

Italian Interuniversity Consortium on Materials Science and Technology (INSTM)

Via Giuseppe Giusti, 9, 50121, Firenze, **ITALY**

Telephone: +39 055-233871

E-mail: segreteria@instm.it, direzione@instm.it

Web site: www.instm.it

Contact: Prof. Teodoro Valente

At a Glance

Status: Public Research Organisation

Number of employees (of which R&D personnel): 2082 employees of which 2073 R&D personnel

Turnover (of which in R&D): year 2007 turnover 27.756 kEuro of which 78,46% in R&D

Year of establishment: 1992

Main Activity

Research and development in materials science and technology, with more than 500 associated researchers being involved in the field of nanotechnology and nanostructures materials for different applications.

Scientific and Technological skills are:

- metallic materials and related technology;
- ceramic materials and related technology;
- polymeric materials (plastics, rubber and fibres) and related technology;
- composite materials and related technology;
- materials and technologies for biomedical applications;
- materials with special electric, magnetic and optical properties;
- heterogeneous and homogeneous catalysts;
- deterioration and preservation of components and structures;
- surface treatments and modifications

The industrial fields involving the main interactions with INSTM are: Chemistry, Electronics, Mechanical Engineering, Transport, Civil Engineering, Rubber and Plastics, Biological and Sanitary Medicine, Energy and Environment; Packaging.

Company Strengths

HIGH END PRODUCTS:

Research activity on Materials (properties and performance); Development on laboratory scale of pilot processes; Implementation on laboratory scale of materials and devices.

PATENTS: 5 (5 IT, 2 EU, 1 PCT)

INNOVATIVE PROCESSES/SERVICES/PRODUCTS:

Processes, Services and Materials as indicated in details in the "Activity Section".

NETWORKING: With 44 participating Universities, INSTM coordinates in a single organization essentially all the National Universities where research on material science and technology is carried out, looking to materials chemistry and related technologies. INSTM is involved in a large number of collaborations with the main Italian, European and International organisations and laboratories working in the area of materials science and technology. INSTM takes part in several running EU projects, such as large projects involving academia and industry and networks of excellence.

As an example, the main national and European INSTM project experiences are listed in the following National Projects:

- Molecular compounds and hybrid nanostructured materials with resonant and non-resonant optical properties for photonic devices – FIRB;
- Advanced Technologies for the knowledge, preservation and valorisation of ceramic, vitreous and musive materials in the Mediterranean area – FIRB;
- Converging strategies for the design, development and fabrication of multi-functional micro- and nano-devices for the detection and local chemo-therapy of cancer cells - FIRB;
- Development and validation of novel metal-ceramic materials for HVOF coatings of gas turbine components – FIRB;

- Polymer electrolyte and ceramic fuel cells: demonstration of systems and novel materials development – FISR;
- Inorganic and hybrid nanosystems for the development and innovation of fuel cells – FISR.

European Excellence Networks (INSTM coordination):

- Nanostructured and functional polymer-based materials and nanocomposites (NANOFUN-POLY)
- Molecular Approach to Nanomagnets and Multifunctional Materials (MAGMANET)
- Integrated Design of Catalytic Nanomaterials for a Sustainable Production (IDECAT)

European Integrated Projects:

- Nanoscale Integrated processing of self-organizing multifunctional organic materials (NAIMO)
- Structural Ceramic Nanocomposites for Top-End Functional Applications (NANOKER)

R&D: Through the integration of a “critical mass” of knowledge, INSTM competes at the highest level, with innovative, pure and applied research projects in order to satisfied the needs and quality standards of national, international and industrial research

EXPERTISE: Schematically, the INSTM research expertises can be categorized in the following activity macro-areas: a) materials and process technologies and transport systems; b) materials and technologies for energy demand and environmental safety; c) materials and intelligent systems for information,transmission and storage; d) materials and technologies for health and nutrition; e) materials and technologies for cultural heritages.

The final aim of the INSTM consortium is the development and valorisation of interrelations between academia and industry, sustaining the development of joint activities as a function of applicative requirements.

Sector

NANOTECHNOLOGY

- Nanomaterials & Chemistry
 - Inorganic
 - Organic
 - Composites
 - Coatings/Thin films
 - Fibres
- Electronics and Devices (ICT)
 - MEMS/NEMS
 - Photonics
- Nanomedicine
 - Drug delivery
 - Tissue Engineering
- Environment
 - Remediation
 - Protection
 - Monitoring
- Nanobiotechnology
- Transport & aerospace, Foods, Textile
- Nanofabrication
- Fundamental research, Cultural heritage, computational tools

Type of Cooperation

- ACTIVATION OF NEW PROJECTS (R&DT)
- TECHNOLOGY TRANSFER OR PRODUCTION LICENSING
- JOINT CREATION OF AN ENTERPRISE OR CONSORTIUM
- OTHER: Training courses to qualify personnel; Dissemination activities: public citizen awareness and knowledge dissemination.

Partnership Proposal

Strengthening and development of new collaborations and technological scientific synergies between INSTM and other international research organisations/industries (public/private) active in the field of Nanotechnologies also aiming at starting common initiatives and projects.