



SEMINAIRE

(de 13 h à 14 h, amphithéâtre PHELMA, Bât. INP, MINATEC,
ouvert aux chercheurs des autres laboratoires)

Jeudi 22 novembre 2012

“Flexible Large Area Electronic, new solution for electronics;
PICTIC the French Printing platform to transfer from Lab to Fab
flexible electronics devices”

by Isabelle CHARTIER

Abstract: Organic Electronics is an emerging electronic field covering different applications and markets from OLED display and e-Paper, OLED Lighting, organic PV and Flexible Electronics devices (organic transistors, sensors, memories....).

Flexible electronics solutions allow the development of "Smart Systems on Foil" integrating different devices on a flexible substrate. To realize such System On Foils, hybrid solution integrating printed organic electronics devices with Si processors will open new products functionalities taking the best of each technology: Innovative Man Machine Interfaces, distributed sensing surfaces, smart packaging, patches for personalized health monitoring, etc.

CEA-Liten is developing printing processes to realize flexible electronics since 2003 focusing on OTFT (Organic Thin Film transistors), sensor and printed OLED. Recent results on printed OTFT, CMOS circuits will be presented. CEA Printed CMOS process exhibits high performance (mobility above $1\text{cm}^2/\text{Vs}$ for both n and p type OTFT) and is air-stable. The process has reached sufficient maturity to define a first set of Design Rules and to realize analogue and digital circuits up to 100 OTFTs. Thanks to process flow reproducibility, models and simulations tools have also been developed within the project and a first Design Tool Kit is available allowing the designers to optimize circuits. Analogue and digital building blocks have been designed to address the demonstrators targeted in the COSMIC project: an A/D Converter for temperature sensors on foils and an RF authentication Tag. Remaining technological challenges will be presented, among them process dispersion, circuit density, system integration are important fields of further research.

CEA-Liten has launched in 2012 a new printing facility: PICTIC the French Printed Electronics Technology Platform. PICTIC gathers a full set of pre-industrial printing equipment in a 400 m² clean room. Based on sheet dimension of 320 mm x 38 mm, the printing tools enable high pattern resolution and high layer to layer alignment required for organic electronics devices. PICTIC targets to scale-up laboratory processes to prepare industrial transfer production pilot lines. PICTIC is open to academic and industrial partners for processes and devices development up to products prototyping. A first business case of PICTIC is the prototyping of printed photodiodes for the start-up company ISORG.

Isabelle Chartier graduated as an engineer in general optics from the Institut d'Optique – Paris in 1986 and joined CEA-Grenoble in 1989. She is currently Business manager for Printed Electronic at CEA-LITEN. Since 2012 she is in charge of PICTIC, the French Rhône-Alpes Region Printing Platform for Organic Electronics development and industrialization (a European funded initiative launched in Q1 2012). She coordinates the organic CMOS technology development in the EU funded project COSMIC. She is member of the advisory board of the Organic Printed Electronics J.

*Institut de Microélectronique, Electromagnétisme et Photonique
MINATEC, INPG, 3 Parvis Louis Neel, BP 257, 38016 GRENOBLE CEDEX 1, France
Tél. +33 (0) 456.529.503 - Fax. +33 (0) 456.529.501
UMR 5130 CNRS INPG UJF
Institut Polytechnique de GRENOBLE*