



ECS 15

EUROPEAN COATING SYMPOSIUM EINDHOVEN

September 9-11, 2015

Program

Sponsors of the ECS 2015



Supported by the ISCST 2016 Chairs:

Dr. Brent Bell
W.L. Gore & Associates, Inc.

Prof. Pirouz Kavehpour
University of California, Los Angeles



Welcome

We cordially welcome you to the 11th European Coating Symposium (ECS). On behalf of the organizing committee it is our pleasure to present the program of the Symposium.

We are happy to celebrate the 20th anniversary of the ECS this year. The symposium was organized for the first time in 1995 at the University of Leeds (UK) by M.D. Savage. Subsequently it was organized at the

University of Strasbourg, France	by P. Bourgin	in 1997
Friedrich Alexander University, Germany	by F. Durst	in 1999
Von Karman Institute, Belgium	by J.M. Buchlin	in 2001
University of Fribourg, Switzerland	by P. Schweizer	in 2003
University of Bradford, UK	by H. Benkreira	in 2005
University of Paris Diderot, France	by L. Limat	in 2007
Karlsruhe Institute of Technology, Germany	by W. Schabel	in 2009
Abo Akademi University, Finland	by M. Toivakka	in 2011
University of Mons, Belgium	by J. de Coninck	in 2013

and this year for the first time in the Netherlands by the Eindhoven University of Technology and the Holst Centre.

For the continuity and success of the ECS, we would like to thank the founders of the symposium and the previous organizers of this biennial event. Due to their efforts, the ECS became a unique platform where a variety of researchers from universities, institutes and industry meet to present and discuss emerging findings and breakthroughs in the field of coating and drying technology. This year the focus of the symposium was extended in the direction of ink jet printing, because the organizing committee noticed that ink jet printing is becoming an interesting technology for example in comparison to slot die coating and a discussion of their advantages and disadvantages was deemed useful for the coating community.

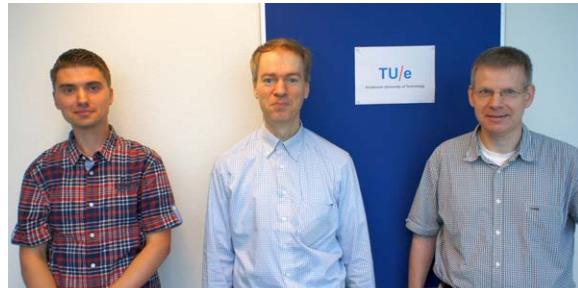
We would like to thank the Scientific Committee members of the ECS for their continuing support, the keynotes lecturers Marcio S. Carvalho, Paul W.M. Blom and Peter M. Schweizer, who will enlighten us with presentations of the state of the art and their perspectives on future developments, and of course all the participants for their contributions to the ECS15. We hope that the symposium will inspire new insights and ideas as well as new contacts and collaborations.

We wish you an exciting symposium and a pleasant stay in the city of Eindhoven.

With kind regards,

Anton Darhuber

Ike de Vries



ECS2015 organization teams of the Holst Centre and the Eindhoven University of Technology

Program overview

Wednesday, 9 September 2015

08:00 – 09:00	Registration	
09:00 – 09:15	Welcome, introduction and overview <i>Ike de Vries and Anton A. Darhuber</i>	
09:15 – 10:00 Plenary talk (Cocagne 2)	Coating flow analysis: How fundamental understanding helps process development and design <i>Marcio S. Carvalho</i> Department of Mechanical Eng., Pontificia Universidade Catolica do Rio de Janeiro, Brazil	
10:00 – 10:30	Coffee break / Exhibition	
10:30 – 12:30	Fluid dynamics & coating fundamentals I	Coating and drying applications I
12:30 – 13:45	Lunch / Exhibition	
13:45 – 15:15	Post-deposition structure formation I	Printing and patterned coatings
15:15 – 15:45	Coffee break / Exhibition	
15:45 – 17:30	Contact lines and wettability	Inkjet printing

Thursday, 10 September 2015

09:00 – 09:45 Plenary talk (Cocagne 2)	Multilayer polymer light-emitting diodes processed from solution <i>Paul W.M. Blom</i> Max Planck Institute for Polymer Research, Mainz, Germany	
09:45 – 10:15	Coffee break / Exhibition	
10:15 – 12:15	Fluid dynamics & coating fundamentals II	Large area electronics
12:15 – 13:30	Lunch / Exhibition	
13:30 – 15:30	Drying fundamentals	Coating and drying applications II
15:30 – 16:00	Bus transfer to Holst Centre	
16:00 – 18:00	Poster session, Holst Centre demonstrator market, virtual tour of Solliance cleanroom	
18:00 – 18:30	Bus transfer to restaurant	
18:30 – 21:30	Symposium dinner	
21:30 – 22:00	Bus transfer to Pullman Hotel / Eindhoven city centre	

Friday, 11 September 2015

09:00 – 09:45 Plenary talk (Cocagne 2)	Concepts for optimizing manufacturing processes of coated products <i>Peter M. Schweizer</i> Wifag-Polytype Technologies AG, Fribourg, Switzerland	
09:45 – 10:15	Coffee break / Exhibition	
10:15 – 12:15	Fluid dynamics & coating fundamentals III	Post-deposition structure formation II
12:15 – 13:30	Lunch / Exhibition	
13:30 – 14:30	Process and product innovations	
14:30 – 15:00	Introduction ISCST 2016 and European Coating Symposium 2017 Best poster awards & closing remarks	
15:00 – 17:30	Optional sight-seeing activities (incl. English-speaking tour guide) <i>To be announced</i>	

