Web Coating & Handling Conference 2015

Naples, Florida, USA 25-28 October 2015

ISBN: 978-1-5108-1504-9

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by Association of International Metallizers, Coaters and Laminators All rights reserved.

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact Association of International Metallizers, Coaters and Laminators at the address below.

Association of International Metallizers, Coaters and Laminators 201 Springs Street Fort Mill, South Carolina 29715 USA

Phone: (803) 948-9470 Fax: (803) 948-9471

aimcal@aimcal.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: 845-758-0400 Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

Sunday Octobe	er 25, 2015			
8:00 AM - 4:30 PM	Registration Table Location: Lobby			
Tracks:	Vacuum Short Course	Web Handling Short Course	Web Slitting Short Course	SPE Short Course
8:30 AM - 12:00 PM		Web Handling Dr. David Roisum, Finishing Technologies Location: Acacia 1-3		Film Fundamentals: Scratch and Fracture Hung-Jue Sue, Polymer Technology Center Location: Acacia 4-6
1:30 PM - 5:00 PM	Vacuum Coating onto Polymer Films Donald J. McClure, Acuity Consulting and Training Location: Acacia 1-3		Web Slitting Technology David Rumson, Slitting Educator/Consultant Location: Acacia 4-6	
4:45 PM - 6:15 PM	Keynote and Welcome R Location: Sunset Veran	eception Sponsored by Pr da	recision Die Systems	
6:15 PM - 7:00 PM	Opening Keynote - Econ Location: Vista Ballroor			
7:00 PM - 8:30 PM	Opening Reception and Location: Royal Palm	TableTops Exhibition Spor	nsored by Nova Chemicals	
Monday Octob	er 26, 2015			
7:00 AM - 9:00 AM	Breakfast Sponsored by L & M Instruments LLC - Followed by talk with the Concierge for Guests and Spouses Location: Royal Palm			
7:00 AM - 5:00 PM	Registration Table Location: Royal Palm F	oyer		
Tracks:	Vacuum Coating Location: Orchid 1	Web Coating Location: Orchid 2	Web Handling Location: Acacia 1-3	FlexPackCon Location: Orchid 3-4
Sessions:	Flexible Devices Session Leaders: Andrew Jack, Vacuum Depositing Inc. and Joe Perdue, ECKART America	Advances in Coating Technology Session Leaders: Dr. Greg Williams, Coveris Advanced Coatings and Dr. Mai Chen, DOW	Drives and Static Control Session Leaders: Duane Smith, Davis Standard and Dave Rumson, Slitting Consultant/Educator	Sustainable Solutions Session Leaders: Dr. Henk Blom, Rollprint Packaging Products
8:30 AM	R2R Processing for Flexible Devices & Components Utilized in Wearable & Mobile Electronics 32 Jens Degenhardt , Applied Materials WEB Coating GmbH	Intermittent Coating 2 Mark Miller, Coating Tech Slot Dies54	Auto-Tuning Drives77 Clarence Klassen, KlassENgineering Inc.	The Challenge of Flexible Packaging Recycling - Multilayer Films, Barrier Structures and Pouches105 Dr. Terry Cooper, ARGO Group International
9:00 AM	R2R Processing for Flexible Devices & Components Utilized in Wearable & Mobile Electronics (continued) Jens Degenhardt, Applied Materials WEB Coating GmbH	Coating and Printing Processes for the Surface Functionalization62 Andrea Glawe, KROENERT GmbH & Co KG	Drive System Design for Low Web Speed Applications87 William Gilbert, Siemens Industry, Inc.	Plastics Packaging: Environmental Assessment of End-of- Life Options120 Abdelhadi Sahnoune, ExxonMobil Chemical Company
9:30 AM	Current Activities of Coating Testbed and Converting Companies in Korea to Develop Functional Films by R2R Processes 52 Dr. Jae Heung Lee, Korea Research Institute of Chemical Technology	Fixed Slot Dies vs Adjustable Lip Dies63 Ron Fraley, Precision Die Systems Corp.	Managing Static 97 Dr. Kelly Robinson, Electrostatic Answers	Accelerating Sustainability in Packaging by Enhancing Recycle Stream Performance .129 Dr. Didem Öner- Deliormanli, The DOW Chemical Company
10:00 AM	Break Sponsored by L & Location: Royal Palm	M Instruments LLC		
Sessions:	Transparent Conductors Session Leaders: Andrew Jack, Vacuum	Advances in Coating Technology (continued) Session Leaders: Dr. Greg Williams, Coveris	Rollers Session Leaders: Ken Guhse, Honeywell and Dr. David Roisum,	Sustainable Solutions (continued) Session Leader: Dr. Henk Blom, Rollprint

