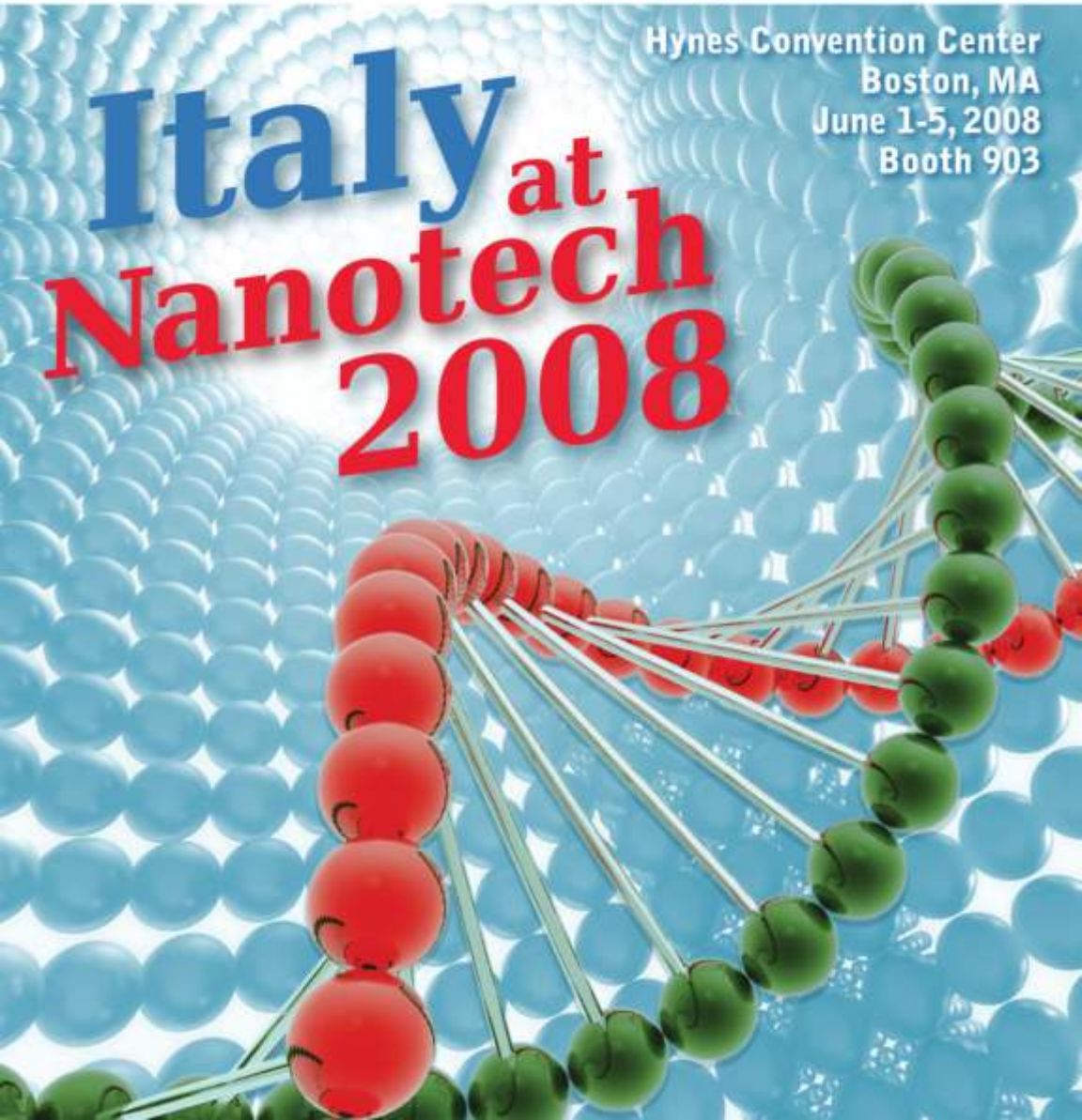
Italian Trade Commission
Trade Promotion Section of the
Consulate General of Italy

Airi
Associazione Italiana per la ricerca industriale

nanotec IT

Italy at Nanotech 2008

Hynes Convention Center
Boston, MA
June 1-5, 2008
Booth 903



Ministry of International Trade

The Ministry of International Trade (Ministero del Commercio Internazionale) establishes directives and has a supervisory role on the activities of ICE Promotional Program.

