

Research Line on *Nanostructured Materials*

ERC Subjects

PE5 Materials and Synthesis: materials synthesis, structure-properties relations, functional and advanced materials, molecular architecture, organic chemistry

PE5_8 New materials: oxides, alloys, composite, organic-inorganic hybrid, superconductors

PE5_20 Macromolecular chemistry,

PE5_10 Nanomaterials : nanoparticles, nanotubes

PE5_14 Coordination chemistry

Abstract

The research interests of *Nanostructured Materials Group* deals with the chemical synthesis and characterization of nanostructured materials. Among others, nanostructured polymers (polyenes, polyacrylates and metal-polyynes), organometallic complexes and polymers with extended electronic conjugation have been investigated. Moreover, functionalized noble metal nanoparticles (Au, Ag, Pt) and core shell systems have been prepared and deeply characterized.

The research activity range from synthetic methods for the achievement of nanosystems to spectroscopic characterization of the materials by means of traditional techniques (FTIR, Far-IR, UV-vis, PL, NMR, GPC, SEM, XPS) and with synchrotron radiation spectroscopies such as NEXAFS, EXAFS and refl-EXAFS.

Nanomaterials have been studied for applications in optoelectronics, biotechnology, photonics and as membranes for chemical sensors. The interaction of nanostructured materials with enzymatic systems, drugs and antibodies for applications in biomedicine as drug delivery systems is under study.

Collaborations (supported by accepted project and/or already published papers)

-CNR Istituto sull'inquinamento atmosferico (IIA), Resp. Dott. A. Bearzotti

-ENEA Technical Unit for Material Technologies (UTTMAT) Resp. Dott. L. Quercia

-ENEA CR Brindisi Unità Tecnica Tecnologie dei Materiali Brindisi (UTTMATB) Resp. Dott. L. Tapfer

-Università Roma 3, Dip. Scienze, Resp. Prof. G. Polzonetti

-Università di Bauru, (UNESP), Brasile, Prof. C. Graeff

-Facoltà Ingegneria Sapienza Dip. SBAI-, resp. Prof. M. Rossi

-Facoltà Ingegneria Sapienza Dip. SBAI-, resp. Prof. C. Sibilìa

-European Synchrotron Facility ESRF, Beamline Gilda, Grenoble Francia Resp. Dott. F. D'Acapito