Coordination and participation in major research projects and other initiatives

The Department is involved in the following international projects:

GRAPHENE FLAGSHIP

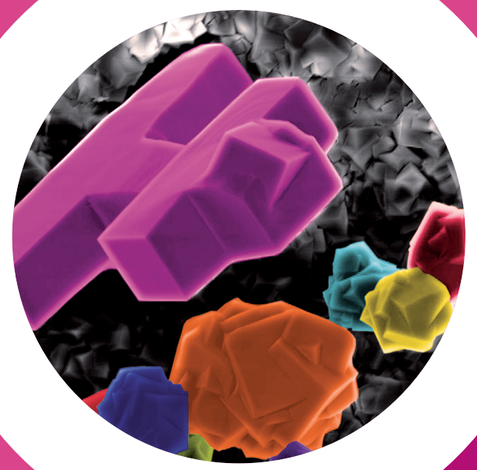
The Graphene Flagship is the EU's biggest research initiative ever and according to the European Commission "history's greatest distinction for excellent research". With a budget of EUR one billion, the Graphene Flagship is tasked to bring graphene from the realm of academic laboratories into European society within the next ten years, thus generating a sustainable social-economic growth. The DSCTM, through his researcher, is Work Package leader of the Nanocomposites in the Graphene Flagship.

NANOREG

A EU Large-scale integrating project, with the mission of providing legislators with a set of tools for risk assessment and decision making instruments for the short to medium term, by gathering data and performing pilot risk assessment, including exposure monitoring and control, for a selected number of nanomaterials used in products; developing for the long term, new testing strategies adapted to a high number of nanomaterials where many factors can affect their environmental and health impact; establishing a close collaboration among authorities and industry with regard to the knowledge required for appropriate risk management, and create the basis for common approaches, mutually acceptable datasets and risk management practices.

Ro-cKETs

Methodology, work plan and roadmap for cross-cutting KETs activities in Horizon 2020. As input to Horizon 2020, the study will develop the methodology, work plan and road map for a seven-year cross-cutting KETs work programme. It is based on clear industrial and market needs for addressing the challenges facing European society. The study will adopt a market perspective, taking the demand side as a starting point.

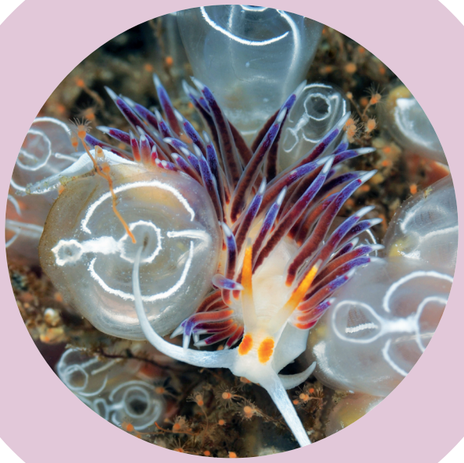


MATCH

MATCH - MATerials Common House is a project financed by European Commission under the H2020 framework program within the Industrial Leadership pillar. The MATCH project is focused on several main targets, crucial for the promotion of European sustainable development and innovation actions, in the Materials sector:

- the enlargement and effective improvement of the existing network at EU level
- the integration with existing networks and/or promotion of new ones at regional and national levels
- to create the conditions for a genuine collaborative and coordinating environment among different stakeholders for Horizon 2020 Materials related initiatives and policies

International cooperation agreements are active with China (Joint Research Center), Brasil, India, Mexico and USA.



DSCTM

www.dsctm.cnr.it

DEPARTMENT OF CHEMICAL SCIENCES AND MATERIAL TECHNOLOGIES

IC - Institute of Crystallography
ICB - Institute of Biomolecular Chemistry
ICCOM - Institute of Organometallic Chemistry
ICRM - Institute of Molecular Recognition
IENI - Institute for Energetic and Interphases
IMC - Institute of Chemical Methodologies
IPCB - Institute for Polymers, Composites and Biomaterials
IPCF - Institute for Chemical-Physical Processes
ISMAC - Institute for Macromolecular Studies
ISMN - Institute for the Study of Nanostructured Materials
ISOF - Institute of Organic Synthesis and Photoreactivity
ISTEC - Institute of Science and Technology for Ceramics
ISTM - Institute of Molecular Science and Technologies
ITM - Institute on Membrane Technology