	Depositing Inc. and Joe Perdue, ECKART America	Advanced Coatings and Dr. Mai Chen, DOW	Finishing Technologies, Inc.	Packaging Products
10:30 AM	3M Advanced Conductor Technology Scott J. Jones, 3M138	Development of Slot Die Coating Unit with Vision-Base Thickness and Meniscus Control for Reliable Thin Uniform Film Coating.167 Jang Hwan Lee, SAM	Guidelines for Rolls Used in Web Handling Duane Smith, Davis- Standard LLC178	A Compostable Solution for Flexible and Coated Paper Packaging192 Randy Jester, BASF
11:00 AM	Roll-to-Roll Sputtered ITO/Ag/ITO Multilayer Films for Flexible Organic Solar Cells and Flexible Heaters Han-Ki Kim, Sung-Hyun Park, Sang-Jin-Lee & Dr. Jae Heung Lee, Kyung Hee University 148	After Over 100 Years of use, Mayer Rods are Still popular Today171 Doug Krasucki, R.D. Specialties	Vacuum Pull Rolls - Design and Applications Kristi Schmidt, Maxcess International Corporation179	Sustainable Collaboration: A Call to ActionN/A Christopher Mitchell, Innovia
11:30 AM	New Materials for Transparent Conductors149 Ajay Virkar, C3 Nano	Fundamental Causes of Coating Defects173 Dr. Edward Cohen, Edward D Cohen Consulting Services	What is your Roller's True Shape and Why Does It Matter?187 Steve Huff, Imperial Rubber	Efficient Design: Novel Packaging Technology Rashi Tiwari, The DOW Chemical CompanyN/A
12:00 PM	Lunch Sponsored by BA Location: Royal Palm	SF		
Sessions:	Process Sensitvities and Improvement Session Leaders: Dante Ferrari, Celplast Metallized Products and Scott Jones, 3M	Advances in Coating and Lamination Technolgy Session Leaders: Dr. Ken McCarthy, Clean Room Coating Solutions and John McGann, Henkel	Slitting and Splicing Session Leaders: William Gilbert, Siemens and Steve Huff, Imperial Rubber	Food Safety and Preservation Session Leader: Tom Dunn, FlexPacknology, LLC
1:30 PM	Metallizer with New Inductively Heated Evaporation Sources Wolfgang Decker, Hilberg & Partner204	Laminating System Application and Design Considerations216 Bob Pasquale, New Era Converting Machinery	Improving Web Tension Regulation During Zero- Speed Splicing Operation248 Prabhakar R. Pagilla, Oklahoma State University	Food Safety Through Better Communication Jim Huang, Bemis266
2:00 PM	Mechanics-Driven Material Design for Optimized Barrier Films Pierre Fayet, Tetra Pak (Suisse) SA206	Latest Developments in Hot Melt Coating Technology for Special Tape Applications227 Alexandre David and Gianni Zanatta, BOBST	Managing Sideforce, Can't Angle and Blade Profile in Tangent Slitting Applications to Reduce Edge Defects Sean Craig, Maxcess.262	Food Safety Management Systems for Food Packaging Manufacturing: Vive la Différence282 Tom Dunn, FlexPacknology, LLC
2:30 PM	AlOx - A Bright Past but do we Need to Protect the Future??215 Steve Jackson, Camvac	Introducing Ultrasonic Welding Technology Into Continuous Web Lamination And Slitting Applications242 Guy Gil, Chase Machine and Engineering	Shear Knife Overlap - The Most Common Set Up ErrorN/A Dave Rumson, Slitting Consultant/Educator	Changes in Regulation for Polymer MasterbatchesN/A Dr. Mitchell Cheeseman, Steptoe & Johnson LLP
3:00 PM	Break Sponsored by BAS Location: Royal Palm	SF	,	
Sessions:	Cathode and Substrate Heat Management Session Leaders: Dante Ferrari, Celplast Metallized Products and Scott Jones, 3M	Advances in Coating and Lamination Technology (continued) Session Leaders: Dr. Ken McCarthy, Clean Room Coating Solutions and John McGann, Henkel	Web Conveyence Session Leaders: Duane Smith, Davis- Standard LLC and Clarence Klassen, KlassENgineering Inc	Food Safety and Preservation (continued) Session Leader: Tom Dunn, Flex Packnology LLC
3:30 PM	Cathode Heating in Reactive Magnetron Sputtering: A Previously Ignored Hysteresis Loop Provides a Direct Determination of the Secondary Electron Yield297 Donald J. McClure,	Laminating to Digitally Printed Substrates for Flexible Packaging316 Thomas Bezigian, PLC Technologies	How Accurately can I Guide my Web?340 Jerry Brown, Essex Systems	Knowing Your Supply Chain: Traceability Solution for Products and Packaging373 Dr. Michael Hogan, Applied DNA Sciences

