Georgia Tech Center for Organic Photonics and Electronics

Flexible Hybrid Electronics @ COPE

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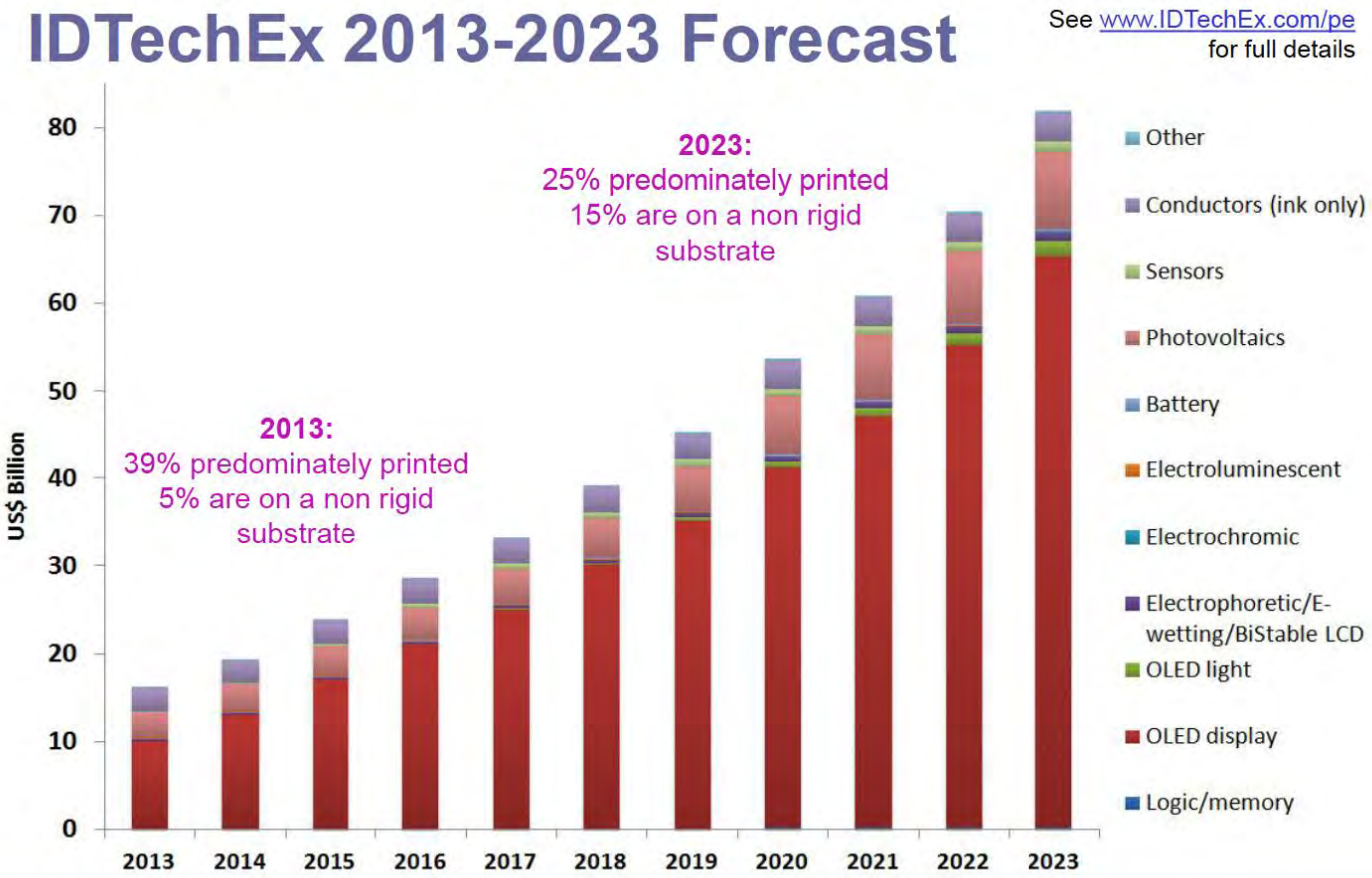
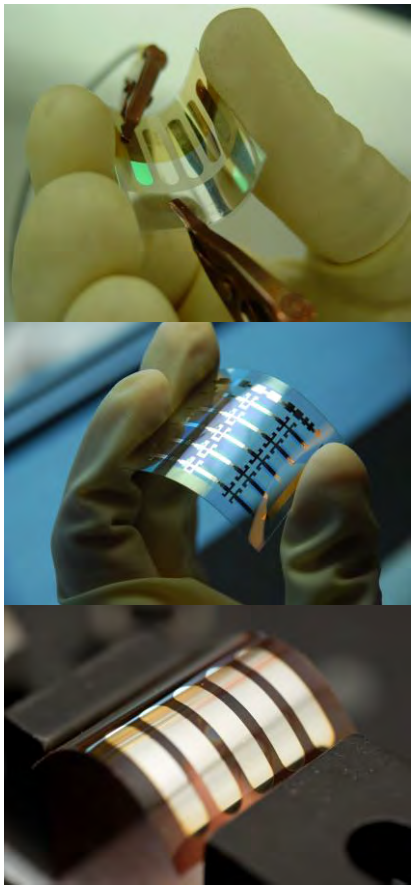
Market forecast



