

ISCSST

14th International Coating Science and Technology Symposium

Sunday - September 7, 2008

- 4:00 PM **Networking Session chair: E.J. Lightfoot - Catalina Room**
6:00 PM **Welcome Reception - Bayview Room, Top Floor**

MONDAY, September 8, 2008

7:30 AM Complimentary Continental Breakfast - Ballroom Foyer

Special Technical Session 1: COATING CHALLENGES IN THE DISPLAY INDUSTRY
Callifornia Ballroom

co-chairs: **Shuzo Fuchigami (Consultant)**

Masato Yamamura (Kyushu Institute of Technology)

8:30 AM WELCOME

8:35 AM **COATING DEFECTS IN ROLL-TO-ROLL PRINTED ELECTRONICS**

Eitan Zeira, Jeremiah Mwaura,
Konarka Technologies

9:00 AM **DRYING ISSUES AND PROCESS SCALE UP OF SOLVENT CASTED FILMS FOR FLAT PANEL DISPLAYS AND ORGANIC ELECTRONICS**

W. Schabel, P. Scharfer, M. Müller, J. Krenn, B. Schmidt-Hansberg,
Karlsruhe Inst. Tech.

9:25 AM **CONTINUOUS COATING OF DISCRETE AREAS OF A FLEXIBLE WEB BY A ROLL-TO-ROLL PROCESS**

Terence D. Blake, Christopher L. Bower, Elizabeth A. Simister,
Kodak European Research

9:50 AM **DEVELOPMENT OF A HIGH-SPEED PATTERN-COATING TECHNOLOGY: "AIR-BUBBLE COATING"**

I-Chun Lin, An-Bang Wang,
National Taiwan University

10:10 AM Break

10:35 AM **TOTAL SIMULATION OF MESO-SCALE STRUCTURE FORMATION OF COATING PROCESS FOR COLLOIDAL SOLUTIONS**

Yukio Yamaguchi, Masahiro Fujita,
The University of Tokyo

11:00 AM **SIMULATION OF CONCENTRATED COLLOIDAL NANOPARTICLES IN SIMPLE SHEAR BETWEEN PARALLEL FLAT PLATES**

Masahiro Fujita, Osamu Koike, Yukio Yamaguchi,
The University of Tokyo

11:30 AM **Luncheon - John A. Tallmadge Award for Contributions to Coating Technology - Bayview Room, Top Floor**

General Poster Session - 1:15 to 2:15 PM - Promenade Room

co-chairs: **Douglas Bousefield (University of Maine)**

Satish Kumar (University of Minnesota)

RELATIONSHIP BETWEEN AGGREGATE STRUCTURES AND SETTLING FOR COLLOIDAL SILICA PARTICLES IN AQUEOUS ELECTROLYTE SOLUTION

Keisuke Oku, Susumu Inasawa, Yukio Yamaguchi,
The University of Tokyo

SENSITIVITY ANALYSIS OF SLOT-COATING FLOW USING FREQUENCY RESPONSE

Bo Kyung Ryu, S.H. Shin, Dong Mye Shin, Je Hoon Lee, Hyun Woo Jung, Jae Chun Hyun,
Korea University

DYNAMICS OF SINGLE POLYMER MOLECULE IN SLOT COATING FLOW

Jeong Yong Lee, Joo Sung Lee, Myung-Suk Chun, Hyun Woo Jung, Jae Chun Hyun,
Korea University

SIMULATION OF STRUCTURE FORMATION AND PHYSICAL PROPERTIES OF COLLOIDAL ROD-LIKE NANOPARTICLES IN DRYING PROCESS

Seiichi Ohta, Osamu Koike, S. Inasawa, Masahiro Fujita, Yukio Yamaguchi,
The University of Tokyo

SURFACE PROPERTIES OF THE SILICON STEEL COATED WITH METAL PHOSPHATE SOLUTION

Min Soo Han, Jung Woo Kim, Min Serk Kwon, Jae Kwan Kim,
Technical Research Laboratories / POSCO

SURFACE PATTERNING VIA CONTINUOUS COATING OF COLLOIDAL SUSPENSIONS

Benson Tsai, Wieslaw Suszynski, Marcio Carvalho, Satish Kumar,
University of Minnesota

MAPPING SLIDE COATING WINDOW WITH FLOW VISUALIZATION

Kristian Tjiptowidjojo, Wieslaw Suszynski, Marcio Carvalho,
University of Minnesota