	Acuity Consulting / Cedric Bedoya and Edward J. Anderson, 3M Corporate Research Laboratories			
4:00 PM	Substrate Thermal Heating Rates as a Function of Magnetically Controlled Plasma Impedance on Rotary Cathodes306 Patrick Morse, Sputtering Components	Drying Laboratory Methods for Characterization of Limited Rate Drying in Simulation Models328 Steve Zagar, B&W Megtec	Troubleshooting Web Scratches352 Kevin Cole, Optimation Technology Incorporated	Successes and Challenges Encountered in the Development of Active Packaging for Food394 Dr. Cynthia Ebner, Sealed Air Corporation
4:30 PM	Sputter Coating of Plastic Film: Strategies for Reduction of Substrate Heat Load.311 Holger Proehl, VON ARDENNE GmbH	Functional Property Enhancement of Packaging and Labels Films Through Coating Anand Sundararaman, Jindal Films338	Combined Stresses for Webs Going Over Rollers364 Dr. David Roisum, Finishing Technologies, Inc.	EVOH and Polyethylene High Barrier Compound Films for Packaging Application417 Guojun Zhang, A. Schulman, Inc.
5:00 PM - 6:00 PM	Vendor Session Location: Vista Ballroom	n		
6:00 PM - 7:30 PM	Reception and TableTop Location: Royal Palm	s Exhibition Sponsored by	DOW	
Tuesday Octob	per 27, 2015			
6:00 AM	Bernard Henry 5K Fun R Location: Meet in Hotel			
7:00 AM - 12:00 PM	Registration Table Location: Royal Palms I	Foyer		
7:00 AM - 9:00 AM	Breakfast Sponsored by Location: Royal Palm	Unimin		
Tracks:	Vacuum Coating Location: Orchid 1	Web Coating Location: Orchid 2	Web Handling Location: Acacia 1-3	FlexPackCon Location: Orchid 3-4
Sessions:	Process improvements Session Leaders: Nick Copeland, Bobst Group and Patrick Morse, Sputtering Components	Adhesives Technology Session Leaders: Joe Heinemann, Rayven Inc. and David Telep, Honeywell	Winding and More Session Leader: Ken Guhse, Honeywell and Dr. Kelly Robinson, Electrostatic Answers, LLC	Our Evolving Industry: Merger and Acquisition Session Leader: Chris Kerscher, A. Schulman, Inc.
8:30 AM	Materials Property Database of Thin Films by Pilot Scale Roll to Roll Sputter432 Dr. Sang-Jin Lee, Korea Research Institute of Chemical Technology	Barrier Adhesive for Flexible Packaging452 Mai Chen, DOW Chemical Company	Practical Methods to Improve Wound Roll Quality467d Neal Michal, Kimberly- Clark Corporation	Innovation Strategy for the Polymers Industry Raj Krishnaswamy, Braskem America489
9:00 AM	Core Technologies for Shortening the Time-to- Market of Display Films Jongkoo Jeong, Higashiyama Film448	Cationic Cure Mechanism for UV HMPSAs461 Natalie Ganio, Henkel Corporation	MD Buckles in Thin Film Winding477 Kevin Cole, Optimation Technology Incorporated	Key Trends, Drivers and Outlook for Mergers and Acquisitions in the Specialty Packaging and Plastics Sectors Rick Weil, Mesirow FinancialN/A
9:30 AM	Transparent Electrodes Made From PEDOT:PSS449 Dr. Ron Lubianez, Heraeus Precious Metals	Fit for Use-Laminating Adhesive Selection for Digitally Printed Packaging467b Cindy Fruth, Ashland	Web Handling Answers for Anyone With Two Thumbs487 Dr. David Roisum, Finishing Technologies, Inc.	M&A Panel Discussion: Sun Capital, Mesirow Financial, and Coveris Panel Discussion:Jeffery M Williams, Rick Weil, Dan Florian, Brian McGee, Coveris, Mesiro Financial, Sun Capital, et alN/A
10:00 AM	Break Sponsored by Uni Location: Royal Palm	min		
10:30 AM - 11:30 AM	Keynote: The U.S. Flexible Packaging Industry500 Marla Donahue, Flexible Packaging Association			
1:00 PM - 4:00 PM	Dolphin Watch and Boat Sightseeing Tour Location: Meet in Lobby			
	Location: weet in Lobby			