Source: IDTechEx report "Printed, Organic & Flexible Electronics 2013-2023" www.IDTechEx.com

Flexible hybrid electronics

Power	• Flexible photovoltaics • Flexible batteries
Human/machine interfaces	• AMOLED displays • E-readers, electrochromic displays
Logic	• Organic thin-film transistors and circuits • Application specific integrated circuits
Sensing	• Environmental monitoring • Biometric sensing
Imaging	• IR, visible UV imaging devices • X-ray, neutron and alpha source detectors
Communication/memory	• Flexible antennas • RFID/memory
Logistics	• Real time location of assets • Monitoring and inspection of assets

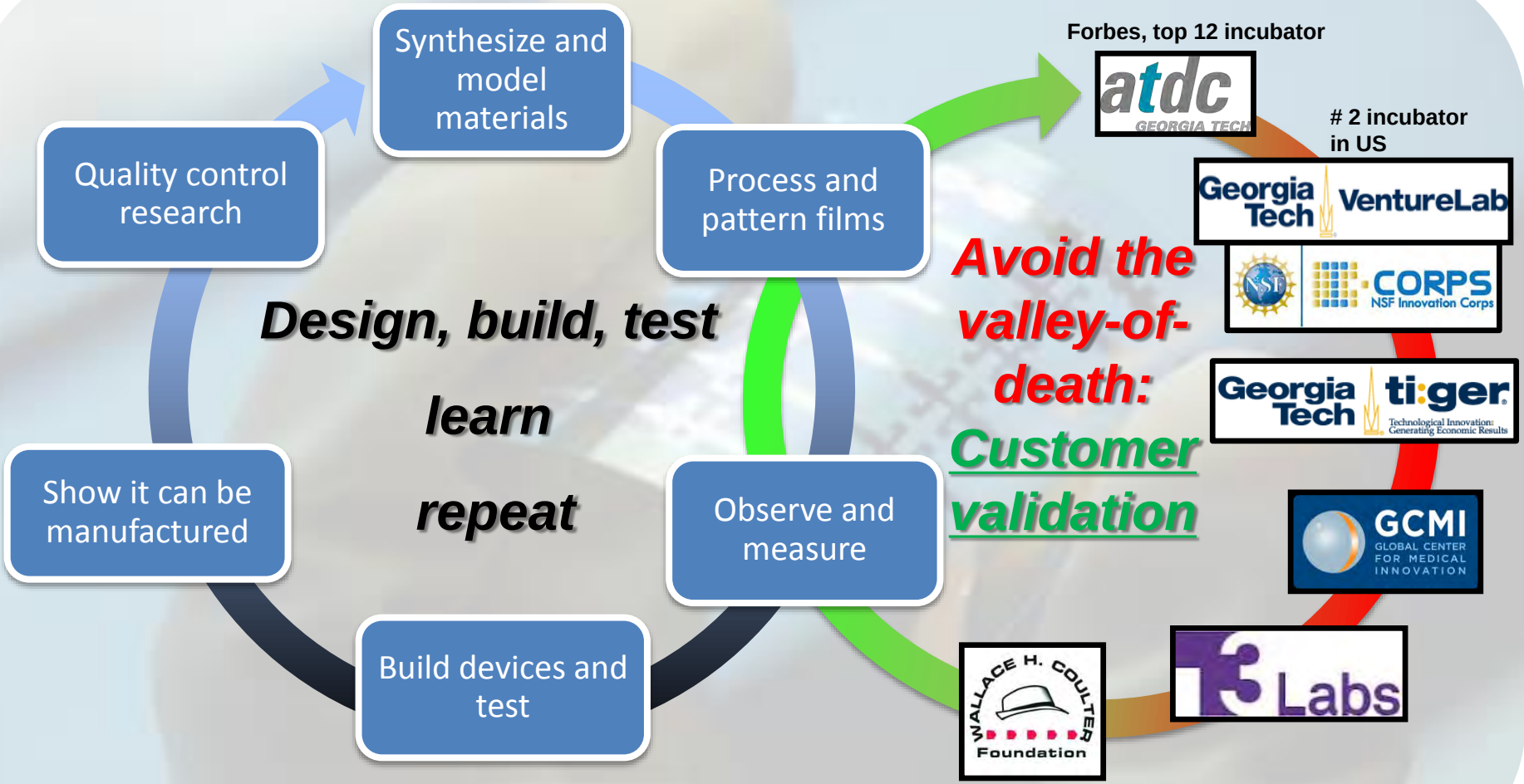


Center for Organic Photonics and Electronics (COPE)

- Established in **2003** at GA Tech.
- Multidisciplinary approach to research, training, and innovation (raised > $80 M since 2003).
- 36 faculty from 7 different schools.
- Shared facilities in computing, synthesis, material characterization and device fabrication.
- An innovation partner for industry.

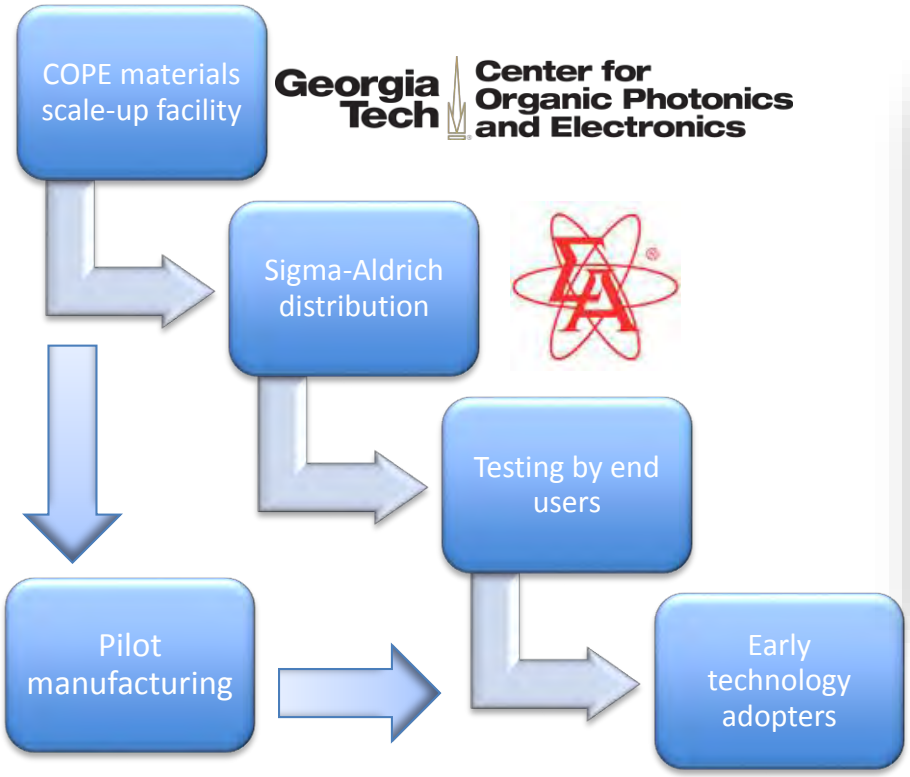
APPLIED MATERIALS · BOEING · BASF The Chemical Company · Ultratech/CambridgeNanoTech Simply ALD · plextronics · novaled · ConocoPhillips · TOTAL · SOLVAY

