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| | **Organic PV** | ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development<br><br>SLOOP – ENEA Portici LabOratory Organic PV | |
| **Location of the infrastructure:** | Portici, Naples, Italy | | |
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| **Objectives:** | processing and characterization of organic photovoltaics (OPV) in various configurations. |
| **Main features:** | UTTP-NANO is ENEA applied nanotechnology unit (~ 30 researchers), which core mission is research and development in organic materials and nano-composites for the development of novel device technologies. UTTP-UNIT has developed a set of dedicated facilities for processing and characterization of organic photovoltaics (OPV) in different configuration .Polymer solar cells and nanocrystal functionalization and nanocrystals dispersed in conjugated polymer matrix are currently studied in UTTP-NANO unit covering realization, characterization and study of the degradation and stability. Studies covers also structured interfaces and substrates, and molecular modelling of the active materials for organic solar cells. The laboratory offers the following equipments:<br>• Chemical synthesis laboratory equipped with chemical reactors, glow box, HPLC, etc.;<br>• sol-gel laboratory (controlled environment and equipped with furnaces for thermal treatments);<br>• Wet benches for surface cleaning and chemical processing<br>• Glove box for processes in inert atmosphere<br>• roll-to-roll inkjet printing and hot embossing machines<br>• lamination / encapsulation equipments.-<br>• Clean room with mask-aligner for photolithographic process; e-beam and thermal evaporator<br>• Access to High Performance Computing infrastructure (CRESCO)<br><br>The laboratory offer the following characterization tools:<br>• laboratory for microstructural and morphological characterization:; scanning electron microscope (SEM), atomic force microscope (AFM), powder X-ray diffraction and glancing-incidence XRD<br>• Functional testing of organic materials and related devices<br>• thermogravimetric analysis (TGA) and differential thermal analysis (DTA) laboratory |

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| | • optical spectroscopy laboratory (photoluminescence (PL), photoluminescence excitation (PLE), UV-vis absorption, 4K cryostat);<br>• VIS-NIR, and FTIR Characterization Spectrometry Spectroscopic Ellipsometer<br>• Ageing/corrosion/humidity by climatic, salt and UV Test chamber<br>• AM1.5G Class A solar simulator for I-V light characterization; IV dark measurement and External quantum efficiency with electrical and/or optical bias<br><br>The processing facilities are integral parts of a research and development lab for polymer solar cells spanning materials synthesis, "Advanced characterisations for OPV" (offered as a separate TNA facility), and solar cell testing facilities. The research comprises all aspects of developing, utilising and characterising polymer solar cells. |
| **Examples of research projects:** | • The processing and characterization facilities are integral parts of a research and development laboratories of UTTP-NANO unit for organic electronic and polymer solar cells.<br>• The offered services comprises all aspects of developing, utilising and characterising polymer solar cells and related materials |