Fluid dynamics and coating fundamentals I	Wednesday September 9	Coating and drying applications I	Lecture hall: Cogagne 1 Session chair: Laurent Limat
Film flows over topography – recent advances	10:30 – 10:45	A Research Methodology to Study Jet Wiping Processes	Lecture hall: Cocagne 1 Session chair: Hadj Benkreira
<i>Florian Warner¹, Philip H. Gaskell² and Markus Scholle¹</i>		<i>M. A. Mendez¹, K. Myrillas¹, A. Gosset² and J.-M. Buchlin¹</i>	
¹ Institute of Automotive Technology and Mechatronics, Heilbronn University, Germany		¹ Von Karman Institute for Fluid Dynamics, Brussels, Belgium	
² School of Engineering and Computing Sciences, Durham University, UK		² Naval and Oceanic Engineering Department, University of A Coruña, Ferrol, Spain	
Gradient flow perspective on thin-film bilayer flows	10:45 – 11:00	Drying of battery electrodes - Separation of drying temperature and drying rate induced effects	
<i>Sebastian Jachalski¹, Robert Huth¹, Georgy Kitavtsev² and Dirk Peschka¹</i>		<i>Michael Baunach, Stefan Jaiser, Philip Scharfer and Wilhelm Schabel</i>	
¹ Weierstrass Institute for Applied Analysis and Stochastics, Berlin, DE		Karlsruhe Institute of Technology, Karlsruhe, Germany	
² Max Planck Institute for Mathematics, Leipzig, Germany			
Gravity-driven thin film flow over topography: internal flow and associated free surface disturbance	11:00 – 11:15	Edge formation in slot die coating of lithium-ion battery electrodes	
<i>Sergii Veremieiev and Philip H. Gaskell</i>		<i>Marcel Schmitt, Paul Kitz, Philip Scharfer and Wilhelm Schabel</i>	
School of Engineering and Computing Sciences, Durham University, UK		Institute of Thermal Process Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany	
Rivulet flow of a power-law fluid	11:15 – 11:30	Functional surfaces produced by foam coating	
<i>F. H. Al Mukahal, B. R. Duffy and Stephen K. Wilson</i>		<i>E. Kenttä, H. Koskela, S. Paunonen, T. Hjelt, K. Kinnunen-Raudaskoski</i>	
University of Strathclyde, Glasgow, UK		VTT Technical Research Centre of Finland Ltd., Finland	
Numerical coating simulations at industrial scale using non-spherical bi-convex objects	11:30 – 11:45	Coating of LiNi_{0.5}Mn_{0.3}Co_{0.2}O₂ Cathode on Various Substrates via Slot-Die Coating and Their Performance	
<i>Charles A. Radke¹, H. G. Kureck² and Johannes G. Khinast²</i>		<i>Jianlin Li¹, David Wood^{1,2} and Claus Daniel^{1,2}</i>	
¹ Research Center Pharmaceutical Engineering GmbH, Graz, Austria		¹ Oak Ridge National Laboratory, Oak Ridge, USA	
² Institute Process and Particle Technology, Graz, Austria		² University of Tennessee, Knoxville, USA	
Self similarity of coalescing droplets on substrates	11:45 – 12:00	Improved Scale-up of Convective Drying Processes by Heat Transfer Rate Measurement	
<i>Dennis Hessling¹, Jacco Snoeijer^{1,2} and Jens Harting^{1,2}</i>		<i>L. Wengeler, B. Schmidt-Hansberg, C. Eichholz, F. Kleine Jäger</i>	
¹ Eindhoven University of Technology, The Netherlands		Coating and Film Processing, BASF, Ludwigshafen, Germany	
² University of Twente, Enschede, The Netherlands			
Lubrication theory for thixotropic fluids	12:00 – 12:15	Characteristic drying stages and their impact on film morphology during drying of particulate electrode coatings	
<i>Stephen K. Wilson, David Pritchard and Catriona R. McArdle</i>		<i>S. Jaiser, M. Müller, M. Baunach, W. Bauer, P. Scharfer, W. Schabel</i>	
University of Strathclyde, Glasgow, UK		Karlsruhe Institute of Technology, Karlsruhe, Germany	
Thin layer coating on porous substrate vs. dense, smooth substrate	12:15 – 12:30	Experimental and Analytical Study of Strip Centering in Flotation Dryer	
<i>Maarten Meijlink and Erik Vermeer</i>		<i>Hirokazu Kobayashi, Yukio Takashima</i>	
FUJIFILM Manufacturing Europe B.V., Tilburg, Netherlands		JFE Steel Corporation, Okayama, Japan	

Post-deposition structure formation I		Lecture hall: Cocagne 2	Wednesday September 9	Printing and patterned coatings	Lecture hall: Cocagne 1
Session chair: <i>Masato Yamamura</i>				Session chair: <i>Wilhelm Schabel</i>	
<i>Invited talk:</i>				On tail formation during gravure printing of electronics	
Transport and structure formation in coatings: depth and time-resolved studies			13:45 – 14:00	<i>Umut Ceyhan and S. J. S. Morris</i>	
<i>Henk Huinink</i>		Department of Applied Physics, Eindhoven University of Technology, Eindhoven, The Netherlands		Department of Mechanical Engineering, UC Berkeley, USA	
Stripe coatings of low viscous fluids			14:00 – 14:15	<i>S. Raupp, M. Schmitt, R. Diehm, P. Scharfer and Wilhelm Schabel</i>	
<i>Charley Schaefer,¹ Paul van der Schoot,¹ Rene Janssen,¹ Ellen Moons,² and Jasper Michels³</i>		¹ Eindhoven University of Technology, The Netherlands ² Dept. of Engineering and Physics, Karlstad University, Sweden ³ Max Planck Institute for Polymer Research, Mainz, Germany	14:15 – 14:30	Intermittent coating <i>Hero 't Mannetje, Ike de Vries and Benjahman Modeste</i>	Holst Centre/TNO, Eindhoven, The Netherlands
Predicting Structure Development in Solvent-Borne Blend Systems			14:30 – 14:45	Bead behavior in a non-continuous slot die coating regime <i>Arjan Langen, Alessia Senes, Ike de Vries, and Pim Groen</i>	Holst Centre/TNO, Eindhoven, The Netherlands
<i>Charley Schaefer,¹ Paul van der Schoot,¹ Rene Janssen,¹ Ellen Moons,² and Jasper Michels³</i>		¹ Eindhoven University of Technology, The Netherlands ² Dept. of Engineering and Physics, Karlstad University, Sweden ³ Max Planck Institute for Polymer Research, Mainz, Germany		Transparent and conductive coatings of metalpolymer nanocomposites with structural control <i>S. Beck, L. Gonzalez-Garcia, B. Haas, I. Kanelidis, J.H.M. Maurer & T. Kraus</i>	Leibniz Institute for New Materials, Saarbrücken, Germany
The comparison of alkyd drying using alternatives for cobalt driers; comparing NMR imaging and conventional methods			14:45 – 15:00		
<i>S.J.F. Erich^{1,2}, Ö. Gezici¹, C.A.A.M. Thomas^{1,3}, M.B. Michel^{1,3}, H.P. Huinink¹, O.C.G. Adan^{1,2}, J. Flapper³, F. Duivenvoorde³, and L.G.J. van der Ven³</i>		¹ Eindhoven University of Technology, The Netherlands ² TNO, Delft, The Netherlands ³ AkzoNobel Coatings, Sassenheim, The Netherlands			
Marangoni flows induced by atmospheric-pressure plasma jets			15:00 – 15:15	Intermittent Coating of Viscous and Low Viscous Fluids <i>R. Diehm, S. Raupp, M. Schmitt, P. Scharfer and Wilhelm Schabel</i>	Karlsruhe Institute of Technology, Karlsruhe, Germany
<i>C.W.J. Berendsen, E.M. van Veldhuizen, G.M.W. Kroesen & A. A. Darhuber</i>		Eindhoven University of Technology, Eindhoven, The Netherlands			

