lines
T.D. Blake, J. De Coninck, M.C.T. Wilson, Y.D. Shikhmurzaev,
L. Schwartz, S. Garoff
- 3:00 PM Application of a finite Element Level Set Method to Wetting and
Filling problems at low to Moderate Capillary Numbers
T.A. Baer, P.R. Schunk, R.R. Rao, D.R. Noble
Gram, Inc.
- 3:20 PM Spreading of Liquids on Solid Surfaces: Pure Fluids
E. Rame, S. Garoff
National Center for Space Exploration Research
- 3:40 PM Dynamic Spreading And Absorption of Impacting Droplets on
Topographically Irregular Porous Substrates
P. Alam, M. Toivakka, K. Backfolk, P. Sirvio
Abo Akademi University

- 4:00 PM Observation of the Breaking of the Dynamic
Wetting Line Under Vacuum
H. Benkreira
University of Bradford
- 4:20 PM Break
- 4:40 PM Interfacial Transients at a Moving Liquid Meniscus
T.B. Jones, K.L. Wang
University of Rochester
- 5:00 PM Stability Analysis for the Flow in a Dynamic Wetting or
Dewetting (micro-) Gap
S. Strein, P. Ehrhard
Forschungszentrum Karlsruhe GmbH
- 5:20 PM Instabilities and Break-up of Liquid Strips and Slabs
with Moving Contact Lines
L. Kondic, J. Diez
New Jersey Institute of Technology
- 5:40 PM Lattice Boltzmann Simulations of Contact Line Motion on
Heterogeneous Surfaces
X.-L. Jia, J.B. McLaughlin, G. Ahmadi, K. Kontomaris
Clarkson University
- 6:30 PM Exhibitor Reception

General Session Room #2

- SESSION 3: Microstructure Development & Drying
co-chairs: Peter Price (3M) and
Masato Yamamura (Kyushu Institute of Technology)
- 3:00 PM Mass Transfer in Thin Layers
W. Schabel
University of Karlsruhe (TH)
- 3:20 PM Optimization of Operating Conditions in Multi-zone Dryers
for Polymer Coatings
P. Shrimal, M. Vinjamur
Indian Institute of Technology, Bombay
- 3:40 PM Investigation of Inhomogeneous Drying of
Aqueous Latex Dispersions
I.S. Ludwig, W. Schabel, J.-C. Castaing, P. Ferlin, F. Kind
University of Karlsruhe (TH)
- 4:00 PM Microstructure of Wet Dispersions and Drying
Particulate Coatings by Cryo-SEM
H. Luo, L.F. Francis, L.E. Scriven
University of Minnesota
- 4:20 PM Break
- 4:40 PM Experimental and Theoretical Investigation of the
Drying Kinetics of Cellulose-Triacetate Films
B.C. Bell
Eastman Kodak
- 5:00 PM Drying-induced Surface Deformation of
Coatings on a Moving Web
M. Yamamura, T. Uchinomiya, Y. Mawatari, H. Kage
Institute of Technology
- 5:20 PM Observation of Non-uniform Air Flow in an
Organic Solvent Coating Dryer
T. Yahiro, Y. Katagiri
Fuji Photo Film Co., Ltd.
- 5:40 PM Effect of Air Impinging on a Liquid Coating Early in Drying M. M.
Komatsubara, J.M. de Santos, L.E. Scriven
Nitto Denko Corporation

