

13th European Coating Symposium

Advances in Coating, Printing and Drying of Thin Films, Smart Coatings and Materials

September 8-11, 2019

Marriott Hotel
Vangerowstraße 16
69115 Heidelberg
Germany



Conference Program

Schedule 08.09.2019

- 18:00 Registration and get together at Marriott hotelbar

Schedule 09.09.2019 - 1st Conference Day

- 8:30 Registration
9:00 Opening and Welcome Address by W. Schabel (ECS 2019 Chair & Vice President of ECS) and P. Schweizer (President of ECS)

Invited Talks - 1 (Chairs: Schabel, Scharfer)

- 9:30 Coating research for mass production technologies of next-gen electronics
J. Nam, K. H. Ahn; *Seoul National University*
10:00 Stratification in Drying Coatings
C. Rees-Zimmermann, A. Routh; *University of Cambridge*

- 10:30 Coffee break

Plenary Talks - 1 (Chairs: Benkreira, Schabel)

- 11:00 Thin liquid film formation on hemispherical and conical substrate
P. H. Gaskell, M. Scholle, F. Marner, A. Morris; *Durham University*
11:25 Dynamics of unstable dewetting at soft solid interfaces
M. Chudak, A. A. Darhuber; *Eindhoven University of Technology*
11:50 Aerosol Jet Printing of Regenerated Silk Fibroin Solutions
Y. Xiao, K. Kalaitzidou, D. Yao, W. H. Yeo, T. A. L. Harris; *Georgia Institute of Technology*
12:15 Statics and dynamics of contact lines on a deformable coating
M. Zhao, R. Masurel, I. Ionescu, T. Narita, F. Lequeux, J. Dervaux, M. Roché, L. Limat; *Université Paris Diderot*

- 12:40 Lunch break

Session A - 1 (Chairs: Buchlin, Durst)

- 13:50 Transient rheological response of co-solvent dilute suspensions
T. Kai, M. Yamamura; *Kyushu Institute of Technology*
14:10 A potential based field description for gravity-driven film flow over piece-wise planar topography
M. Scholle, F. Marner, P. H. Gaskell; *Heilbronn University*
14:30 Integral Boundary Layer Simulations of the Jet Wiping Process
M. A. Mendez, A. Gosset, B. Scheid, J.-M. Buchlin; *von Karman Institute for Fluid Dynamics*
14:50 Validation of high and low fidelity CFD simulations of the jet wiping process
D. Barreiro Villaverde, A. Gosset, M. A. Mendez, J.-M. Buchlin; *University of A Coruña*
15:10 Breakdown of a thin film in rivulets: Approach with a shallow water solver
A. Gosset, D. Barreiro Villaverde; *University of A Coruña*

Session B - 1 (Chairs: Darhuber, Mages-Sauter)

- Contact line advancing on a cold substrate: arrest condition and stick-slip behaviour
R. Herbaut, P. Brunet, J. Dervaux, L. Limat, L. Royon; *Université Paris Diderot*
Superhydrophobic coating based on phase-change material and its application in thermal management
S. Naderizadeh, J. A. Heredia-Guerrero, G. Caputo, S. Graselli, A. Malchiodi, A. Athanassiou, I. S. Bayer; *Istituto Italiano di Tecnologia*
Controlling grain size and growth direction of single-crystal perovskite by coalescing anti-solvent droplets
S.-Y. Peng, Y.-C. Liao; *National Taiwan University*
Perovskite Thin-Film Photovoltaics – Understanding and controlling the drying process in large-scale solution processing
S. Ternes, T. Börnhorst, J. A. Schwenzer, I. M. Hossain, U. Paetzold, B. Richards, P. Scharfer, W. Schabel; *Karlsruhe Institute of Technology*
Experimental Investigations on Phase Equilibria and Diffusion Kinetics of Nanolayers for Printed Electronics
T. Börnhorst, S. Ternes, P. Scharfer, W. Schabel; *Karlsruhe Institute of Technology*