Wednesday October, 28 2015

7:00 AM - 9:00 AM Breakfast Sponsored by Addivant					
Location: Vista Ballroom					
Tracks:	Vacuum Coating Location: Orchid 1	Web Coating Location: Orchid 2	Extrusion Coating Location: Acacia 1-3	FlexPackCon Location: Orchid 3-4	
Sessions:	Flexible Packaging & Barrier Session Leaders: Don McClure, Acuity Consulting and Training and Dr. Anye Chifen, LEYBOLD OPTICS GmbH	Flexible Electronics Session Leaders: Mark Fehlmann, Madico, Inc. and Anand Sundararaman, Jindal Films	Extrusion Coating Basics Session Leader: Jim Cooper, Dow	Processing Equipment and Materials Session Leader: Dan Falla, NOVA Chemicals	
8:30 AM	Consumer Trends and Package Design529 David Kessler & Bill Barlow, Printpack	Flexible Glass554 Substrates for Printed Electronic Applications Scott Pollard, Corning	Market Highlights: Extrusion and Vacuum Web Coating601 Corey Reardon, AWA	From Idea to Product Barry Hunter, DR. Collin 632	
9:00 AM	Consumer Trends and Packaging Design (continued) David Kessler & William J. Barlow, Printpack	Active and Passive Device Integration on Flexible Glass Substrates560 Mark Poliks, Systems Science and Industrial Engineering	A Review of Adhesive and Extrusion Lamination613 Tom Bezigian, PLC Technologies	Improved Film Flatness of a Blown Film and The Quality Enhancements it Brings653 Steve DeSpain, Reifenhauser Incorporated	
9:30 AM	Sputtered Low-E Films on Flexible PET Substrates553 Dr. Stella M. Van Eek, FHR Anlagenbau GmbH	Electronic and Optical Devices via Self- Assembly of Hybrid Materials and Nanoimprint Lithography: Towards Solution-Based R2R Nanomanufacturing575 James Watkins, University of Massachusetts	E/C Equipment Review Frank Orsini, Davis-Standard, LLC631	Creating Valve Sacks & Pouches From Plastic Film and Creating Pinch Bottom Sacks From Woven-PPN/A David Beddus, Windmoeller & Hoelscher Corporation	
10:00 AM	Break Sponsored by Add Location: Orchid Foyer	livant		·	
Sessions:	Flexible Packaging & Barrier (continued) Session Leaders: Don McClure, Acuity Consulting and Training and Dr. Anye Chifen, LEYBOLD OPTICS GmbH	Flexible Electronic (continued) Session Leaders: Mark Fehlmann, Madico, Inc. and Anand Sundararaman, Jindal Films	Advances in Extrusion Coating Session Leader: Tom Bezigian, PLC Technologies Extrusion Consulting Group	Processing Equipment and Materials (continued) Session Leader: Dan Falla, NOVA Chemicals	
10:30 AM	Roll-to-roll ALD: Applications and Scaling Prospects668 Sami Sneck, Beneq	Flexible Electronics Substrates688 Scott Gordon, DuPont Teijin Films	Feedblock and Die Technology695 Christine Ronaghan, Cloeren	Control of Diespersed Polymer Domain Size Formantion in Melt ProcessingN/A Eldridge M. Mount III, EMMOUNT Technologies	
11:00 AM	Optimizing the ALD Cycle for High Speed, Low Cost Barrier Films in Commercial Packaging Applications Bryan Danforth, Lotus Applied Technology673	Coated Ultra Thin Copper for Printed Circuit Laminates689 Don Novotny, Intrinsiq Materials	New Sealant Solutions for Food Packaging Structure708 Christopher Walker, ExxonMobil Chemical Company	The Stabilization of LLDPE: A new, Clean Stabilization System to Overcome Challenges of the Flexible Packaging Industry730 Ron Becker, Addivant	
11:30 AM	High Barrier Film for Flexible Packaging: Challenges and Latest Solutions for the Vacuum Web Coating Industry681 Fabiano Rimediotti, Nordmeccanica Vacuum Division	Highly Accurate In- Process Measurement of Thin Coated Films and Applied Layers Within R2R Processes for Flexible Electronics and Other Transparent Conductors694 Bobby Greiner, Sensory Analytics	Advances in Sustainability for Extrusion Coating Converters718 Bruce Foster, Poly Knows	The Next Milestone for Blown Film Technology Bradley Kramer, ExxonMobil Chemical CompanyN/A	
12:00 PM	Lunch Sponsored by Exx Location: Vista Ballroom				