TUESDAY, September 12, 2006

- 7:30 AM Complimentary Continental Breakfast - Exhibit Hall
General Session Room #1
- 8:15 AM SESSION 4: Experimental & Numerical Methods I
co-chairs: Hadj Benkreira (Bradford University) and Wilhelm Schabel (Universitaet Karlsruhe)
- 8:25 AM Marangoni Flows in Drying of Colloidal Films
S.G. Yiantsios, B.G. Higgins
University of California, Davis
- 8:45 AM Asymptotic Structure of a Dewetting Thin Liquid Film
P.L. Evans, A. Munch, J.R. King
Humboldt-Universitat zu Berlin
- 9:05 AM Dynamical Analysis of Gravity-driven Thin Film
Over Substrates with Topography
Z. Liu, M.C.T. Wilson, P.H. Gaskell, H.M. Thompson
Beijing University of Technology
- 9:25 AM Trackling Vortex Birth (and Death) in Coating Flows
J. Nam, M.S. Carvalho, L.E. Scriven
University of Minnesota
- 9:45 AM Break
- 10:05 AM 3-D Transient Simulation of Viscoelastic Coating Flows
J.M. Brethour
Flow Science Inc
- 10:25 AM Two-Layer Slot Coating Frequency Response for Active Control
T. Tsuda, J.M. de Santos, L.E. Scriven
University of Minnesota
- 10:45 AM Slot Coating Process
O.J. Romero, M.S. Carvalho
Research Engineer
- 11:05 AM Current State of Theoretical Modeling of Coating Flows
J.M. de Santos, M.S. Carvalho, L.E. Scriven
University of Minnesota
- General Session Room #2
- SESSION 5: Discontinuous & Particulate Coatings I
co-chairs: Dunbar Birnie (Rutgers University) and John McLaughlin (Clarkson University)
- 8:25 AM Spreading and Infiltration of Films and Droplets on Permeable Layered Substrates
D. Gerlach, N. Alleborn
University of Erlangen-Nuremberg
- 8:45 AM The Roll Application of Suspensions and Foams on a Porous Web
N. Traintafillopoulos, D.W. Bousfield
University of Maine
- 9:05 AM Immediate Surface Characteristics of an Aqueous Pigment Coating Applied to a Porous Substrate
B. Hutton
Monash University
- 9:25 AM The Use Of Morphological Algorithms And Finite Difference Methods On 3-Dimensional Paper Coating Structures For Identifying Pores, Gathering Statistical Data And Physical Constants
T. Byholm, P. Alam, M. Toivakka, J. Westerholm
Abo Akademi University
- 9:45 AM Break
- 10:05 AM Solvent Vapor Effects on Striation Growth in Spin Coating
R. Carpenter, D.P. Birnie
Rutgers University
- 10:25 AM Modeling of Striation Development in Spin Coating
D.P. Birnie, D.E. Haas
Rutgers University
- 10:45 AM Spin Coating of a Thin Conducting Liquid Film in the Presence of a Magnetic Field: Dynamics and Stability
R. Usha, B. Uma
Indian Institute of Technology, Madras

- 11:05 AM Hysteresis And Non-uniqueness in The Speed at the Onset of Instability in Curtain Coating
J.O. Marston, M.J.H. Simmons, S.P. Decent
University of Birmingham
- 12 Noon Luncheon - L.E. Scriven Young Investigator Award for Contributions to Coating Technology & Poster Preview II

- General Session Room #1
- SESSION 6: Experimental & Numerical Methods II
co-chairs: Andrew Hrymak (McMaster University) and Robert Yapel (3M)
- 3:00 PM The Effects of pH, Molecular Weight and Degree of Hydrolysis of Poly(Vinyl Alcohol) Suspensions on Slot Die Coating
T.J. Liu, W.-B. Chu, J.-W. Yang, C. Tiu, J. Guo
National Tsing Hua University
- 3:20 PM Determination of Moisture Content and Drying Rates of Thin Films and Coatings with the Quartz Crystal Microbalance/Heat Conduction Calorimeter
A. Smith
Masscal Corporation
- 3:40 PM Dynamic Measurement of the Surface Viscoelastic Properties of the Polymer-Solvent Films with Ripplon Light Scattering Method
K. Oki, Y. Nagasaka
Keio University
- 4:00 PM Measuring the Velocity Field in film-splitting Flows of Newtonian Liquids
M.Z. Becerra, O.J. Romero, L.F.A. Azevedo, M.S. Carvalho
Pontificia Universidade Catolica de Rio de Janeiro
- 4:20 PM Break
- 4:40 PM Thermo-Structurally Stable Hot Melt Coating Die
M.J. Wyatt
Avery Dennison Corporation
- 5:00 PM Flow Control and Die Design in Patch Slot Coating
H.W. Jung, S.Y. Kim, D.M. Shin, J.S. Lee, J.C. Hyun
Korea University
- 5:20 PM Two-Layer Coating on Tensioned Web over Slot Die
E. Park, L.E. Scriven, M.S. Carvalho
University of Minnesota
- 5:40 PM Next Generation Portable "Electronic Feeler Gage" For Maintaining Coater Gap Uniformity in Production
B. Manning, R. Foster
Capacitec Inc.