Contact lines and wettability	Lecture hall: Cocagne 1	Wednesday September 9	Inkjet printing	Lecture hall: Cocagne 1
Session chair: Joël De Coninck			Session chair: Martti Toivakka	
Forces at a moving contact line				
<i>J.-C. Fernandez-Toledano, Terence D. Blake, and Joël De Coninck</i>		15:45 – 16:00	<i>Invited talk: Inkjet printing as a coating technology</i>	
University of Mons, Mons, Belgium			<i>Bas Middelbos</i>	
Liquid contact line on a soft gel in dip-coating geometry				
<i>T. Kajiyama^{1,2}, P. Brunet¹, L. Royon¹, A. Daerr¹, M. Receveur¹ and L. Limat¹</i>		16:00 – 16:15		Océ Technologies - A Canon Group Company, Venlo The Netherlands
¹ Université Paris Diderot, Paris, France				
² Max-Planck Institute for Polymer Research, Mainz, Germany				
Young's Equation and Nanotubes				
<i>David Seveno¹, Terry D. Blake², and Joël de Coninck²</i>		16:15 – 16:30		
¹ Materials Engineering Department, KU Leuven, Belgium			<i>M. Chaperon, F. Ardacić, M. Manceau and Solenn Besson</i>	
² University of Mons, Mons, Belgium			INES, Univ. Grenoble Alpes and CEA LISTEN, Le Bourget du Lac, France	
Enhancement of contact line mobility by infrared laser illumination				
<i>M.A. v.d. Tempel, H.M.J.M. Wederschoen, J.C.H. Zeegers, A.A. Darhuber</i>		16:30 – 16:45		
Eindhoven University of Technology, Eindhoven, The Netherlands			<i>Lena Janßen, Ulrich Jung</i>	
			Print and Media Technology, University of Wuppertal, Germany	
Wetting on deformable coatings: experiments and modelling				
<i>M.Zhao^{1,2}, J.Dervaux³, M.Roché¹, L.Royon¹, T.Narita², F.Lequeux², L.Limat¹</i>		16:45 – 17:00		
¹ Université Paris Diderot – CNRS, Paris, France			<i>Ag line width control and improvement of adhesion between the two different interfaces by near-atmospheric pressure plasma for ink jet printing</i>	
² CNRS/UPMC, ESPCI, Paris, France			<i>Mu Kyeam Mun and Geun Young Yeom</i>	
³ CNRS and Univ. Paris Diderot, France			Sungkyunkwan University, Suwon, Gyeonggi-do, South Korea	
Contact line dynamics on a pseudo-brush				
<i>R. Lhermerout¹, H. Perrin², E. Rolley¹, B. Andreotti² and K. Davitt¹</i>		17:00 – 17:15		
¹ Laboratoire de Physique Statistique de l'ENS, Paris, France			<i>Drop-In-Flight Measurement Techniques</i>	
² ESPCI, Paris, France			<i>Paul Best</i>	
Solid surface geometry dependence of advancing contact angle				
<i>Yumiko Yoshitake, Yoshinori Itakura and Tsutomu Takahashi</i>		17:15 – 17:30		
Nagaoka University of Technology, Nagaoka, Niigata, Japan			ImageXpert, Inc., Nashua, New Hampshire, USA	