- 15:30 Coffee break

- 16:00 Poster presentations

- 17:15 Postersession, Exhibitor presentation & Live music



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Schedule 10.09.2019 - 2nd Conference Day

9:00	Welcome Address by T. Hirth, Vice President of Karlsruhe Institute of Technology
Invited Talks - 2 (Chairs: Schabel, Scharfer)	
9:10	Two-Photon Polymerization - a key enabling technology: From maskless lithography to 3D printing <u>M. Hermatschweiler; Nanoscribe GmbH</u>
9:40	Adhesion Science for Coaters <u>S. Abbott; TCNF Ltd</u>
10:10	Coffee break
Plenary Talks - 2 (Chairs: Scharfer, Schweizer)	
10:40	Methods for Local Property Investigations of Liquid Curtain Flows A. Kutz, Ü. Acikel, D. Eggerath, A. Al-Zoubi, J. Domnick, T. Hellmuth, <u>F. Durst; FMP Technology GmbH</u>
11:05	Slot die coating of nanographite/nanocellulose-based electrodes for metal-free supercapacitors <u>M. Toivakka, R. Koppolu, N. Blomquist, C. Dahlström; Åbo Akademi University</u>
11:30	Advantages and Limitations of Structured Coatings of Lithium-ion Battery Electrodes <u>R. Diehm, J. Kumberg, P. Scharfer, W. Schabel; Karlsruhe Institute of Technology</u>
11:55	Recent Developments in Rivulet Flow <u>S. K. Wilson, B. R. Duffy; University of Strathclyde</u>
12:20	Lunch break & Posteraward
Session A - 2/1 (Chairs: Kleine Jäger, Routh)	
13:40	Marangoni-induced flow fields in drying films and printed structures measured with μ PTV <u>M. Tönsmann, P. Scharfer, W. Schabel; Karlsruhe Institute of Technology</u>
14:00	Modelling gravity-driven film flow on inclined, periodically corrugated, uniformly heated substrate <u>G. Daly, P. H. Gaskell, S. Veremieiev; Durham University</u>
14:20	Development of an Extrusion-Based Coating Process for High-Energy Li-Ion Batteries <u>J. Seeba, S. Reuber, M. Wolter, A. Michaelis; Fraunhofer IKTS</u>
14:40	Water mass transport in the post-drying process of lithium ion batteries <u>J. Eser, T. Wirsching, P. Scharfer, W. Schabel; Karlsruhe Institute of Technology</u>
15:00	Coffee break
Session A - 2/2 (Chairs: Gugler, Toivakka)	
15:30	Development of a screw extrusion-based 3D printer and its biomedical / microfluidic applications <u>J.-W. Tseng, Y.-W. Tsao, P.-H. Tsai, H.-N. Chiu, M.-C. Hsieh, J. Belkner, T. Bremicker, T.-J. Sun, B. H. Liu, C.-L. Chin, K.-L. Cheng, A.-B. Wang; National Taiwan University</u>
15:50	Selective inkjet coating of Printed Circuit Boards with paraffin wax <u>J. Renner, R. von Arx, M. Soutrenon, G. Gugler, F. Bircher; iPrint, University of Applied Sciences of Western Switzerland</u>
16:10	Formation of satellite droplets during dip-coating of partially wettable surface protrusions on hydrophobic substrates <u>M. v. Gestel, B. He, A. A. Darhuber; Eindhoven University of Technology</u>
16:30	Simulation of Reactive Droplets in Porous Medium <u>T.-Y. Cheng, J.-X. Wu, P. Doshi, Y.-C. Liao; National Taiwan University</u>
16:50	Break
18:00	Boat tour & Barbecue
Session B - 2/1 (Chairs: Wang, Yamamura)	
In-situ Preparation of TiO ₂ /CdSe/graphene Nanocomposites and Their Application in Photo-Electrochemical Cathodic Protection Coating for 304 Stainless Steel <u>D. Xu, B. Liu, Yu Liu, Yan Liu, R. Zhu, S. Liu; Beijing University of Chemical Technology</u>	
Improving Coating Performance with Graphene Nano-Platelets <u>W. Weaver, L. Chikosha, P. Grimoldby, M. Sharp; Applied Graphene Materials Ltd</u>	
Drying of polymer particle composites <u>V. Gracia, P. Scharfer, W. Schabel; Karlsruhe Institute of Technology</u>	
Drying dynamics of colloidal dispersion during film formation: A lattice Boltzmann Study <u>B. Chun, T. Yoo, H. Wo. Jung; Korea University</u>	
Session B - 2/2 (Chairs: Döll, Müller)	
Processing of Thick Electrodes for Li-Ion Batteries with increased Microstructure Homogeneity <u>J. Kumberg, R. Diehm, P. Scharfer, W. Schabel; Karlsruhe Institute of Technology</u>	
Spanwise Pattern Formation in Blade Coating <u>O. Kim, K. Ahn, J. Nam; Seoul National University</u>	
Modelling compound redistribution due to droplet evaporation on a thin film <u>T. W. G. van der Heijden, A. A. Darhuber, P. van der Schoot; Eindhoven University of Technology</u>	
Experimental and theoretical investigation of the interdiffusion behavior in polymer-multilayers <u>L. Merklein, S. Raupp, P. Scharfer, W. Schabel; Karlsruhe Institute of Technology</u>	