- General Session Room #2
- SESSION 7: Discontinuous & Particulate Coatings II
co-chairs: Jason Payne (Eastman Kodak) and James Brethour (Flow Science)
- 3:00 PM Particulate Coatings Deposited on Patterned Substrates
T. Reynolds, L.F. Francis
University of Minnesota
- 3:20 PM Controlled-Evaporation Dip Coating for Convective Assembly of Thin Particulate Coatings
J.A. Lee, M. Tsapatsis, L.E. Scriven
University of Minnesota
- 3:40 PM Self-Organization Simulation of Colloidal Nanoparticles with Strong Hydrodynamic Interactions
M. Fujita, Y. Yamaguchi
University of Tokyo
- 4:00 PM Shear Alignment of Particles During Spin Coating
S.S. Hussain, D.P. Birnie
Rutgers University
- 4:20 PM Break
- 4:40 PM Modeling the Deformation and Flow of a Half-tone Dot During Off-set Printing
D.W. Bousfield
University of Maine

- 5:00 PM The Effect of Shear Thinning on Splating Behavior of Molten Polymer Droplets under Thermal Spray Conditions
M. Ivosevic, R.A. Cairncross, R. Knight
Drexel University
- 5:20 PM Unsteady Numerical Simulation of Electrostatic Spray-painting Processes with Moving Atomizer
Q. Ye, A. Scheibe
Universität Stuttgart
- 5:40 PM Lattice Boltzmann Simulations of Inkjet Drop Formation, Propagation, and Impact with Substrates
X. Jia, J.B. McLaughlin, K. Kontomaris
Clarkson University

WEDNESDAY, September 13, 2006

- 7:30 AM Complimentary Continental Breakfast - Exhibit Hall
General Session Room #1
- 8:15 AM SESSION 8: Coating & Drying Fundamentals
co-chairs: Luigi Sartor (Avery Dennison) and Marcio Carvalho (PUC-Rio)
- 8:25 AM To Coat Is To Replace Gas at Surface of Solid by Liquid: Where Does The Gas Go?
L.E. Scriven
University of Minnesota
- 8:45 AM Static Contact Angles: The Fully Augmented Young-Laplace Equation
E. Diaz Martin, J. Fuentes, M. Savage, R. Cerro
University of Alabama in Huntsville
- 9:05 AM Hydrodynamic Model of Capillary Puddle Vibrations in Planar-Flow Melt Spinning
E. Theisen, C. Byrne, S. Weinstein, P.H. Steen
Cornell University
- 9:25 AM Competitive Displacement of Thin Liquid Films on Chemically Patterned Substrates
R.D. Lenz, S. Kumar
University of Minnesota
- 9:45 AM Break
- 10:05 AM Bayes' Theorem, Fick's Law and Multicomponent Diffusion
P.E. Price, I. Hadj Romdhane
3M
- 10:25 AM Pulsed Electron Beam Curing of Polymer Coatings
K.B. Richter, A.V. McCormick, L.E. Scriven, D.E. Weiss
University of Minnesota
- 10:45 AM Flow of Particle Dispersions in Coating-die Geometries
K. Apostolou, A.N. Hrymak
McMaster University
- 11:05 AM The Flow into a Pore From a Thin Fluid Layer
Y. Shen, D.W. Bousfield
University of Maine
- 11:30 AM Closing Remarks
- 11:45 AM Adjourn

POSTER SESSIONS

(on display throughout symposium, posters will be previewed during luncheons)

Session chairs:
Brian Higgins, University of California, Davis
Dennis Coyle, General Electric

MONDAY, POSTER PREVIEWS I

- Effect of Gas Flow on Stress Development in Polystyrene Coatings
S. Kim, K.H. Ahn, S.J. Lee, K. Jindal, L.F. Francis, L.E. Scriven
Seoul National University
- Characterization of Silicone Rheology and Coated Fabric Film Formation
William Blackwood
Dow Corning Corporation
- Films of Single-Walled Carbon Nanotubes by Drop Drying
R. Duggal, F. Hussain, M. Pasquali
GE Plastics
- Surface Properties of the Silicon Steel Coated with "Metal Phosphate Solution"
M.S. Han, J.W. Kim, J.K. Kim
POSCO Technical Research Laboratories
- Modeling for the Effect of Resin Solutions and Coater Conditions on the Coating Weights in the Roll Coating Processes
H.U. Kim, H.W. Jung, D.H. Jo
POSCO Technical Research Labs.
- Mechanisms Leading to a Defect in Some Solvent-Coated Films
F.M. Joos
Kodak
- Particle Image Velocimetry of Slot Coating by Continuous Illumination and High Speed Video Camera
M.S. Komatsubara, W.J. Suszynski, L.E. Scriven
Nitto Denko Corporation
- The Mu-transform and its Use in Nonlinear Hydrodynamics
V. Mitlin
Milton & Associates
- Theoretical Prediction of the Minimum Coating Thickness in Upstream-flooded Reverse Tensioned Web Over Roll Coating
M. Torigoe
Mitsubishi Chemical Group Science and Technology Research Center

