Organic functional materials

Francesca Parenti, Emanuela Libertini, Adele Mucci,

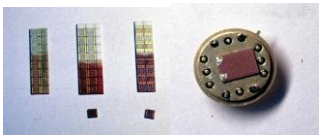

Figure 1

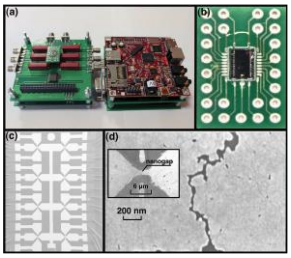

Figure 2

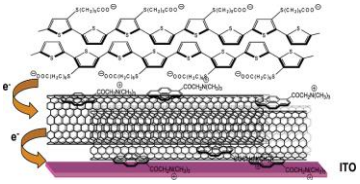

Figure 3

CONTACTS

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Sito web del gruppo

RESEARCH TOPICS

The group in mainly involved in the synthesis and characterization of thiophene-based materials with applications in optoelectronics and sensors.
Polymeric and molecular π-conjugated compounds combine optical and electrical properties of semiconductors with chemical–physical characteristics and easy processability of organic polymeric and molecular materials.
The polythiophenes synthesized in our lab have been already tested as sensors for gas (Figure 1) as gold-oligothiophene-gold junctions for molecular optoelectronic devices (nanogaps) (Figure 2) and as material for polymeric solar cells (for example together with carbon nanotubes, Figure 3).
Since 2010 the research activity is mainly focused on the collaboration with ENEA (Research Centre of Portici) on the "Development of new technologies for innovative photovoltaic devices" and "Research of innovative photovoltaic cells". In this project the research group is involved in the synthesis of low band gap polythiophenes to use as donor material in BHJ cells, with PCBM as acceptor material.

Facilities:

Well equipped organic synthesis lab.
Access to other campus facilities placed at Centro Interdipartimentale Grandi Strumenti.

Skills:
organic synthesis
NMR, IR, UV-Vis, CD, MS, AFM, SEM characterization of materials

Collaborations:
Prof. Luisa Schenetti, Dipartimento di Scienze della Vita, Unimore
Dr. Valeria Righi, Università di Bologna
Dr. Pasquale Morvillo, ENEA, Portici
Prof. Maurizio Prato, Università di Trieste
Prof. Ludovico Valli, Università del Salento
Dr. Massimiliano Lanzi, Università di Bologna
Prof. Gianluca Piccinini, Politecnico di Torino
Prof. Ron Naaman, Weizmann Institute of Science, Rehovot, Israel