Tracks:	Vacuum Coating Location: Orchid 1	Web Coating Location: Orchid 2	FlexPackCon Location: Acacia 1-3	FlexPackCon Location: Orchid 3-4
Sessions:	Flexible Packaging & Barrier (continued) Session Leaders: Bill Barlow, Print Pack and Roland Trassl, AMAT	Solution Delivery Technology Session Leaders: Doug Krasucki, R.D. Specialities and Dr. Kelly Robinson, Electrostatic Answers, LLC	Innovation Tools and Trends Session Leader: Donna Davis, ExxonMobil Chemical Company	Package Performance and Sealing Session Leader: David Constant, BASF Corporation
1:30 PM	Optimized High Barrier Properties of Plasma Assisted Deposited AlOx on BOPP and PET Films for Food Packaging Applications Dr. Anye Chifen, Bühler Alzenau GmbH748	Coating Process Performance: Start at the Beginning758 Eric Maki, B&W MEGTEC	Evaluating Your New Business Development (NBD) Process for PackagingN/A Greg Stevens, WinOvations	Functionality in Multilayer Films for Packaging781 Abdellah Ajji, PolyMTL
2:00 PM	Understanding the Vacuum-Chamber Pressure Effect on Metallized Film Properties: Controlling the Timing of Vacuum Pump Maintenance750 Eldridge Mount, EMMOUNT Technologies	Solution Delivery for High-Precision Coating Todd Arndorfer, Carestream Contract Manufacturing766	Innovation Contest: The Implementation of InnovationN/A Paul Musille, NineSigma	Peelable Seal Films with Enhanced Moisture Barrier Properties for Flexible Packaging801 Dan Falla, NOVA Chemicals
2:30 PM	Surface Functionalization of Web Substrates In-line With Metal and Metal Oxide Deposition757 Angelo Yializis, Sigma Technologies International	Optimizing Mix Performance 770 Dr. Ken McCarthy, Clean Room Coating Solutions	Developing an Effective Learning Strategy and Toolset to Innovate SuccessfullyN/A Dudley Brundige and Jason Pallente, GLG	Sealant Development for Flexible Packaging Using Light Microscopy Eddy Garcia-Meitin, The Dow Chemical Company815
		1,	·	
3:00 PM	Break Sponsored by Exx Location: Orchid Foyer	conMobil Chemicals		
3:00 PM Sessions:		Solution Delivery Technology (continued) Session Leaders: Doug Krasucki, R.D. Specialities and Dr. Kelly Robinson, Electrostatic Answers, LLC	Innovation Tools and Trends (continued) Session Leader: Donna Davis, ExxonMobil Chemical Company	Package Performance and Sealing (continued) Session Leader: David Constant, BASF Corporation
	Location: Orchid Foyer Magnetrons, Plasma and Control Session Leaders: Bill Barlow, Print Pack and	Solution Delivery Technology (continued) Session Leaders: Doug Krasucki, R.D. Specialities and Dr. Kelly Robinson, Electrostatic Answers,	Trends (continued) Session Leader: Donna Davis, ExxonMobil Chemical Company Practical Flexible Food Packaging Innovation	and Sealing (continued) Session Leader: David Constant, BASF