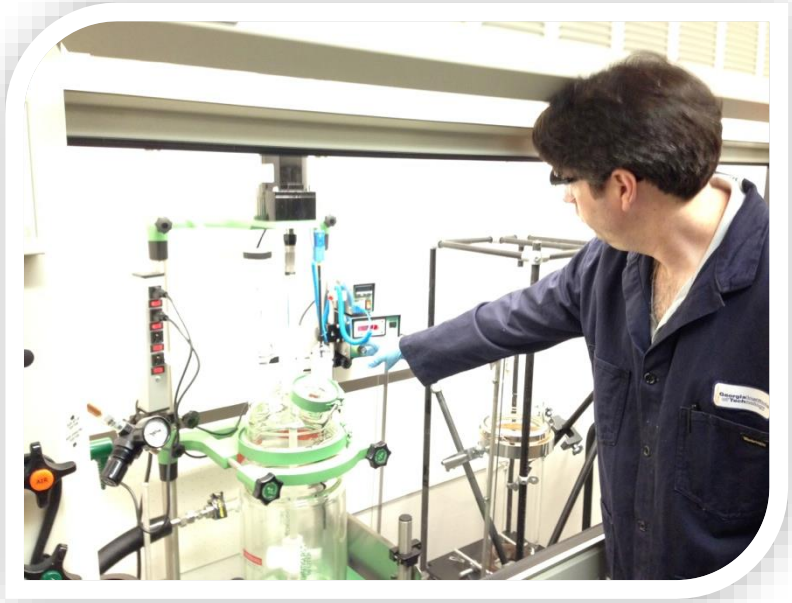
Integrated science and engineering cycle in an ecosystem for innovation



Key enabling infrastructure: materials scale-up facility

A culture of innovation stresses partnerships: the COPE/Sigma-Aldrich partnership

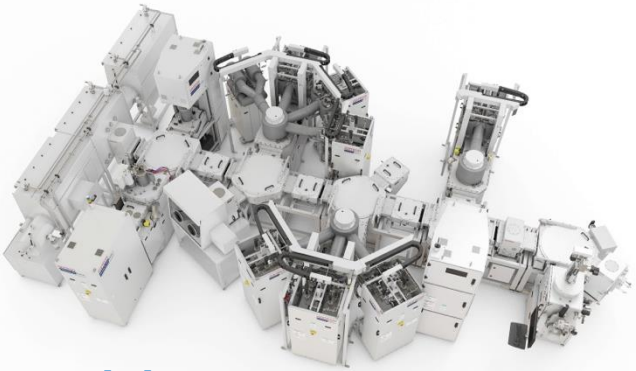




COPE scale-up facility

Georgia Tech's technology infrastructure

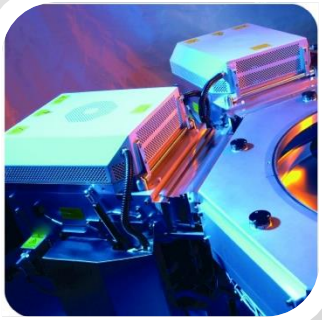
Semiconductor material growth and pilot manufacturing



OVPD laboratory

MOCVD laboratory

e-beam, photolithography, ICP and RIE etching, PECVD, ALD, metal coating



ALD

Institut Lafayette, France

INSTITUTLAFAYETTE

Building inaugurated in May 2014

> 30 M€ investments, building of 25,000 sq. ft., including 5,000 sq. ft. lab space and fully equipped 5,000 sq. ft. clean room (> 10 M€ investment in equipment)