Italian Trade Commission
Trade Promotion Section of the
Consulate General of Italy

The Italian Trade Commission (I.C.E., Istituto nazionale per il Commercio Estero) is the government agency entrusted with the promotion of trade, business opportunities and industrial cooperation between Italian and foreign companies.
ICE supports the internationalization of Italian firms and their consolidation in foreign markets and operates in 115 branch offices in over 86 countries in the world.
ICE activities are financed by public and private funds: from the Ministry for International Trade and from the companies, which use its services for advice, information and assistance. The main activities and services include: information, promotion, multilateral cooperation and training.

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INDEX

AIRI/Nanotec IT

GENERAL OVERVIEW

The activity in nanotechnology is in Italy rather intense and growing. The "2nd Census of Italian Nanotechnology", carried out by AIRI/Nanotec IT in 2006, and integrated in 2007, has pinpointed 185 structures doing R&D in this field. Around 60% of them refer to public institutions and the remaining 40% to private enterprises. Respect the 1st Census of 2004 the number has more than doubled.

The activity is widely distributed across the national territory and usually nested around the biggest universities present in the various regions. In *Figure 1* it's reported the number of research structures (public and private) present in each region that answered the census. It turns out that the major concentration is in the northern-central part of the Country, with Lombardia, with more than 20% of the structures and 30% of the people reported by the census, showing the highest concentration. It must, however, be stressed that in spite of the smaller numbers, the south doesn't play a secondary role since the structures present there can boast a high level of competences and equipment and, often, good critical mass.

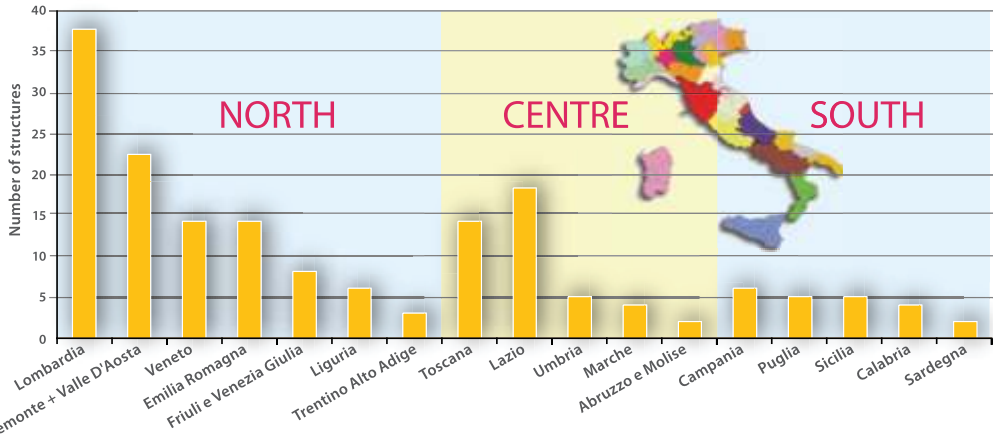

Figure 1. Geographical distribution of research structures active in nanotechnology

Public funding is the principal driver of the action and nanotechnology was among the priorities of the **2005-2007** National Program for Research (PNR).

It is estimated that in 2007 it amounted to some €70 Million.

Several initiatives have been taken in the last years to promote the activity in this field, to improve the use of the resources, and increase overall operational efficiency.

In the public sector, research groups, labs, departments, institutes, have been grouped together to reduce fragmentation and coordinate the activities. "Centres of excellence" focused on nanotechnology have been created at various Universities with the support of the Ministry for University and Research (MUR) and several courses dedicated to nanotechnology have been activated. Growing attention is dedicated to risks and safety issues. Finally, working groups have been set up to tackle the problem of standardization and metrology.

Among the high tech clusters ("technological districts") created in some regions with the support of MUR to favour technological development in specific advanced sectors, those having nanotechnology in their mission are increasing. At the moment there are 6 of them (*Table 1*).

Table 1: High tech clusters ("technological district") involved in nanotechnology

Region	Area/s of research	Managing company [1]
Veneto	Nanotechnology applied to materials	Veneto Nanotech S.c.p.a
Friuli Venezia Giulia	Nano-Biotechnology	Center for Molecular Biomedicine CBM S.c.r.l.
Campania	Polymeric and Composite Materials	District for Polymer and Composite Materials Engineering and Structures IMAST S.c.a.r.l.
Puglia	Nanoscience, Bioscience, Infoscience	DHitech S.c.a.r.l.
Sicilia	Micro and nanosystems	*In definition*
Umbria	Special metal materials, Micro and nanotechnologies, mechatronics	DTU-Umbria Region

[1] Public institutions and private enterprises participate in the managing company

Veneto Nanotech, started in 2005, is focused exclusively on nanotechnology. In 2005 it has been activated in the district a nanofabrication facility, NanoFab, and in 2007 ECSIN, European Centre for the Sustainable Impact of Nanotechnology. The spectrum of the R&D activity (*Figure 2*) covers the principal fields of nano-tech research. There is not much difference when one compares industry and public research. The indication given by Fig. 2 is mainly qualitative for it is based on the number of structures doing research in each of the above said areas, nevertheless it can be said that materials is the field were activities is more intense.