Sessions:	Location: Orchid Foyer Magnetrons, Plasma and Control Session Leaders: Bill Barlow, Print Pack and Roland Trassl, AMAT New Rotatable Magnetrons and Target Materials: Enabling Higher Performance Sputter Coatings827 Wilmert De Bosscher, Soleras Advanced	Solution Delivery Technology (continued) Session Leaders: Doug Krasucki, R.D. Specialities and Dr. Kelly Robinson, Electrostatic Answers, LLC Fluid Delivery Through Motor Driven Diaphragm Pumps840 James Feltman,	Trends (continued) Session Leader: Donna Davis, ExxonMobil Chemical Company Practical Flexible Food Packaging Innovation Across the Value Chain Dr. Lora Liang,N/A Mondelez International Creating Consumer Value Using High Barrier Films; A	and Sealing (continued) Session Leader: David Constant, BASF Corporation Testing and Prediction of Puncture Resistance of Flexible Food Packages845
Sessions: 3:30 PM	Location: Orchid Foyer Magnetrons, Plasma and Control Session Leaders: Bill Barlow, Print Pack and Roland Trassl, AMAT New Rotatable Magnetrons and Target Materials: Enabling Higher Performance Sputter Coatings827 Wilmert De Bosscher, Soleras Advanced Coatings Use of Plasma Sources and Feedback Control in Web Coating829 Frank Papa, Gencoa	Solution Delivery Technology (continued) Session Leaders: Doug Krasucki, R.D. Specialities and Dr. Kelly Robinson, Electrostatic Answers, LLC Fluid Delivery Through Motor Driven Diaphragm Pumps840 James Feltman, Tacmina USA Dispensing System Considerations841 Ken McCarthy, Clean	Trends (continued) Session Leader: Donna Davis, ExxonMobil Chemical Company Practical Flexible Food Packaging Innovation Across the Value Chain Dr. Lora Liang,N/A Mondelez International Creating Consumer Value Using High Barrier Films; A Campbell's Brand Example N/A Matthew Dingee, Campbell Company of Canada Speaker Panel Discussion	and Sealing (continued) Session Leader: David Constant, BASF Corporation Testing and Prediction of Puncture Resistance of Flexible Food Packages845 Barry Morris, DuPont 10 Ways to Improve Corona & Atmospheric Plasma Treatment Results860 Rory Wolf, ITW Pillar

ADDITIONAL PAPERS

Advances in Surface Functionalization Using New Pulsed Power Plasma Sources	894
Kevin Coulter, Vicky Poenitzsch, Ronghua Wei, Jianliang Lin, Michael Miller	
5-Layer Polyolefin-Dedicated (POD) Blown Film Technology - The Next Milestone	927
Camille Drake, Dirk Van Der Sanden, Brad Kramer	
Database of ITO and Barrier Thin Films by Pilot Scale Roll to Roll Sputter	934
Sang-Jin Lee, Cheol Hwan Kim, Jae Seong Park, Han-ki Kim, Sung-Hoon Choa, Jae Heung Lee	