OVPD Pilot Manufacturing

Delivered on Feb. 24, 2015,
Commissioning in progress

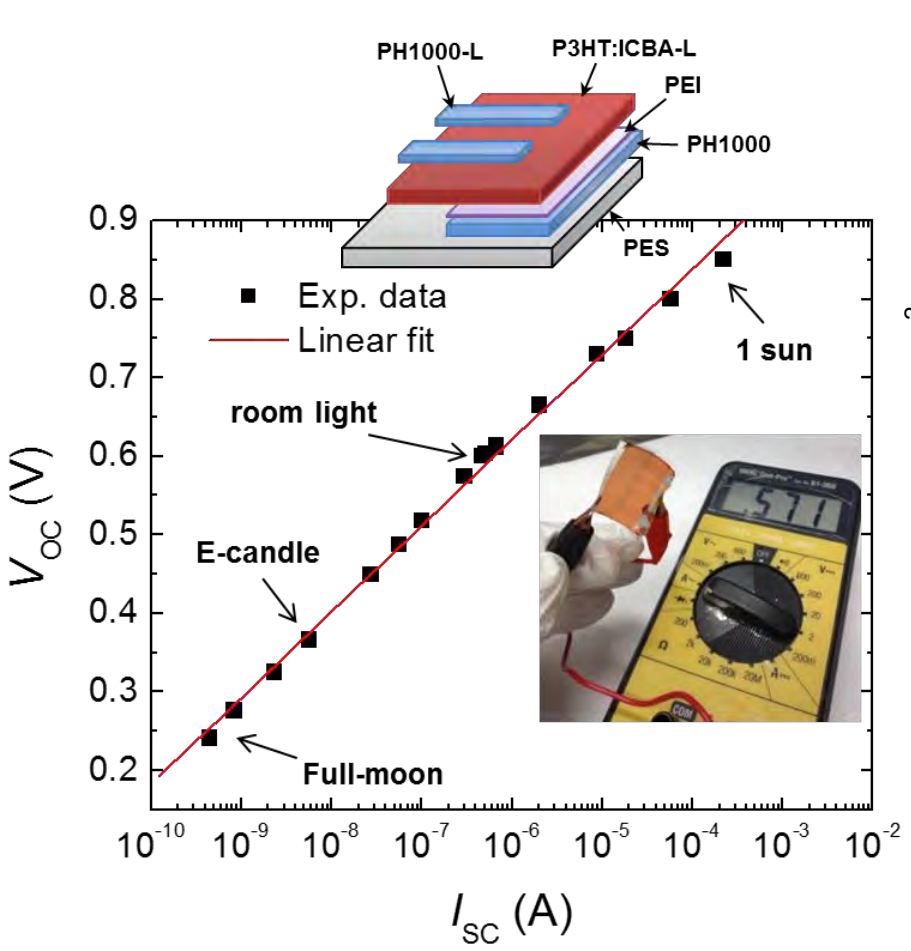
Organic Vapor Phase Deposition (OVPD) cluster tool.

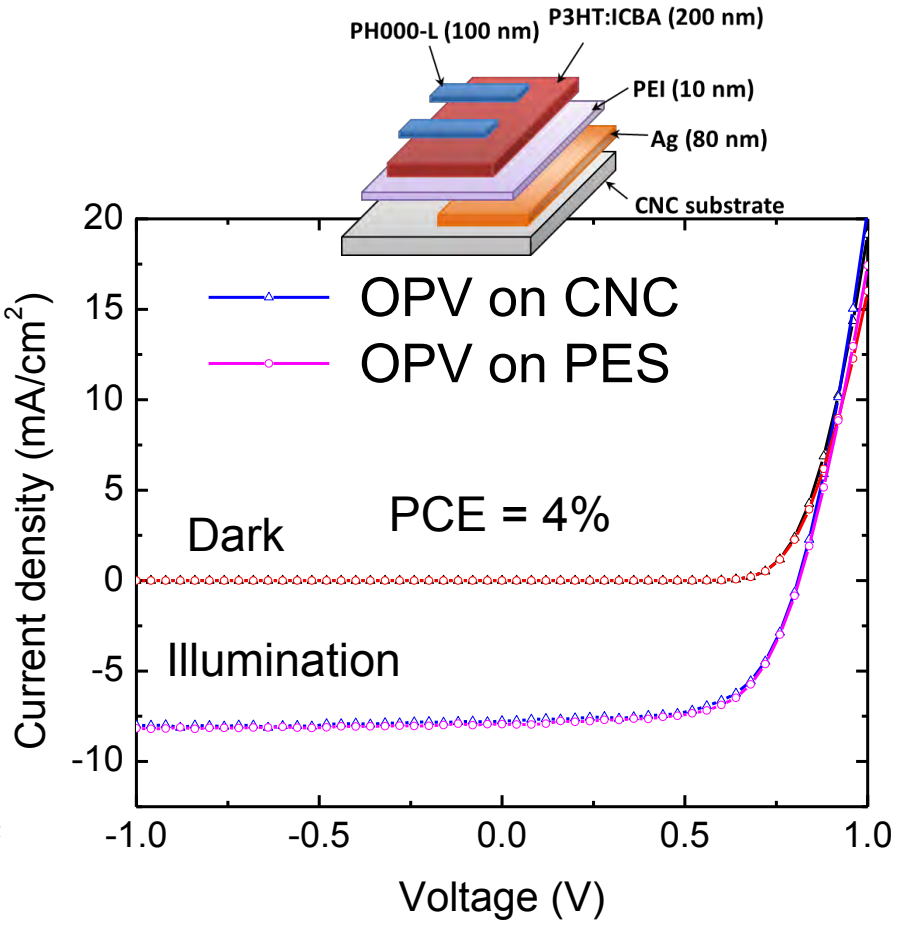
200 mm 8 organic source cluster tool with metallization chamber.