Fluid dynamics and coating fundamentals II		Thursday September 10	Large area electronics	Lecture hall: Cocagne 1
Session chair: <i>Marcio Carvalho</i>	Lecture hall: Cocagne 2		Session chair: <i>Andrew Hrymak</i>	
<i>Invited talk:</i>			<i>Invited talk:</i>	
Lattice Boltzmann simulations of complex fluids for printing and coating applications	Jens Harting ^{1,2}	10:15 – 10:30	Perovskite coated layers: from ceramic capacitors to solar cells	Pim Groen ^{1,2}
¹ Eindhoven University of Technology, The Netherlands		10:30 – 10:45		¹ Holst Centre/TNO, Eindhoven, The Netherlands
² University of Twente, Enschede, The Netherlands				² Technical University of Delft, Delft, The Netherlands
Simulation of concentrated suspensions in thin film processing	Mahyar Javid and Andrew N. Hrymak	10:45 – 11:00	Fabrication of efficient organic solar cell from eco-friendly nanoparticle dispersions utilizing scalable deposition processes	K. Glaser, S. Gärtner, S. Sankaran, J. Fragozo and A. Colsmann
Western University, London, ON, Canada				Karlsruhe Institute of Technology, Karlsruhe, Germany
Soft Wetting: Liquid drops on (visco)elastic solids	S. Karpitschka ¹ , S. Das ² , M. van Gorcum ¹ , H. Perrin ³ , B. Andreotti ³ and J.H. Snoeijer ^{1,4}	11:00 – 11:15	Plasma treatment of slot die coated polymer layers for OLEDs	Susan Mühl ¹ , Claudia Keibler ¹ , Michael Törker ¹ , Matthias Jahnel ¹ , and Andreas Richter ²
¹ University of Twente, Enschede, The Netherlands				¹ Fraunhofer FEP, Dresden, Germany
² University of Maryland, College Park, USA,				² Polymer Mikrosysteme, Technical University Dresden, Germany
³ ESPCI-CNRS, Univ. Paris-Diderot, Paris, France				
⁴ Eindhoven University of Technology, Eindhoven				
Study on yield behavior of colloidal gels with clay particles	Ipppei Homma ¹ , Tsutomu Takahashi ¹ , Yumiko Yoshitake ¹ , and A. Sogabe ²	11:15 – 11:30	Relation between coating defects and device performance: Understanding failure mechanisms in solution processed OLED and OPV	Juliane Tripathi, Harmen Rooms, Dirk Spruijt, Yulia Galagan
	¹ Nagaoka University of Technology, Nagaoka, Niigata, Japan			Holst Centre/TNO, Eindhoven, The Netherlands
	² Shiseido Research Center, Yokohama, Kanagawa, Japan			
Capillary suspensions in coating processes for energy storage applications	Boris Bitsch, M. Schmitt, P. Scharfer, Wilhelm Schabel, N. Willenbacher	11:30 – 11:45	Spray coating of highly reproducible, conductive and uniform silver nanowire layer over large areas: an industrial perspective	Yilei Shen, Marius Adler, Karen Forberich and Christoph J. Brabec
Karlsruhe Institute of Technology, Karlsruhe, Germany				Friedrich-Alexander-University Erlangen-Nuremberg, Germany
A correlation for the maximum wetted radius on a spinning disc	Håkon B. Line ^{1,2} , Helfried Steiner ¹ and Günter Brenn ¹	11:45 – 12:00	Substrate-solvent interactions to ensure homogeneous deposition of perovskite for large area high efficiency solar cells	Jenny Baker, Giovanni Cotella, Eifion Jewell and Trystan Watson
	¹ Institute of Fluid Mechanics & Heat Transfer, TU Graz, Austria			SPECIFIC, Swansea University, Swansea, United Kingdom
	² CTR Carinthian Tech Research AG, Villach, Austria			
Transition to rivulets in a highly sheared liquid film on an airfoil	Anne Gosset ¹ and Philippe Villedieu ²	12:00 – 12:15	New continuous R2R production method of large area electroluminescence systems	Moritz Graf zu Eulenburg
	¹ University of A Coruña, Ferrol, Spain			InovisCoat GmbH, Monheim am Rhein, Germany
	² ONERA, DMAE, Toulouse, France			

Drying fundamentals		Thursday September 10	Coating and drying applications II	Lecture hall: Cogagne 1 Session chair: Peter Schweizer
Session chair: Masao Doi	Lecture hall: Cogagne 2			
<i>Invited talk:</i>				
Gradient dynamics description for films of mixtures and suspensions - model development and application to dewetting and line deposition	Uwe Thiele Institute of Theoretical Physics, University of Münster, Germany	13:30 – 13:45	A portable technique for fabrication of colloidal array on any substrate <i>Meneka Banik and Rabibrata Mukherjee</i> Indian Institute of Technology Kharagpur, Kharagpur, India	
		13:45 – 14:00	Self-cleaning multi-functional coatings with good robustness, high transmittance and superamphiphobicity <i>Junhui He and Zhi Geng</i> Chinese Academy of Sciences, Beijing, China	
Simulations of ring-like deposits	Qingguang Xie, Dennis Hessling and Jens Harting Eindhoven University of Technology, The Netherlands	14:00 – 14:15	Drying regime maps for the prediction of particle distribution in particle-filled polyvinyl alcohol films <i>S. Baesch¹, K. Price², D. Wagner¹, L. Francis², P. Scharfer¹, W. Schabel¹</i> ¹ Karlsruhe Institute of Technology, Karlsruhe, Germany ² University of Minnesota, Minneapolis, USA	
Modeling drying droplets on porous substrates	C. Diddens¹, J.G.M. Kuerten^{1,2}, C.W.M. van der Geld¹ and H.M.A. Wijshoff^{1,3} Eindhoven University of Technology, The Netherlands	14:15 – 14:30	A novel Cleaning in Place (CIP) approach and CFD modeling of the removal of thin films from metal surfaces with rotating high speed jets <i>C. Mohan Kumar¹, P. Elsen², B. Berger³ and U. Janoske¹</i> ¹ Lehrstuhl für Strömungsmechanik, University of Wuppertal, Germany ² Breuer GmbH, Solingen, Germany ³ Bernd-Berger Consulting, Kaarst, Germany	
Controlled solution-deposition by modulating gas phase convection	H. M. J. M. Wedershoven, K. R. M. Deuss, C. Fanticin, J. C. H. Zeegers and A. Darhuber Eindhoven University of Technology, The Netherlands	14:30 – 14:45	Water Absorption and Electric Conductivity of Polymer Blends for Coated Biosensor Films <i>Anna-Lena Riegel, Sibylle Kachel, Philip Scharfer, Wilhelm Schabel</i> Karlsruhe Institute of Technology, Karlsruhe, Germany	
Drying kinetics of nanoscale polymer films	Felix Buss, Philip Scharfer and Wilhelm Schabel Karlsruhe Institute of Technology, Karlsruhe, Germany	14:45 – 15:00	Selective deposition of ZnO nanorods in nematic thin films by dipcoating <i>Rubitha Srikantharajah and Wolfgang Peukert</i> Friedrich-Alexander University Erlangen-Nuremberg, Germany	
Effect of drying to orientation process of chromonic liquid crystal	S. Wakaki, H. Yamazaki, Y. Yoshitake and T. Takahashi Nagaoka University of Technology, Japan	15:00 – 15:15	Experimental investigation on Multicomponent Mass Transport during Drying of Ternary Poly(vinyl) Acetate Polymer Solutions <i>David Siebel, Wilhelm Schabel, Philip Scharfer</i> Karlsruhe Institute of Technology, Karlsruhe, Germany	
Characterization of contact line motion during solvent evaporation, cyclic breathing of triple line	Benjamin Vuillemy, Komla Ako, Yahya Rharbi Laboratoire Rhéologie et Procédés, INP – CNRS, UJF, Grenoble, France	15:15 – 15:30	Diffusion-optimized convection dryers and their applications in the coating industry <i>F. Durst, G. Zheng, H. Soltanzadeh, T. Brunner, S. Trzeciak</i> FMP Technology GmbH, Erlangen, Germany	

