

# Advanced Materials and Devices in CENIMAT/I3N

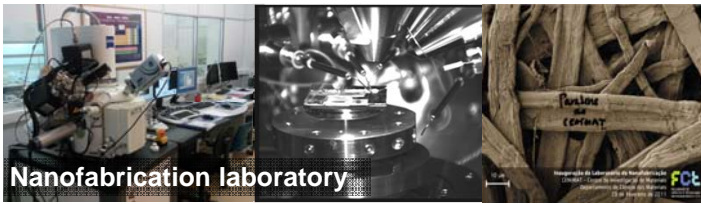


Microelectronic clean rooms



Staff (DCM): 21 + 1 invited      PhD Students: 39  
 Researchers with PhD: 41      Grant holders: 17

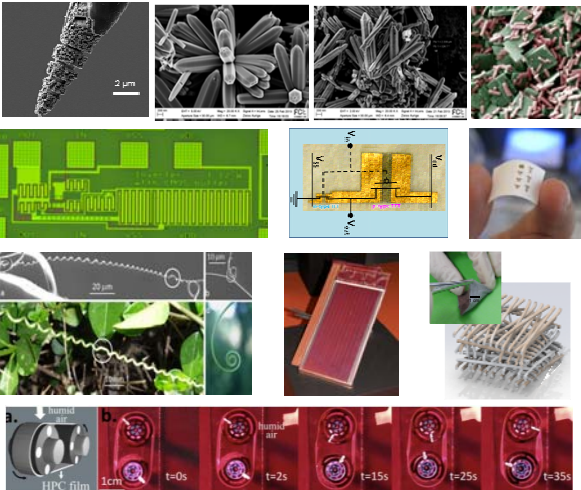
## Materials for Devices



Nanofabrication laboratory

- |                         |                                |
|-------------------------|--------------------------------|
| Solar Cells             | Integrated Circuits            |
| Batteries/Biobatteries  | UV-vis Optical Sensors         |
| Nanobiosensors          | Electrochromic Devices         |
| Paper Electronics       | Microfluidics                  |
| Transparent Electronics | Interdigital Electrode Sensors |
| Intelligent Windows     | Smart Textiles                 |
| Thin Film Transistors   |                                |

## Technologies / Facilities



- |                      |                                   |
|----------------------|-----------------------------------|
| Ink-jet Printing     | CO <sub>2</sub> laser             |
| Sol-Gel              | Severe Plastic Deformation (ECAP) |
| Hydrothermal         | Casting                           |
| Combustion Synthesis | Heat Treating                     |
| PECVD                | Rolling                           |
| Thermal Evaporation  | Oxygen Plasma                     |
| Magnetron Sputtering | Diffusion Furnaces                |
| Langmuir Blodgett    | Oxidation Furnaces                |
| Electrospinning      | LPCVD                             |
| Dry Etching          | Spray Pyrolysis                   |
| Parylene Deposition  | Single Screw Extruder             |
| Oxygen Plasma        |                                   |

## Projects 2007-2014

Total > 17 M€

Category	Amount (M€)
Nationals	7.9 10.217
European	9.5 52.524

## Recent Books/Chapter Books

Barquinha, P.; Martins, R.; Pereira, L.; Fortunato, E., **Transparent oxide electronics: from materials to devices**. West Sussex: Wiley, 2012.

Barquinha, P.; Martins, R.; Fortunato, E., **"N-type Oxide Semiconductor Thin-Film Transistors,"** in *Advances in GaN and ZnO-based Thin Film, Bulk and Nanostructured Materials and Devices*. vol. 156, Pearton, S. J., Ed. New York: Springer, 435-476, 2011

J.P. Borges, M.H. Godinho, J.L. Figueirinhas, M.N. de Pinho, M.N. Belgacem, **"All-cellulosic based composites"** in *Cellulose Fibers, Bio-, and Nano- Polymer Composites*, ed. By S. Kalia, B.S. Kaith, I. Kaur, Springer-Verlag, Germany (2011).

"Shape Memory Alloys-Processing, Characterization and Applications", Editor: FM Braz Fernandes. ISBN 978-953-51-1084-2, InTech., Apr 2013 (<http://www.intechopen.com/books/shape-memory-alloys-processing-characterization-and-applications>). 278 pgs.