Research on light harvesting devices for portable power; interface science

EFRC CIS:SEM

Portable power in recyclable substrates

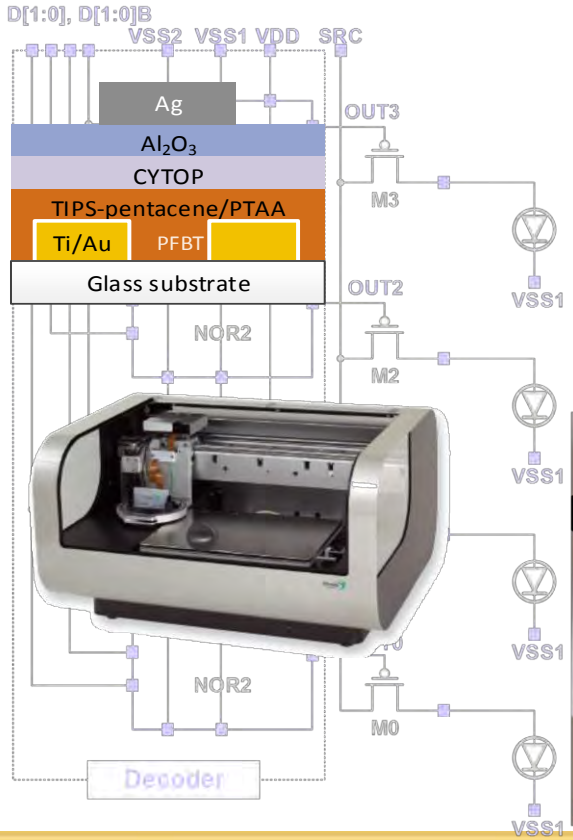


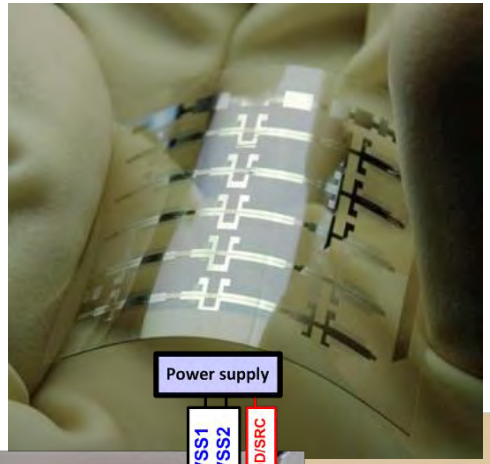


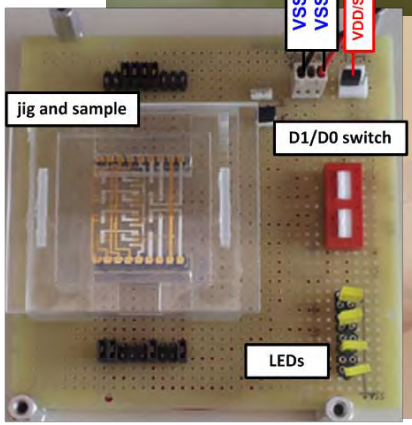
CNC: cellulose nanocrystals

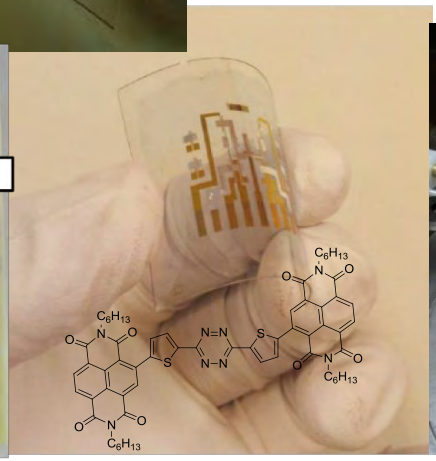
COPE sensor platforms

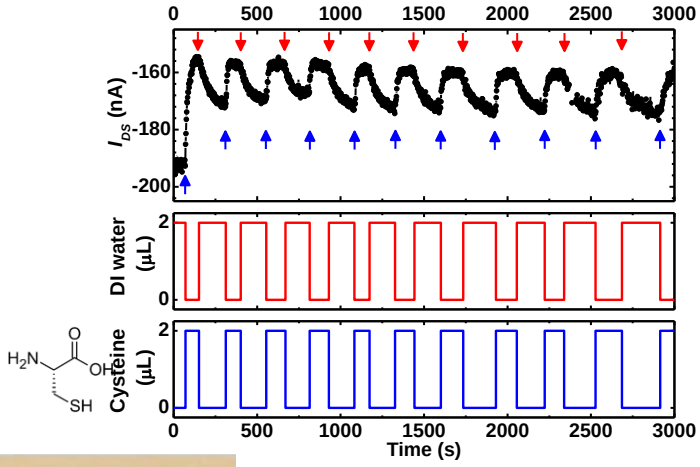
Proprietary air-stable scalable organic field-effect transistor technology for non-destructive sensing