Fluid dynamics and coating fundamentals III			
Session chair: Terry Blake	Lecture hall: Cocagne 2	Friday September 11	Post-deposition structure formation II
Forced wetting and hydrodynamic assist <i>Terence D. Blake, J.-C. Fernandez-Toledano, and Joël De Coninck</i> University of Mons, Mons, Belgium			Shear banding in films of drying colloids <i>Bin Yang, James S. Sharp and Mike I. Smith</i> School of Physics, University of Nottingham, UK
Flow Imaging & Instabilities Study of Multilayer Slide Coating <i>R. Alpin and H. Benkreira</i> School of Engineering, University of Bradford, UK			Crack Formation in Films of Latex Nanoparticles with Varying Surface Charges <i>U. U. Ghosh, Aditya B. Bhandari, S. Chakraborty, S. DasGupta</i> ¹ Indian Institute of Technology, Kharagpur, India
Viscoelastic liquid curtains <i>A. Gaillard^{1,3}, L. Lebon¹, H. Lhuissier², L. Limat¹, and Julien Beaumont³</i> ¹ Université Paris Diderot and CNRS, Paris, France ² Université de Provence et CNRS, Marseille, France ³ Saint-Gobain Recherche, Aubervilliers, France		10:45 – 11:00	The film formation of polymeric particles analyzed by optical reflectometry <i>Nicolae Tomozeiu</i> Océ-Techologies A Canon Group Company, Venlo, The Netherlands
Analysis of Geometric Modeling of Slot Die Lips <i>Naoki S. Rikita</i> MMC Ryotec Corporation by Mitsubishi Materials, Tokyo, Japan		11:00 – 11:15	Solidification Process in Film Formation from Polymer Solution <i>A. Fujimaki, R. Katsumata, K. Kuboyama and Toshiaki Ougizawa</i> Tokyo Institute of Technology, Tokyo, Japan
Regime Maps to Predict Sag in Drying Coatings and a New Method to Measure Sag <i>R. K. Lade Jr., J.-O. Song, A. D. Musliner, B. A. Williams, S. Kumar, C. W. Macosko, L. F. Francis</i> University of Minnesota, Minneapolis, USA		11:15 – 11:30	Self-assembly of solvent in phase-separating polymeric films <i>Ayaka Fujishita and Masato Yamamura</i> Kyushu Institute of Technology, Tobata, Kitakyushu, Japan
Thin liquid film in polymer tubing: dynamics and dewetting in partial wetting condition <i>P. Hayoun^{1,2,3}, A. Letailleur², J. Teisseire³, E. Verneuil¹, F. Lequeux¹, E. Barthel¹</i> ¹ Soft Matter Sciences and Engineering, ESPCI ParisTech, France ² Saint-Gobain Research, France ³ Glass Surface and Interface, Saint-Gobain/CNRS, France		11:30 – 11:45	Ultrasonically sprayed flexible thin film electrodes for bio-fuel cells <i>A. Laaroussi^{1,2,3}, N. Lalaoui⁴, N. Reverdy-Bruas^{1,2,3}, A. Le Goff⁴, M. Holzinger⁴, S. Cosnier⁴, D. Chaussy^{1,2,3}, N. Belgacem^{1,2,3}</i> ¹ Univ. Grenoble Alpes, Grenoble, France ² CNRS, Grenoble, France ³ Agefpi, Grenoble, France ⁴ DCM, UMR CNRS-UJF, ICMG, Université Joseph Fourier, France ⁴ UFR de chimie, Bâtiment C & NanobiobP 53, Grenoble, France
Paper based microfluidics: Capillary-Driven Free Surface Flow <i>Joei Songok and Martti Toivakka</i> Laboratory of Paper Coating and Converting and Center for Functional Materials, Abo Akademi University, Turku, Finland		11:45 – 12:00	Coating of an oil-in-water emulsion on a glass plate: phase inversion and pattern formation <i>R. Harich, A. Deblais, D. Bonn, A. Colin, and H. Kellay</i> CNRS and University of Bordeaux, Talence, France
Molecular Dynamics Simulations of surface roughness effects on monatomic liquid flows <i>Michail Papanikolaou and Dimitris Drikakis</i> Institute of Aerospace Sciences, Cranfield University, UK		12:00 – 12:15	

Lecture hall: Cocagne 1

Session chair: Anton Darhuber

Friday September 11

Lecture hall: Cocagne 1

Session chair: Anton Darhuber

Friday September 11

Process and product innovations

Session chair: *Philip Scharfer*

Friday, September 11

Lecture hall: Cocagne 2

13:30 – 13:45	New Challenges for the Inline Thin Film Characterization <i>Martin Busch and Marcus Klein</i> SURAGUS GmbH, Dresden, Germany
13:45 – 14:00	µPlasmaPrinting deposition of amine-containing polymers by means of 3-aminopropyl trimethoxysilane and the application in metal-nanoparticle immobilization <i>Jean-Paul Schalken^{1,2}, Peter Verhoeven¹, Alquin Stevens¹, Hugo de Haan¹, Mariadriana Creatore²</i> ¹ InnoPhysics B.V., Eindhoven, Netherlands. ² Plasma Materials Processing, Eindhoven University of Technology, Eindhoven, Netherlands.
14:00 – 14:15	DEVELOPMENT OF NEW PRODUCTS WITH OPTIMIZED DIES – PRACTICAL EXAMPLES <i>Harald Döll</i> TSE Troller AG, Murgenthal, Switzerland
14:15 – 14:30	Instantaneous Drying and Photonic NIR-Curing <i>Dr. Kai K. O. Bär and Michael Schumann</i> adphos Digital Printing GmbH, Bruckmühl, Germany

