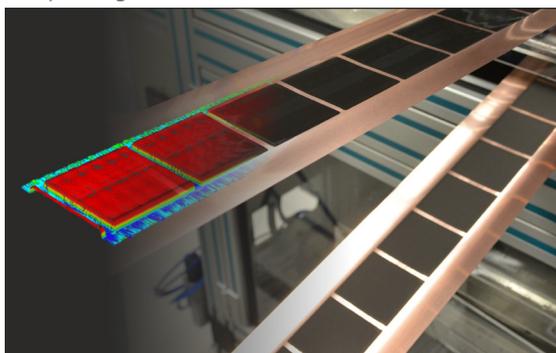




## 9<sup>th</sup> Short Course Coating and Drying of Thin Films

3(+2)-day short course on fundamentals and applications with practical workshop in the coating and printing lab



## 2<sup>nd</sup> Thin Film Technology Forum

2-day forum on June 1-2 on advances in printed electronics, battery and smart coatings



May 29-June 2, 2017

KIT-Tagungszentrum (FTU)

Seminar room 157 / lecture hall (TFT Forum)

Hermann-von-Helmholtz-Platz 1  
76344 Eggenstein-Leopoldshafen



Organisation: Prof. Dr.-Ing. Dr. h. c. Wilhelm Schabel  
Dr.-Ing. Philip Scharfer  
with 19 experts from industry and academia

## Program Short Course and Forum

31 contributions from 25 speakers (19 external)

### Schedule 29.05.2017 – Short Course Monday

- 12:00 *Registration and hand out of course material*
- 12:30 *Welcome and introduction*  
Prof. Dr.-Ing. Dr. h. c. W. Schabel / Dr.-Ing. P. Scharfer
- 13:00 *From theory to practice in coating technologies*  
Dipl.-Ing. Andrea Glawe (Kroenert)
- 13:45 *Rheology of coating fluids*  
Prof. Dr. Norbert Willenbacher (KIT)
- 15:00 *Coffee break*
- 15:30 *Coating / printing fluids characterisation*  
Dipl.-Ing. Gilbert Gugler (iPrint, CH)
- 16:45 *Introduction to self- and premetered coating*  
Dr. Peter Schweizer (Fribourg, CH)
- 19:30 *Social dinner at BESITOS (Karlsruhe town square)*

### Schedule 30.05.2017 – Short Course Tuesday

- 09:00 *Curtain and slot die coating*  
Dr. Peter Schweizer (Fribourg, CH)
- 10:00 *Coffee break*
- 10:30 *Fluid flow in coating tools*  
Prof. Dr. Dr. h. c. mult. Franz Durst (FMP)
- 11:30 *Knife and blade coating*  
Prof. Dr. Hadj Benkreira (University of Bradford, UK)
- 12:30 *Lunch break*
- 13:30 *Gravure and roll coating*  
Prof. Dr. Hadj Benkreira (University of Bradford, UK)
- 14:30 *Coffee break*
- 15:00 *Fundamentals of drying technology*  
Prof. Dr.-Ing. Dr. h. c. Wilhelm Schabel (KIT)
- 16:00 *Film drying and drying studies*  
Prof. Dr.-Ing. Dr. h. c. Wilhelm Schabel (KIT)

### Schedule 31.05.2017 – Short Course Wednesday

- 08:30 *Drying of particulate coatings and crack formation*  
Dr. Alex Routh (Cambridge, UK)
- 10:00 *Sorption and phase equilibrium in polymeric systems*  
Dipl.-Ing. Anna-Lena Riegel (KIT)
- 10:20 *Coffee break*
- 10:50 *Drying characterisation of battery electrodes*  
M. Sc. Jana Kumberg (KIT)
- 11:10 *Simulation & design of industrial thin film dryers*  
Dr.-Ing. Philip Scharfer (KIT)
- 12:40 *Lunch break*
- 13:40 *Homogeneous drying with comb nozzles*  
Dipl.-Ing. Philipp Cavadini (CND Solutions)

- 14:10 *Industrial perspectives of slot die coating*  
Dipl.-Ing. Harald Döll (TSE)
- 14:40 *Coffee break*
- 15:10 *Industrial perspectives on drying design rules*  
Dr. Stephan Sternowsky (Drytec)
- 15:50 *Coating apps and web handling*  
Prof. Dr. Steven Abbott (TCNF, UK)

