Thin Film Technology
- coating and printing lab @ KIT

Prof. Dr.-Ing. Wilhelm Schabel
Dr.-Ing. Philip Scharfer
Thin Film Technology
– Shared Professorship

initiated within the
“KIT - Elite Future Concept“

Since 2009
TFT – Group

Prof. Dr. –Ing. Wilhelm Schabel
(„Shared“ Professor)

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(Head of TFT@CN)

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(Joint Project)
Thin Film Technology Group - Research Fields - Applications

Functional Films & Coatings
Coatings, Paints,
Antireflective-, Protective Coatings, ...

(Semi-) Conducting Films
Organic Photovoltaic (OPV),
Hybrid SC, OLEDs, 
Printed Electronics

Bioactive Films
Diagnostics, Patches
Medical Coatings

Foils, Membranes
Optical Foils, Displays, Membranes,
Battery Electrodes

Source: BASF - Coatings

Source: BAYER MS
- Functional Films

Source: ROCHE - Diagnostics

Source: EVONIK - Litarion

Source: PHILIPS - Lightings

Source: BAYER BTS

Source: LOFO / ShinKong

Source: BASF - Coatings

Source: BAYER MS
- Functional Films

Source: ROCHE - Diagnostics

Source: EVONIK - Litarion
Thin Film Technology - located within KIT

KIT – Campus Nord
Geb. 717

KIT – Campus Süd
Institut für Thermische Verfahrenstechnik
Bereich Technologie dünner Schichten

10 – 15 min
TFT coating and printing lab

**Purpose**
- Determination of material properties
- Characterization of coating processes
- Investigation of polymer film drying
- Multi-layer coating
- Printed electronics
May 12, 2009 - KIT Campus North

2:15 PM: TFT is setting up its new research lab at the KIT Campus North. The lab furniture has arrived today and the assemblers started to arrange 102 single parts.

6:15 PM: End of day one. Four out of six lab tables are almost finished.

More details: www.tft.kit.edu
**Characterization Tools**

**Inverse Micro Raman Spectroscopy (IMRS)**

- Sorption/ Diffusion
- Permeation
- Phase separation
- Sol-Gel

**Surface Treatment** (Corona, Plasma)

**Surface Energy Contact Angle**

**Rheometry**

**In-Situ Interferometry, XRD**

**Surface Profiler**

**In situ Surface Deformation**
TFT Coating & Printing Lab @ KIT CN

Pre-metered and Self-metered

Slide Curtain

Slot Bead

Slot Curtain

Source: ILFORD

Source: TSE TROLLER

Source: ROTARY COATER

KNIFE-OVER ROLL

KISS

GRAVURE
Roll to Roll (R2R) – Coating and Drying Pilot Plant

**Coating Station:**

Pre-Metered Coating Methods:
- Slot Die / Slide / Curtain - Coating

**R2R - Coating & Drying:**

- Web Speed: 0,2 … 20 m/min
- Coating Width: 50 … 400 mm
- Dryer Length: 2 … 5 m

Self-Metered Coating Methods:
- Knife / Blade - Coating
- Roll / Gravure - Coating
Roll to Roll (R2R) – coating and drying pilot plant

Roll to Roll:

- Web speed: 0.2 … 20 m/min
- Coating width: 40 … 400 mm
- Dryer length: 2 … 5 m

Pre Metered Coating station:

Slot Die/ Slide/ Curtain

Foto: PKM, KIT
Press Release June, 2010
TFT @ KIT film project „Printed Electronics“
Danke für die Aufmerksamkeit!

„Kontrollierte“ Marangoni Struktur im trocknenden Film

Dank an TFT Gruppe