Posters

Host: *Ike de Vries*

Thursday, September 10

Location: Holst Centre/TNO, High Tech Campus

01	Sol-Gel Fabrication of Coatings in the System of Ti/CaTiO₃/Ca₁₀(PO₄)₆(OH)₂ <i>Pranas Usinskas, Zivile Stankeviciute, and Aivaras Kareiva</i> Department of Chemistry, Vilnius University, Vilnius, Lithuania
02	Infrared laser induced thermocapillary deformation and destabilization of thin liquid films <i>H.M.J.M. (Ber) Wedershoven, Christian W. J. Berendsen, Jos C. H. Zeegers and Anton A. Darhuber</i> Department of Applied Physics, Eindhoven University of Technology, Eindhoven, The Netherlands
03	Measuring drying kinetics of Li-ion battery electrodes exposed to impinging gas flow <i>Michael Baunach, Stefan Jaiser, Philip Scharfer and Wilhelm Schabel</i> Institute of Thermal Process Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany
04	Effects of in-situ post-annealing process on microstructure, electrical properties, and chemical bonds of Li-doped ZnO thin films deposited by RF magnetron sputtering system <i>Chun-Cheng Lin^{1,2}, Sheng-Yuan Chu¹, Ann-Tin Yu² and Ming-Yue Fu^{2,3}</i> ¹ Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan ² Department of Mathematic and Physical Sciences, R.O.C. Air Force Academy, Kaohsiung, Taiwan ³ Department of Avionics Engineering, R.O.C. Air Force Academy, Kaohsiung, Taiwan
05	Micro-Cavity Effects in Color-Tunable Ultraviolet Organic Light Emitting Devices <i>Hsin-Wei Lu, Hui-Ling Weng, and Sheng-Yuan Chu</i> Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan
06	Effects of UV-ozone photo-annealing on surface, electrical properties, and chemical bonds of BaTiO₃ thin films deposited by sol-gel method <i>An-Hsiao Cheng, Sheng-Yuan Chu</i> Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan
07	Investigation of effects of anode buffer layer for organic light emitting devices by admittance spectroscopy <i>Ming-Chi Li, Hui-Ling Weng, Sheng-Yuan Chu</i> Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan
08	Local characterization of a complex fluid drying in a dip-coating-like <i>C. Loussert¹, J.-B. Salmon¹, J. Leng¹, B. Selva¹, B. Guerrier² and F. Doumenc²</i> ¹ Lab LOF, CNRS UMR 5258 - Univ. Bordeaux 1 - IPB - Rhodia, Pessac, France ² UPMC Université de Paris 06, Université de Paris-Sud, CNRS, Laboratoire FAST, Orsay, France
09	Impact of the local distribution of the heat transfer coefficient on the properties of thin porous films <i>S. Jaiser, M. Baunach, P. Scharfer, and W. Schabel</i> Institute of Thermal Process Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany
10	Numerical simulation of two-phase flows in dip coating <i>Jaewon Lee and Gihun Son</i> Department of Mechanical Engineering, Sogang University, Seoul, South Korea
11	Tinplate surface property effects in lacquer coating of steel packaging <i>Chris Melvin¹, Eifion Jewell¹, Jacob Miedema², Maxim Aarnts² and Koen Lammers²</i> ¹ SPECIFIC, Swansea University, Port Talbot, South Wales, UK ² Research and Development, TATA Steel Europe, Velsen-Noord, The Netherlands
12	Slot Die Coating of OLED-Multilayers <i>Sebastian Raupp, Philip Scharfer and Wilhelm Schabel</i> Institute of Thermal Process Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany
13	Drying influence on surfactant distribution in film forming water borne dispersions for adhesive applications <i>S. Baesch¹, D. Siebel¹, B. Schmidt-Hansberg², C. Eichholz², P. Scharfer¹, and W. Schabel¹</i> ¹ Institute of Thermal Process Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany ² BASF SE, GCP/TT - L544, Ludwigshafen, Germany
14	Direct determination of diffusion coefficients in polymer solvent systems from Raman spectroscopic data <i>David Siebel, Philip Scharfer, and Wilhelm Schabel</i> Institute of Thermal Process Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany
15	Magnetic Resonance Imaging of the drying and wetting process of coatings on wood <i>Ö. Gezici¹, S. J. F. Erich^{1,2}, H. P. Huinink¹, O. C. G. Adan^{1,2} and L. G. J. van der Ven³</i>

