

DCM - Materials Science Department

Nanostructured EC materials

CENIMAT|I3N/ Microelectronic and Optoelectronic Group



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2006-2010: Coordinator at Medinfotec Cosmetics
2004-2005: Logistics work at Imres (Netherlands)
2003-2004: Volunteer work in South Africa
2002-2003: Research grant
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Objectives

- New inorganic nanostructured materials
- Hydrothermal synthesis
- Deposition by Inkjet printing technique
- Cheap substrates (Plastic and paper)
- Good electrochromic performance

Methodology

1. Nanoparticle hydrothermal synthesis
 - Study of the influence of the precursors, mineralizer, solvents, pH, time and temperature
2. Ink formulation
 - Study of amount of functional material (nP's or/and precursors), dispersants, additives and solvents
 - Determination of surface tension and density of the ink
3. Inkjet printing
4. Electrochromic device assembly

Expected Results

Development of new inkjet printed electrochromic devices based on nanostructured metal oxides for possible application in large scale digital displays, smart packages and smart labels.

Main expected features:

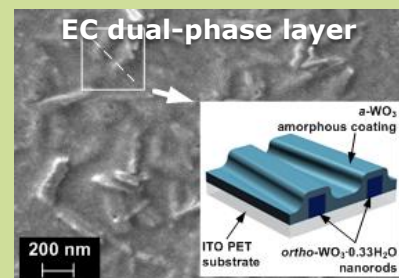
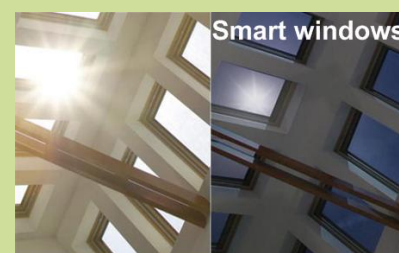
High color contrast ratio
(≥ 40%)

Low operation voltage

Scalability
(10 x 10 cm²)

Cycling
(10 000 hours)

Low switching times
(≈ 1 s/ 0.01 m²)



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