Department of Chemical Sciences and Material Technologies

Institutes | 14

Permanent employees | 938, 608 of which are researchers and technologists

Main research themes

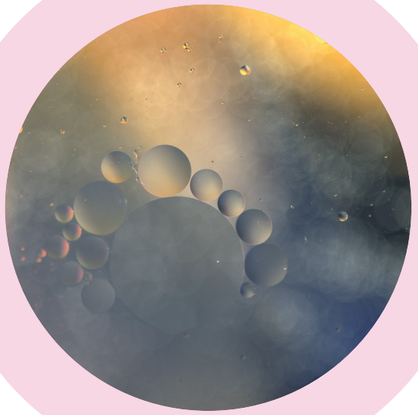
The Department of Chemical Sciences and Materials Technology (DSCTM) has defined as own main mission the "Chemical Manufacturing & Advanced Materials Technology". Within this framework the research activities are aimed to the development of systems with new functionalities leading to both innovation of products and realization of new services by always considering the environmental issues to pursuit a sustainable growth. There are three main themes in turn divided into several areas:

Sustainable Chemistry

Enzymatic Reactions
Hydrogen Generation and Storage
Carbon Capture and Sequestration
Energy from renewable sources
Biorefinery
Chemical process with low environmental impact
Modelling

Advanced materials and key enabling technologies

Nanostructures
Polymers and Composites
Ceramics and Composites
Metals and Composites
Biodegradable Materials
Multifunctional Biomaterials
Coatings and Adhesive
Nanostructured Membranes
Optoelectronic and Photonics
Sensors
Rapid Prototyping



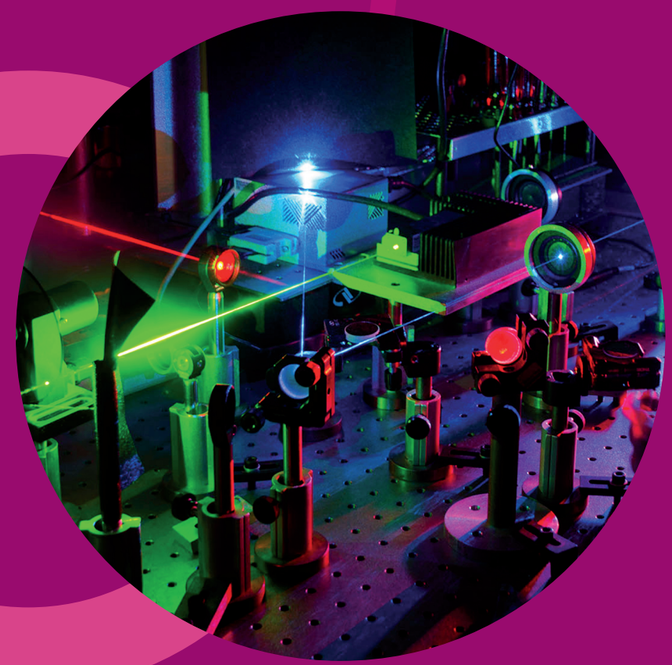
Nanomedicine

Tissue Engineering
Natural biopharmaceutical molecules
Drug delivery
Drug discovery
Nanoparticles
Biosensors
Nutraceutics
Teradiagnostic
Modelling

Main technologies developed and services offered

The Department is positioned within the most important stakeholders in the "living technologies" scenario and in this context has consolidated and strengthened the know how in Nanotecnologies and Advanced Materials with an high excellence impact in Flexible electronics and optoelectronics, Renewable sources for chemicals and energy production, Sustainable processes with high efficiency, advanced Manufacturing, Technologies and multifunctional materials in regenerative medicine and Cultural Heritage; engaging in the development and licensing of:

- materials and innovative organic devices for solar Energy
- materials for energy, hydrogen and fuel cells technology
- catalytic processes and reduction of polluting agents
- design and development of innovative methods of molecular synthesis for coatings functionalization
- development of multifasic and polymeric systems for the smart packaging in the agro-food chain
- development of advanced composites for transport and construction
- development of membranes for water treatment
- advanced materials, processes and converging technologies for new generation organic nanodevices
- silktronics for optics development, optoeletronics devices and living technologies based on silk
- structural genomics, proteomics, nutraceutics



Patents | The Department manages 65 patents and 1 trademark

Spin offs | The Department participates in 10 spin offs in the following areas: nanomedicine, advanced materials, key-enabling technologies