	<p>¹Department of Applied Physics, Eindhoven University of Technology, Eindhoven, The Netherlands ²TNO, Delft, The Netherlands ³AkzoNobel Coatings, Sassenheim, The Netherlands</p>
16	<p>An Experimental study on surface treatment of aluminum film for improving the hydrophilicity by using the deep coating method in the aluminium pouch of lithium-ion secondary battery <i>Sungwoo Bae¹ and Dong Soo Kim^{1,2}</i> ¹Hanbat National University, Daejeon, Republic of Korea ²TOPnC Co., Ltd., Daejeon, Republic of Korea</p>
17	<p>Deformation of thin liquid films by static surface charge distributions <i>Christian W. J. Berendsen, Kees (C.J.) Kuijpers, Jos C. H. Zeegers and Anton A. Darhuber</i> <i>Department of Applied Physics, Eindhoven University of Technology, The Netherlands</i></p>
18	<p>Solution Processing of Semiconducting Organic Molecules for Tailored Charge Transport Properties <i>Rafal Z. Rogowski, Andrzej Dzwilewski, Martijn Kemerink, and Anton A. Darhuber</i> <i>Department of Applied Physics, Eindhoven University of Technology, The Netherlands</i></p>
19	<p>Latex Films with In-Plane Composition Gradients Caused by Lateral Drying <i>Malin Schulz, Heike Römermann, Katja Pohl, Chakkresit Chindawong, and Diethelm Johannsmann</i> <i>Institute of Physical Chemistry, Clausthal University of Technology, Clausthal-Zellerfeld, Germany</i></p>
20	<p>Air-jet induced deformation, rupture and dewetting of liquid coatings on partially wetting substrates <i>Christian W. J. Berendsen, Jos C. H. Zeegers and Anton A. Darhuber</i> <i>Department of Applied Physics, Eindhoven University of Technology, Eindhoven, The Netherlands</i></p>
21	<p>Simulation of the coating film appearance for spray application <i>Fabian Seeler¹, Christian Hager², Matthias Schneider¹, and Oliver Tiedje¹</i> ¹Department Coating Systems and Painting Technology, Fraunhofer Institute for Manufacturing Engineering and Automation, Stuttgart, Germany ²John Deere GmbH & Co.KG, Bruchsal, Germany</p>
22	<p>Liquid wedge motion by evaporation/condensation controlled by diffusion <i>Frédéric Doumenc^{1,2}, Vladislav Janecek^{1,3}, Vadim Nikolayev⁴ and Béatrice Guerrier¹</i> ¹Lab FAST, University Paris-Sud, CNRS, Campus Universitaire, Orsay, France ²UFR919, Sorbonne Universités, UPMC Univ Paris 06, Paris, France ³ArcelorMittal, Voie Romaine, Maizières-lès-Metz, France ⁴SPEC/SPHYNX, CEA, CNRS, DSM/IRAMIS CEA Saclay, Gif-sur-Yvette, France</p>
23	<p>The influence of solvents on the morphology and the working parameters of the organic thin film transistors with n-type channel <i>I. Tszydel¹, M. Kucinska¹, T. Makowski², A. Nosal³, M. Gazicki-Lipman³, and J. Ułanski¹</i> ¹Department of Molecular Physics, Lodz University of Technology, Lodz, Poland ²Centre of Molecular and Macromolecular Studies PAS, Lodz, Poland ³Institute of Mechanical Engineering, Lodz University of Technology, Lodz, Poland</p>
24	<p>ELECTRICALLY CONDUCTIVE FUNCTIONS FOR INNOVATIVE TEXTILES <i>Evelyn Lempa, Carsten Graßmann, and Maike Rabe</i> <i>Niederrhein University of Applied Sciences, Mönchengladbach, Germany</i></p>
25	<p>Slot Die Material Innovations: Tungsten Carbide <i>N. Rikita¹ and J.-M. Balthazar²</i> ¹MMC RYOTEC Corporation, Tokyo, Japan ²MMC Hartmetall GmbH, Meerbusch, Germany</p>
26	<p>One step Slot-die coated hybrid halide perovskites for photovoltaic application: layer thickness, morphology and surface coverage <i>Giovanni F. Cotella, Jenny Backer, Eifion Jewell and Trystan Watson</i> <i>SPECIFIC, Swansea University, Swansea, United Kingdom</i></p>
27	<p>Shear stress oscillation in co-solvent nanoparticle suspensions : instability mode map <i>Eunhye Jang, Yoshihide Mawatari, Hiroyuki Kage, and Masato Yamamura</i> <i>Department of Applied Chemistry, Kyushu Institute of Technology, Fukuoka, Japan</i></p>
28	<p>Dynamics in dewetting: The influence of fluid parameters <i>Michel Riepen and Koen Winkels</i> <i>ASML, Veldhoven, The Netherlands</i></p>

Exhibitors		Location: Lumiere / Ampere / Maxwell
Kroenert GmbH & Co KG	Schützenstraße 105 D-22761 Hamburg, Germany www.kroenert.de	 KROENERT
Coatema Coating Machinery GmbH	Roseller Strasse 4 D-41539 Dormagen, Germany www.coatema.de	 Coatema® Coating Machinery GmbH
TSE Troller AG	Aareweg 6 CH-4853 Murgenthal, Switzerland www.tse-coating.ch	 TSE TROLLER
VDL Enabling Technologies Group	Achtseweg Noord 5 5651 GG Eindhoven, The Netherlands www.vdletg.com	 VDL
Smit Thermal Solutions B.V.	Ekkersrijt 4302 5692DH Son, The Netherlands www.smithermalsolutions.com	 Smit THERMAL SOLUTIONS
SPS-Europe B.V.	Midden Engweg 41 3882TS Putten, The Netherlands www.spincoating.com	 SPS
InnoPhysics B.V.	Fransebaan 592a 5627 JM Eindhoven, The Netherlands www.innophysics.nl	 InnoPhysics
adphos Digital Printing GmbH	Bruckmühler Strasse 27 D-83052 Bruckmühl/Heufeld, Germany www.adphos.de	 adphos
Maan Research and Development	Klipperweg 16 8102 HR Raalte, The Netherlands www.maangroup.nl	 MAAN RESEARCH & DEVELOPMENT
Océ - A Canon Company	St. Urbanusweg 43 5900 MA Venlo, The Netherlands global.oce.com	 océ A CANON COMPANY
Suragus GmbH	Maria-Reiche-Straße 1 D-01109 Dresden, Germany www.suragus.com	 SURAGUS Sensors & Instruments
nTact	10480 Markison Road Dallas, Texas 75238, USA ntact.com	 nTact  Adapting to Process
AIMCAL	PO Box 69533 1060 CA Amsterdam, The Netherlands www.aimcal.org	 AIMCAL
John P. Kummer GmbH	Steinerne Furt 78 D-86167 Augsburg, Germany www.jpkummer.com	 Kummer SEMICONDUCTOR TECHNOLOGY
FUJIFILM Dimatix, Inc.	2250 Martin Avenue Santa Clara, CA 95050-2704, USA www.dimatix.com	 FUJIFILM Dimatix Value from Innovation
ImageXpert Inc.	460 Amherst Street Nashua, NH 03063, USA www.imagexpert.com	 imageXpert inc.
m-u-t GmbH	Am Marienhof 2 D-22880 Wedel, Germany www.mut-group.com/m-u-t.html	 m.u.t