MID-GAP INVASION IN TWO-LAYER SLOT COATING

Jaewook Nam, Marcio Carvalho,
University of Minnesota/PUC-Rio

RESIDUAL STRESS AND ADHESIVE FORCE OF NANOPARTICLE FILMS FABRICATED BY INKJET PRINTING

Hiroaki Nakatsu, Susumu Inasawa, Masahiro Fujita, Yukio Yamaguchi,
The University of Tokyo

APPLICATION OF INJET PRINTING ON PREPARATION OF ALL POLYMER THIN FILM TRANSISTORS

Zhaomiao Liu, Huamin Liu and Tan Zhang,
Beijing University of Technology

MORPHOLOGIES OF FAST-FROZEN AND FREEZE-FRACTURED LATEX COATINGS DURING DRYING

Xiaobo Gong, Alan Bagwell, L.F. Francis, H.T. Davis
University of Minnesota

DRYING REGIME MAPS FOR PARTICULATE COATINGS

Yoon Dong Jung, Christine M. Cardinal, Lorraine F. Frances
Seoul National University, Seoul / University of Minnesota

MONDAY PARALLEL SESSIONS

Technical Session 1 - COATING APPLICATION PROCESSES I

Pacific Ballroom

co-chairs: Luigi Sartor (Avery-Dennison)

Enrique Rame (Glenn Research Center, NASA)

- 2:30 PM **DYNAMICS OF COATING FLOWS WITH CHEMICAL REACTION**
Brian G.Higgins
University of California, Davis
- 2:50 PM **BOUNDARY INTEGRAL SIMULATIONS OF LIQUID EMPTYING FROM MODEL GRAVURE CELLS**
Nazish Hoda, Satish Kumar,
University of Minnesota
- 3:10 PM **SIMULATION FOR COATING PROCESS APPLYING CFD PACKAGES ON THE MARKET**
Yamasaki Masanori, Masaru Yasuhara,
Hitachi Maxell/Mitsubishi Paper Mills
- 3:30 PM Break
- 3:50 PM **UNCOVERING SLIDE COATING WINDOW WITH THEORETICAL MODELING**
Kristian Tjiptowidjojo, Marcio Carvalho,
University of Minnesota
- 4:10 PM **OPERABILITY LIMITS OF CURTAIN COATING PROCESS**
Melisa Becerra, Marcio Carvalho,
PUC-Rio
- 4:30 PM **SLOT DIE COATING TECHNOLOGY**
Mark Miller,
Extrusion Dies Industries, LLC
- 4:50 PM **MAINTAINING VERY THIN COATER GAP UNIFORMITY IN MULTI-LAYER APPLICATIONS SUCH AS FLAT PANEL DISPLAYS AND SOLAR PANELS**
Bryan Manning, Robert L. Foster,
Capacitec, Inc.

Technical Session 2 - SOLIDIFICATION AND MICROSTRUCTURE DEVELOPMENT I

Sierra Ballroom

co-chairs: Wilhelm Schabel (University of Karlsruhe)

Mei Wen (Arkema)

- 2:30 PM **STRESS DEVELOPMENT IN NANO-COMPOSITE SILICA COATINGS**
Karan Jindal, L.F. Francis, A.V. McCormick,
University of Minnesota
- 2:50 PM **ENHANCED SOLVENT DRYING IN SURFACTANT POLYMER BLEND COATINGS,**
Masato Yamamura, Hirokazu Yoshihara, Y. Mawatari, H. Kage
Kyushu Institute of Technology
- 3:10 PM **OPTICAL TECHNOLOGY TO ANALYSE FILM-FORMATION,**
Helene Dihang, Laurent Brunel, C. Tisserand,
Formulation
- 3:30 PM Break
- 3:50 PM **PERIODIC POROUS STRIPE PATTERNING IN A POLYMER BLEND FILM INDUCED BY PHASE SEPARATION DURING SPIN-CASTING**
Jae-kyung Kim, Kentaro Taki, Shinsuke Nagamine, Masato Yamamura, Masahiro Ohshima,
Kyoto University/Kyushu Institute of Technology
- 4:10 PM **SURFACE STRUCTURES DURING THIN FILM-DRYING CAUSED BY MARANGONI CONVECTION**
Joachim Krenn, M. Sojka, P. Scharfer, Matthias Kind, Wilhelm Schabel,
Universität Karlsruhe
- 4:30 PM **EFFECT OF HUMIDITY ON COATING SURFACE DEFORMATION**
Hiroaki Kobayashi, Lorraine Francis, L.E. Scriven,
Nitto Denko Corp./Univ. of Minnesota
- 4:50 PM **LIQUID FLOW IN ASSEMBLY OF ORDERED COLLOIDAL CRYSTALS**
Damien Brewer, Satish Kumar, Michael Tsapatsis,
University of Minnesota

