

RECENT MATERIALS DEVELOPMENT FOR ORGANIC SOLAR CELLS

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CIDETEC (Centre for Electrochemical Technologies) was created in 1997 as a private non-profit Research Centre devoted to electrochemistry, its core activity being the field of applied research. CIDETEC addresses all electrochemical technologies, applying its experience and know-how in three main areas of activity: Energy, Surface Finishing and New Materials.

Nowadays, **activities at CIDETEC in the field of organic solar cells** are centred in the synthesis and processing of new materials suitable for photovoltaics applications such as:

1. Synthesis and modification of polymeric **formulations based on PEDOT** (poly(3,4-ethylenedioxythiophene)) to be used as conductive transparent electrode and/or hole injector layer in combination with ITO layers in solar cells. Our main results have been related to the preparation of high conductive PEDOT, PEDOT nanocomposites including metal nanoparticles, biomimetic PEDOT, organic dispersions and hydrophobic PEDOT [*Chemistry of Materials* 19, 2147 (2007); *J. Nanosci. Nanotec.* 7, 1 (2007); *Biomacromolecules* 8, 315 (2007); *J. Pol. Sci. Pol. Chem.* 2008 (in press)]
2. Synthesis and characterization of solid electrolytes for dye sensitized solar cells based on **polymeric ionic liquids**. Our actual activities are focused on the synthesis and formulation of poly(3-ethyl-vinyl-imidazolium iodide) to develop solid electrolytes for dye sensitized solar cells [*Electrochemistry Communications* 8, 482 (2006)]
3. **Electrodeposition studies of metallic oxides** such as TiO₂, ZnO as well as quantum dots and metallic nanorods.
4. Synthesis of **ionic fullerenes** as substitutes of PCBM in polymer/fullerene solar cells.
5. Electropolymerization of **low-band gap polymers** based on polythiophene derivatives. [*Electrochimica Acta* 52, 4784 (2007)].