Map of High Tech Campus Eindhoven (3 km southwest of Pullman hotel)



Address of Holst Centre

High Tech Campus 31, 5656 AE Eindhoven
Tel. 040 402 0400
(Parking P3 West or P3 East)

Location of conference dinner

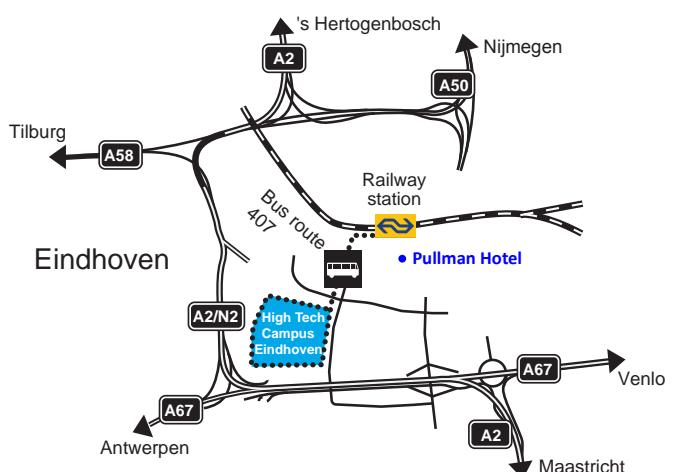
Kasteel Henkenshage
Laan van Henkenshage 3
5492 BH Sint-Oedenrode
(16 km north of Eindhoven city centre)

Taxi services Eindhoven

Taxi Connect, Tel. 040 777 7777

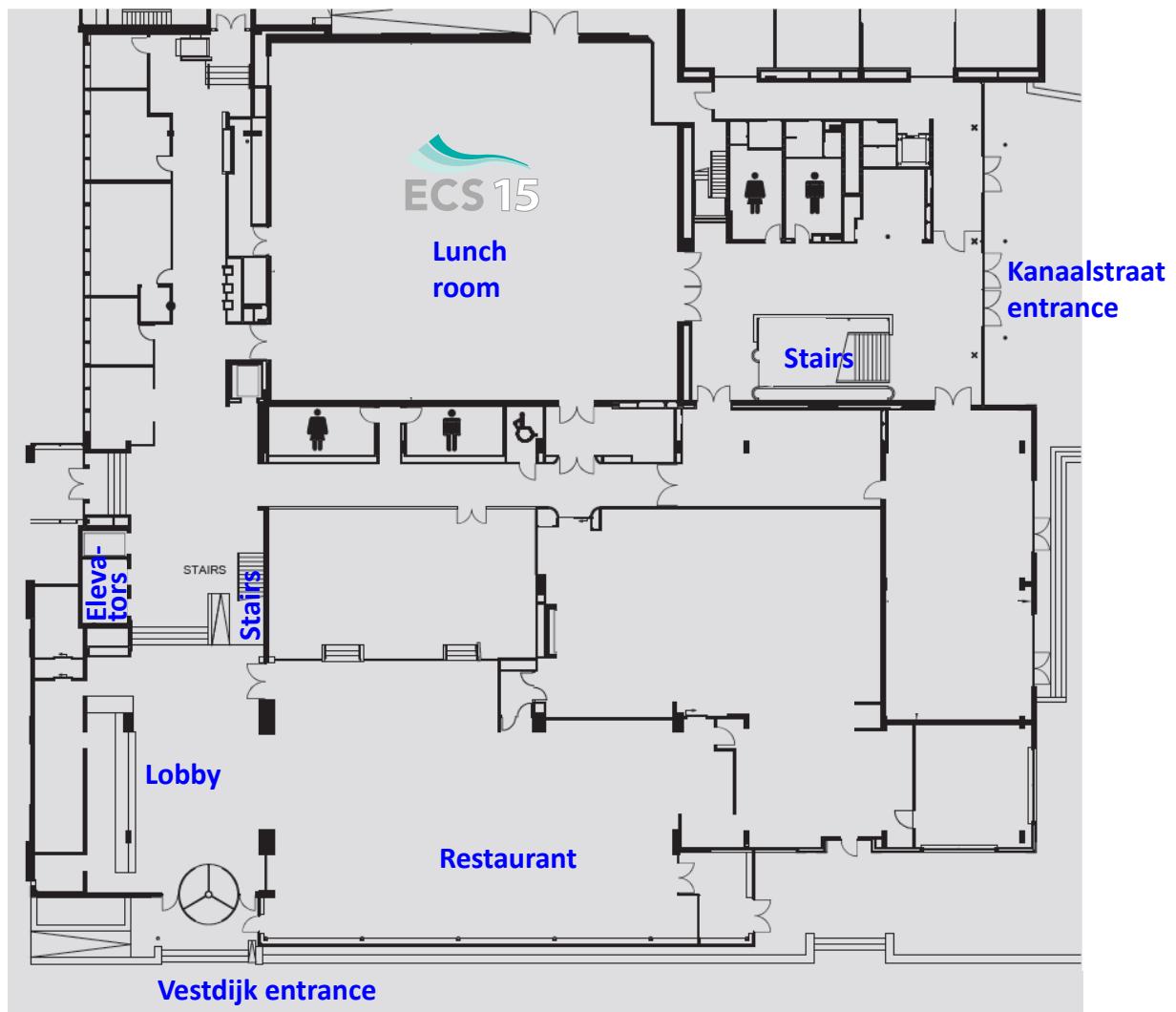
Jansen Taxi, Tel. 040 283 8383

Cibatax, Tel. 040 244 3333



Pullman hotel floormaps

Ground floor



First floor