6:00 PM **Exhibitor Reception - Ballroom Foyer**

TUESDAY, September 9, 2008

7:30 AM **Complimentary Continental Breakfast** - Ballroom Foyer

Technical Session 3 - NEW DIRECTIONS IN COATING AND DRYING

California Ballroom

co-chairs: Michael Savage (University of Leeds)

Yukio Yamaguchi (The University of Tokyo)

8:30 AM **TALE: AN ARBITRARY LAGRANGIAN-EULERIAN APPROACH TO FLUID-STRUCTURE INTERACTION PROBLEMS**

P. Randall Schunk, Robert B. Secor,
Sandia National Laboratory/3M

8:50 AM **DYNAMICS OF DEWETTING AT THE NANOSCALE -- A LARGE SCALE MOLECULAR DYNAMICS STUDY**

Emilie Bertrand, Terence D. Blake, Joel De Connick,
University of Mons-Hainaut

9:10 AM **ANALYSIS OF SPIN COATING FOR NON-IDEAL CONDITIONS**

Leonard Schwartz,
University of Delaware

9:30 AM **COATING OF NARROW STRIPES**

Ta-Jo Liu, Chi-Feng Lin, Yu-Chih Lin, David S.Wong, Shu-Heng Wen,
National Tsing Hua University/ITRI

9:50 AM **DIFFUSION OF NON-VOLATILE SPECIES DURING DRYING IN POLYMERIC COATINGS**

Max Müller, Dirk Baudy, Matthias Kind, Wilhelm Schabel,
Karlsruhe Institute of Technology

10:10 AM Break

10:30 AM **PHASE SEPARATION DURING THE DRYING PROCESS OF THE PHOTOACTIVE LAYER IN POLYMER SOLAR CELLS**

Benjamin Schmidt-Hansberg, K. Peters, N. Schabel, Matthias Kind,
Wilhelm Schabel,
Universität Karlsruhe

10:50 AM **STRENGTHENING GLASS BY POLYMERIC COATINGS**

Mei Wen, Stephen W. Carson,
Arkema Inc.

11:10 AM **ADVANCES IN CONTACT CLEANING FOR FLAT PANEL DISPLAY MATERIALS**

Sheila Hamilton,
Teknek Limited

11:30 AM **L.E. Scriven Young Investigator Award for Contributions to Coating Technology** - Bayview Room, Top Floor

General Poster Session (Continued) - 1:15 to 2:15 PM - Promenade Room

Monday afternoon's posters along with:

MAINTAINING VERY THIN COATER GAP UNIFORMITY IN MULTI-LAYER APPLICATIONS SUCH AS FLAT PANEL DISPLAYS AND SOLAR PANELS

Bryan Manning, Robert L. Foster,
Capacitec, Inc.

ADVANCES IN CONTACT CLEANING FOR FLAT PANEL DISPLAY MATERIALS

Sheila Hamilton,
Teknek Limited

TUESDAY PARALLEL SESSIONS

Technical Session 4 - COATING APPLICATION PROCESSES II Pacific Ballroom

- co-chairs:** Ramon Cerro (University of Alabama in Huntsville)
Kathleen Stebe (University of Pennsylvania)
- 2:30 PM **EXTENSIONAL DEFORMATION OF LIQUID BRIDGES NEAR GRAVURE CELLS**
Shawn Dodds, Satish Kumar,
University of Minnesota
- 2:50 PM **THE INTERLAYER STABILITY IN TWO-LAYER SLOT COATING FLOWS**
Jaewook Nam, Marcio Carvalho,
University of Minnesota/PUC-Rio
- 3:10 PM **ANALYSIS OF PERIODICAL THICKNESS VARIATION ON SLOT COATING**
Eduardo Perez, Marcio Carvalho,
PUC-Rio
- 3:30 PM Break
- 3:50 PM **STRUCTURED NANOPARTICLE ARRAYS: COATINGS BY CONTINUOUS CONVECTIVE ASSEMBLY WITH CONTROLLED EVAPORATION**
J. Alex Lee, Michael Tsapatsis,
University of Minnesota
- 4:10 PM **COATING PROCESS OF PHOTSENSITIVE CYLINDERS**
Danmer M. Quiñones, Marcio Carvalho, Satish Kumar,
University of Minnesota/PUC-Rio
- 4:30 PM **INSTABILITY OF CONFINED THIN LIQUID FILM TRILAYERS WITH APPLICATION TO LITHOGRAPHIC PRINTING**
Richard D. Lenz, Satish Kumar,
University of Minnesota
- 4:50 PM **DENSITY-DRIVEN PENCIL-LINE STREAKS IN SLIDE FLOWS**
F.M. Joos, K.C. Ng, W.D. Devine,
Eastman Kodak Company