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Schedule 11.09.2019 - 3rd Conference Day

Session A - 3 (Chairs: Gaskell, Seveno)

- 9:00 Low-temperature curing application using dual-curable clearcoats with radical and urethane reactions
K. I. Jung, D. G. Lee, S. B. Jeong, Y. I. Park, S. M. Noh, H. W. Jung; *Korea University*
- 9:20 Effect of polycarbonate diol with hindered urea on tunable scratch-healing properties in polyurethane-based clearcoat systems
D. G. Lee, J. C. Kim, S. M. Noh, H. W. Jung; *Korea University*
- 9:40 Analysis of inlet flow rate oscillations inside a coating die manifold
H. Jung, J. Nam; *Seoul National University*
- 10:00 Rivulet Flow Down an Inclined Permeable Membrane
A. Alshaikhi, M. Grinfeld, S. K. Wilson; *University of Strathclyde*
- 10:20 Film processing challenges of electro-chromic coatings
M. Schmitt, C. Mages-Sauter, F. Kleine Jäger; *BASF SE*

10:40

Coffee break

Plenary Talks - 3 (Chairs: Buchlin, Mendez)

- 11:10 Printing on textile: a wetting view
Q. Si, J. Wang, Y. Zhang, C. Fuentes, Z. Dongxing, J. De Coninck, A. W. Van Vuure, D. Seveno; *KU Leuven*
- 11:35 Film Transfer in Reverse Roll Coating: Film Thickness and Stability Window
H. Benkreira, Y. Shibata, K. Ito; *University of Bradford*
- 12:00 Crack patterns in drying films: Laboratory models to study paintings
F. Giorgiutti-Dauphiné, D. McIlroy, L. Pauchard; *University of Paris-Saclay*
- 12:25 Structure formation due to phase separation in polymer nanocomposite thin films during solution casting
N. Kobayashi, S. Yagawa, M. Kubo, E. Shoji, T. Tsukada, T. Adschiri; *Tohoku University*
- 12:50 Closing Remarks & Announcement of ECS 2021 by
P. Schweizer (President of ECS), W. Schabel and P. Scharfer (ECS 2019 Chairs)
- 13:00 Lunch
- 15:20 Post conference tour:
Guided tour through Heidelberg city & old town

For further information visit www.european-coating-symposium.eu.

Contact:

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