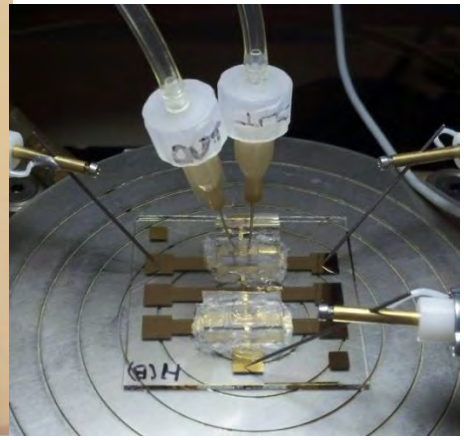










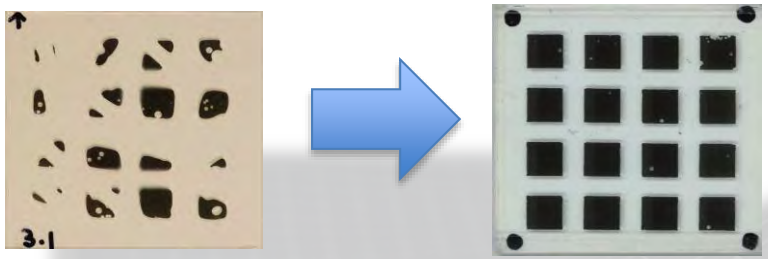


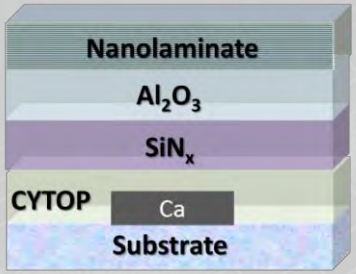
Key enabling technologies: ultrabarriers

COPE ultrabarrier coating technology for flexible hybrid electronics based on Atomic Layer Deposition

Atomic Layer Deposition

Calcium sensors





> 500 h @ 85° C and 85% RH

General Information

For additional information feel free to contact:

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