

CNR – DEPARTMENT OF MOLECULAR DESIGN

P.le Aldo Moro, 7, 00185, Rome, **ITALY**

Telephone: +39 06 49937765

Fax: +3949937763

E-mail: segreteria.dpm@cnr.it

Web site: www.dpm.cnr.it

Contact: Giuseppina Padeletti, (Director of Institute)

At a Glance

Status: Public Research Organisation

Number of employees (of which R&D personnel): 1112, of which 814 in R&D

Turnover: 75,6 Millions of Euros, of which 62,4% in R&D

Year of establishment: 2006

Main Activity

Design of new molecules with biochemical properties

The general objective of the project, involves the design, realization, characterization and pre-competitive development of new molecules with predetermined biochemical properties, as well as innovative processes within the industrial, medical and pharmaceutical biotechnology.

Nano-structured polymeric systems and membranes

Objectives of the project are the development, the advanced characterization and the engineering of macromolecular systems with different levels of structural organization with the aim of developing multi-functional structures designed for sectoral and cross-sectoral applications. The integration of pre-existing competences in the field of synthesis and chemical modification (bulk and surfaces), advanced characterization, design techniques, engineering and processes will be focused to the development of added value materials and the related processes and technologies

Innovative products and processes for sustainable chemistry

The project consists of nine research lines, eight of them with strategic value. Two research lines are strictly related to the current energetic needs and deal with some fundamental aspects of "hydrogen economy".

Three additional research activities are focused on the optimisation of chemical processes for the production of bulk and fine chemicals in terms of efficiency and selectivity. These research activities will be carried out following the principles of Sustainable Chemistry. Waste removal and valorisation of renewable resources are common aspects of a number of research lines and the focus of one strategic project. The use of nanotechnologies and the environmental constraints imposed to the catalytic processes are part of each research line and emerge as the heart of one of them specifically dedicated to multifunctional porous materials. The use of "white" biotechnology to accomplish low-environmental impact sustainable chemical syntheses is the core of a specific research project which collects the most important expertises existing on this topic in the CNR

Nano-organized systems with electronic, photonic and magnetic properties

Integration of the molecular design of nanostructured multifunctional materials together with multiscale fabrication of innovative architectures of novel optoelectronic and photonic devices for next manufacturing and biodiagnostic is the general aim of the Project. The Project works at the interface of nanotechnologies, organic optoelectronics and photonics and biohybrid systems

Molecular design of thin films and surfaces

The project is developed in the strategic field of molecular manipulation aimed at the fabrication of thin films and multifunctional surfaces. The project is focused on the design and synthesis of inorganic and hybrid organic-inorganic multifunctional systems and on the widespread characterization of their composition, morphology and structure up to the testing of their functional performances. Potential applications of the obtained scientific results concern the up-to-date technologies of photonics, optics, (bio)sensing and energy production. With this aim, the scientific activity of the project is developed along three principal research lines: i) organization and reactivity of molecular precursors and functional molecules on surfaces (also activated); ii) manipulation, functionalization and modification of surfaces and thin films; iii) comprehension of the structure-properties relationships of surfaces and thin films through the development of theoretical and experimental atomic and molecular-scale methodologies.

Enabling technologies for Drug Discovery

The research activities carried on by the research Units are aimed at three specific objectives, in correspondence with the strategic lines of the new national and European programs, Drug Design, Development and Delivery, Discovery of Targets and Biomarkers, Study of Systems and Modeling.

Computational modelling

the most significant motivations are related to the increasingly central position of molecular modelling and computer simulations in connection with:

- the rationalization at the molecular level of material properties;
- the targeted synthesis of innovative products and materials, by means of molecular design;
- the design and optimization of nanosystems for a wide range of applications, ranging from electronics, to catalysis, to the development of (bio)materials endowed with sophisticated features.

Company Strengths

- Nanomaterials & Chemistry
 - Inorganic
 - Organic
 - Composites
 - Coatings/Thin films
- Nanomedicine
 - Diagnostic
 - Drug delivery
 - Tissue Engineering
- Energy
- Nanobiotechnology
- Nanofabrication, Nanotools, instrumentation
- Fundamental research

Sector

ACTIVATION OF NEW PROJECTS (R&DT)
TECHNOLOGY TRANSFER OR PRODUCTION LICENSING
DEVELOPMENT OF NEW PRODUCTS