Advanced coating and printing at Empa

Empa
Materials Science and Technology

nsm
Norbert Schläfli AG
Pilot lines for functional- and security printing

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Coating Competence Center

Vacuum Table | Flexography | Gravure | Screen Printer | Hot air dryer

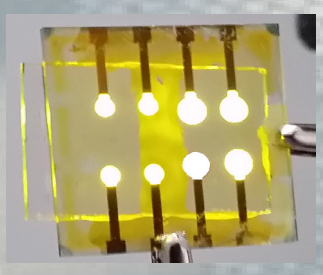
Empa is a multidisciplinary research institution and provider of specialist technical services within the ETH Domain, based in Dübendorf, Switzerland. The aim of EMPA is to exploit research results in material science and technology it acquires to develop marketable innovations in cooperation with industrial partners. The newly inaugurated coating competence center (CCC) at Empa focusses on Advanced Additive Manufacturing including high temperature surface coatings, cluster tools and wet coating & printing. The wet coating facility offers research in the printed electronics domain.

C600 printing machine

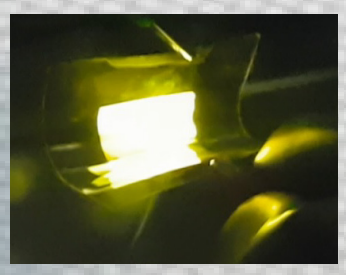
C600 is a unique concept printer (from ns*m* Nobert Schläfli AG) with flexo, gravure and screen printing modular units for advanced functional material research. The C600 offers tremendous possibilities with its multiple printing units, semi industrial printing speeds (1.5 m/sec) and inline drying system. It offers below 10µm inter print unit registration, thus opens new dimensions for additive manufacturing research.

The center also offers non-contact printing facilities like inkjet printing and slot die coating. With its expertise in materials research Empa hosts advanced ink, surface and device analysis tools like rheometers, densitometer, AFMs, XRD, SEM, solar simulators etc. At Empa, we explore vivid applications of the printing and coating machines such as printing of Ag electrodes and circuits, Solar cells, Organic light emitting diodes, actuators, to only name a few..

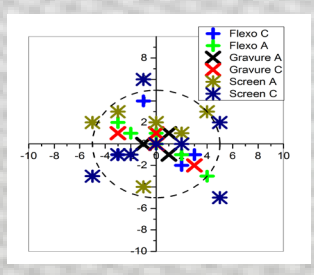
Demonstrators



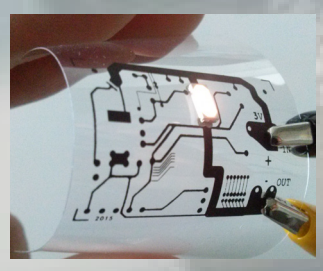
Slot die coated OLED on Glass



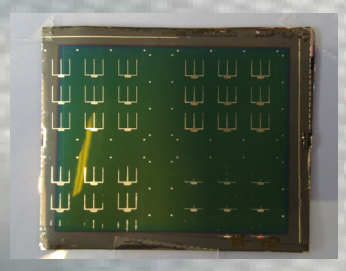
Slot die coated Flexible-OLED on PET



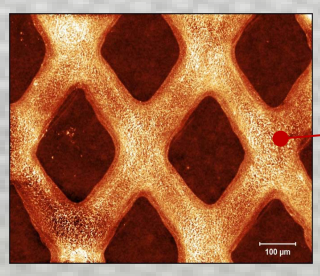
Overpring Accuracy: Flexography, Gravure, Screen



Gravure printed Ag-nanoparticle ink



Conductive electrodes on CIGS solar cells- Gravure



Graphene/CNT Flexo printed transparent electrodes for Actuators

We Offer

- **Various collaboration models → EU projects, CTI, company specific projects.**
- **Ink development, process development for printed electronics, ink industry, substrate industry, printing machine manufacturers.**
- **Prototype production.**
- **A R&D team with experience in printing technologies, chemistry , device physics, material science and the fabrication of printed and organic electronic devices.**
- **R & D Infrastructure→ Ink, Surface, Device- analysis and characterization.**
- **Clean room – class 5 facility.**

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