TUESDAY, POSTER PREVIEWS II

- Fluid Dynamics of Jet Coating
D. Gerlach, N. Alleborn, M. Kustermann, F. Fischer
University Erlangen-Nuremberg/Voith Paper GmbH & Co KG
- Absorption and Diffusion in Bio-Based Polymer Films
J.A. Meisner, S. Ramaswamy, R. O'Connor, A.L. Smith, R.A. Cairncross
Drexel University
- Physics of Low Flow Limit in Slot Coating
J.M. de Santos, M. Dallman, L.E. Scriven
University of Minnesota
- Controlled Environment Vitrification System to Prepare Samples of Formulations and Drying Coatings for Visualization by Cryo-SEM
H. Ge, W.J. Suszynski, L.E. Scriven
University of Minnesota
- Roles of Capillary and van der Waals forces in Latex Film Formation
X. Gong, H.T. Davis, L.E. Scriven
University of Minnesota
- Stress Development and Cracking Behavior of Particulate Coatings
K. Jindal, L.F. Francis, A.V. McCormick
University of Minnesota
- Elastohydrodynamics of Slot Coating Process with Deformable Roll
D.M. Quinones, M.S. Carvalho
Pontifical Catholic University of Rio de Janeiro - PUC-Rio
- Hysteresis an Non-uniqueness in the Speed at the Onset of Instability in Curtain Coating
J.O. Marston, M.J.H. Simmons, S.P. Decent
University of Birmingham
- Simple Models of Slide Coating
K. Tjiptowidjojo, L.E. Scriven, M.S. Carvalho
University of Minnesota

POSTER SESSIONS

An Experimental and Simulation Study on Discrete Patch Coating Process

J.H. Kim, J.H. Kim, K.H. Ahn, S.J. Lee

Seoul National University

Solvent-less Deposition of Polymer-ceramic Composite Coatings

V. Gupta, M. Ivosevic, R.A. Cairncross, R. Knight

Drexel University

Simple Model for the Uniform Coating Weights of Chromate/Cr-free

Coating Liquids in Steel Products

H.Y. Kim, H.W. Jung, D.H. Jo

POSCO Research Laboratories

Next Generation Portable "Electronic Feeler Gage"

For Maintaining Coater Gap Uniformity in Production

B. Manning, R. Foster

Capacitec Inc.

Hydrodynamic Assist and Film Thickness Effect for Coating
onto a Pre-wetted Substrates

J.O. Marston, M.J.H. Simmons, S.P. Decent

University of Birmingham

Mid-gap Invasion in Two-layer Slot Coating

J. Nam, M.S. Carvalho, L.E. Scriven

University of Minnesota

A Pulsed Electron Beam Apparatus for Curing and Polymerization

K.B. Richter, A.V. McCormick, L.E. Scriven, D.E. Weiss, R.J. Adler

University of Minnesota

Dual Layer Slot Coating

O.J. Romero, M.S. Carvalho

Research Engineer

Simulation to Design Technical Film Drying Processes

P. Scharfer, W. Schabel, M. Kind

University of Karlsruhe (TH)

Implementation and Performance of Published Wetting Models in Level-set-
and ALE-based Algorithms for Free and Moving Boundary Problems

P.R. Schunk, D.R. Noble, T.A. Baer, R.B. Secor

Sandia National Laboratories

Foil Bearing, Back-Pressured and Forward-Pressured

E. Park, J.M. de Santos, L.E. Scriven, M.S. Carvalho

University of Minnesota

Overview of Nanoparticle Project in Japan

Y. Yamaguchi, M. Fujita

University of Tokyo