### Schedule 01.06.2017 – Short Course & Forum Thursday

- 09:00 *Experimental workshop at the TFT coating and printing laboratory*  
- Characterisation of material systems  
- Pilot-scale coating trials  
- Heat and mass transfer coefficients  
- Experimental drying curves
- 13:00 *TFT Forum get-together lunch (Finger Food)*
- 14:00 *Welcome & Introduction to TFT Forum*  
Prof. Dr.-Ing. Dr. h. c. W. Schabel / Dr.-Ing. P. Scharfer
- 14:10 *Welcome & Introduction to KIT*  
Prof. Dr. Thomas Hirth (KIT)  
Vice President for Innovation and International Affairs
- 14:20 *Advances in organic & printed electronics processing*  
Ir. Ike de Vries (Holst Centre, NL)
- 15:20 *Multilayer polymer LEDs from solution*  
Prof. Dr. Paul Blom (MPI Polymer Research)
- 16:05 *Coffee break*
- 16:35 *Multilayer coating of organic electronics*  
Dipl.-Ing. Sebastian Raupp (KIT)
- 16:55 *New trends in Perovskite organic solar cells*  
Dr. Ulrich Paetzold (KIT)
- 17:25 *Drying and diffusion in printed nanofilms*  
Prof. Dr.-Ing. Dr. h. c. Wilhelm Schabel (KIT)
- 19:30 *Get-together at BESITOS (Karlsruhe town square)*

### Schedule 02.06.2017 – Short Course & Forum Friday

- 09:00 *Advances in digital direct printing*  
Prof. Fritz Bircher (iPrint, CH)
- 09:45 *Self-cleaning antireflective optical coatings*  
Dr. Stefan Guldin (UCL, UK)
- 10:15 *Solvent-borne acrylic pressure-sensitive adhesive films*  
Dr. Stephan Zöllner (tesa SE)
- 10:45 *Coffee break*
- 11:15 *Industrial production of Li-ion battery cells*  
Dr. Armin Modlinger (Litarion)
- 12:00 *Industrial experiences in production of Li-ion cells*  
Dr. Andreas Huth (VW-VARTA Microbattery)
- 12:30 *Limitations in industrial coating of battery electrodes*  
Dipl.-Ing. Ralf Diehm (KIT)
- 12:50 *Cryo SEM morphology characterisation and drying research on Li-ion battery electrodes*  
Dr.-Ing. Philip Scharfer (KIT)
- 13:10 *TFT Forum closing session lunch - Finger Food*

## Introduction

The short course **Coating and Drying of Thin Films** addresses engineers, scientists and technicians working in the areas of coatings, functional films, direct printing, inkjet printing, sensors, adhesives, paints, automotive coatings, patches, optical foils, tapes, diagnostics, membranes, printed electronics, fuel cells and battery coatings, who intend to get insight into more fundamental aspects with industrial applications or to deepen their expertise. Leading national and international scientists and experts from academia and industry will report on topics of coating technologies, rheology, preparation of coating fluids and about fundamentals and industrial aspects of drying technology. Coating and printing processes and drying technology are explained interactively by easily accessible examples and in a **practical workshop in the TFT Coating and Printing Lab** instructed by TFT staff members (see photos below).

The **2<sup>nd</sup> Thin Film Technology Forum** will take place on the 4<sup>th</sup> and 5<sup>th</sup> day, where renowned scientists will present and discuss new trends in industry and academia with a focus on **Printed Electronics, Battery and Smart Coatings**.



## Registration fees

	Early Bird (until 15.03.17)	later
General	€ 1550.–	€ 1700.–
GVT Members	€ 1500.–	€ 1650.–

## Payment

According to §4 Nr. 22a UStG the registration fee is purchase tax free. Registration fees include a short course folder with documentation of lectures and workshop, coffee, refreshments, lunch and social dinner on Monday evening and the TFT Forum get-together on Thursday evening. A participation certificate will be distributed.

## Venue

The short course takes place at the KIT-Tagungszentrum (FTU), Seminarraum 157, Hermann-von-Helmholtz-Platz 1 in 76344 Eggenstein-Leopoldshafen.

## Hotel recommendations

Hotel Kaiserhof, Hotel Novotel Karlsruhe City, City Partner Hotel Berliner Hof, Hotel Rio

## Further information

[www.tft.kit.edu](http://www.tft.kit.edu) – TFT Courses

## Feedback about the last TFT courses

- “Excellent introduction in coating and drying of films. Demonstrates the complexity, offers better understanding of processes.”
- “Very interesting course, lots of information on all coating application! Building bridge from university to industrial applications.”
- “Well built-up structure, wide range of theory and application covered too short time for discussion/break”
- “High level talks with broad range of topics but with good scientific and practical depth, also on application.”
- “Good structure.”

## and workshop

- “Good to see how the theory of the courses works in real life”
- “Experiments were very well prepared and perfectly organized”
- “Interesting, well organized”

## Further information and registration:

<http://www.tft.kit.edu/745.php>  
<http://www.gvt.org/Hochschulkurse.html>



## Contact

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