Technical Session 5 - SOLIDIFICATION AND MICROSTRUCTURE DEVELOPMENT II Sierra Ballroom

- co-chairs:** Aparna Bhave (Boston Scientific)
TBA
- 2:30 PM **PROCESS WINDOWS FOR PATTERNED PARTICULATE COATINGS**
Timothy Reynolds, L.F. Francis,
University of Minnesota
- 2:50 PM **DEPTH PROFILING OF MULTICOMPONENT COATINGS TO TEST THEORIES FOR DIFFUSION**
Rajkumar Arya, Madhu Vinjamur,
Indian Institute of Technology Bombay
- 3:10 PM **CONTROL OF PARTICLE MICROSTRUCTURE IN THE COATING PROCESS**
Hiroshi Yoshida,
Dai Nippon Printing Co., Ltd
- 3:30 PM Break
- 3:50 PM **ADVANCED RADIACHROMIC RADIOMETRY FOR UV CURING PROCESS DESIGN AND PROCESS CONTROL**
R. W. Stowe, J.W. Guarniere
Fusion UV Systems, Inc.
- 4:10 PM **INFLUENCE OF LOCAL GAS PHASE MASS TRANSPORT COEFFICIENTS ON THE DRYING RATE OF POLYMER FILMS – A FUNDAMENTAL STUDY**
Philip Scharfer, Ying Zhou, Joachim Krenn, Matthias Kind, Wilhelm Schabel
Universität Karlsruhe / Karlsruhe Institute of Technology
- 4:30 PM **MODELING VISCOELASTICITY AND STRESS GENERATION IN SOLIDIFYING COATINGS**
Daniel O'Neal, A.V. McCormick,
University of Minnesota
- 4:50 PM **DRYING AND COLLAPSE OF HOLLOW LATEX**
Christine Cardinal, L.F. Francis, L. E. Scriven,
University of Minnesota

WEDNESDAY, September 10, 2008

- 7:30 AM **Complimentary Continental Breakfast** - Ballroom Foyer
- 8:30 AM **Special Technical Session 2 - TRIBUTE TO PROF. L.E. SCRIVEN'S CONTRIBUTION TO COATING SCIENCE**
California Ballroom
- co-chairs:** Randy Schunk (Sandia National Laboratory)
Juan Manuel de Santos (Avery-Dennison)
- 8:35 AM **EVAPORATION INDUCED SELF-ASSEMBLY DURING THIN FILM COATING**
C. Jeffrey Brinker,
Sandia National Laboratory
- 9:00 AM **L.E. SCRIVEN'S CONTRIBUTION TO THE COATINGS INDUSTRY: A BASF PERSPECTIVE**
Jacob Wildeson, Koichi Takamura, Cheng-Le Zhao, Xiaobo Gong, H. Ted Davis,
BASF/University of Minnesota
- 9:25 AM **ANISOTROPIC PARTICLES AT FLUID INTERFACES: RULES FOR ORIENTED AGGREGATION BY CAPILLARY INTERACTIONS**
Kathleen Stebe, Eric Lewandowski, Jorge Bernate, Peter Searson,
Johns Hopkins University
- 9:50 AM **ON THE STATIC CONTACT ANGLE: ITS MACROSCOPIC THERMODYNAMIC INTERPRETATION AND PHYSICAL LOCATION WITHIN A TRANSITION REGION**
Elena Diaz, Javier Fuentes, Michael Savage, Ramon L. Cerro,
University of Alabama in Huntsville
- 10:35 AM **ADVANCES IN THE STUDY OF DYNAMIC WETTING IN COATING FLOWS -- EXPERIMENTS WITH AIR AND OTHER GASES UNDER REDUCED PRESSURES**
Hadj Benkreira, Bruce Ikin, Raj Patel,
University of Bradford
- 11:00 AM **MODELING LIQUID COATING FLOWS - RECENT PROGRESS AND MANY CHALLENGES**
Andrew Hrymak,
McMaster University