In the period 2002-2005 the structures reported in the Census produced some 7638 scientific publications (most of them on international journals) and 332 patents. Around 60% of the patents come from industry and 40% from public research. It is possible that the number of patents is underestimated. Many enterprises didn't answer this question.

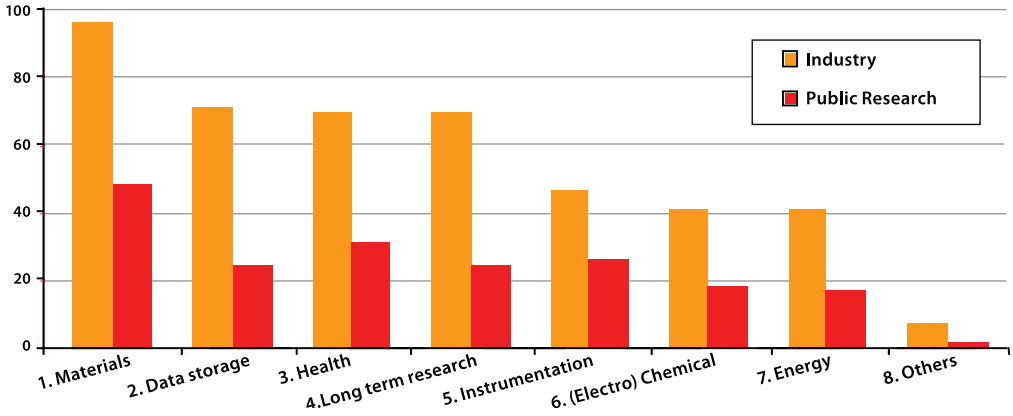

Figure 2. Number of structures/organizations doing research in a given area

Note: *1. Structural and functional materials; 2. Data storage, processing and transmission (devices and materials); 3. Health & medical systems/Life sciences; 4. Fundamental /long term research; 5. Instrumentation/equipment; 6. (Electro) chemical-related products and processes; 7. Energy (photovoltaic, fuel cells H2 storage, etc.); 8. Others.*

THE PLAYERS

Public Institutions

Nanotechnology is high in the agenda of all major public research organizations (CNR/INFM, INSTM, INFN, ENEA) and University. They play a pivotal role to promote nanotechnology in the Country, and, as said, all together represent about 60% of the structures reported in the Census.

The National Research Council (CNR), into which merged in 2004 the National Institute of the Structure of Matter (INFM), is the largest Italian public research institution. Nanotechnology has gained progressively room in its R&D activity and it covers all the research areas considered in *Figure 2*. This commitment has been paralleled with initiatives aimed to focus and reorganize the resources active in this sector. Research units, sometime located in different places, were grouped around common objectives and under an unique direction. From the summer of 2006 most of the activity at CNR in nanotechnology refers to two newly created departments: the Department of Materials and Devices and the Department of Molecular Design (reference website: http://www.cnr.it/istituti/Perareetematiche_eng.html). A nanofabrication facility, NANOFABER, is active at CNR-ISMN of Bologna.

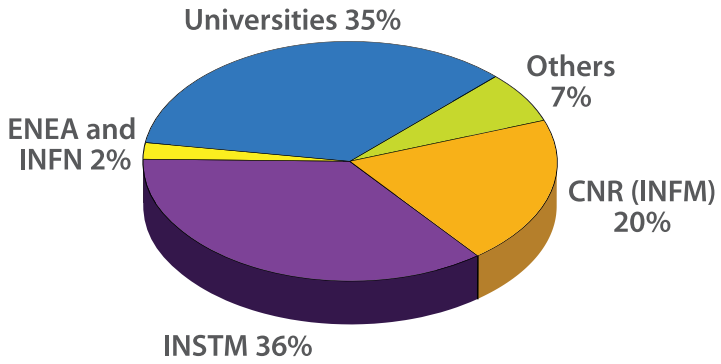

Figure 3. Distribution (%) of structures among the Institutions considered

The Italian Interuniversity Consortium on Materials Science and Technology (INSTM) coordinates Research Units located in 44 Italian Universities and its interest is mainly related to chemical sciences.

In 2004, 9 Reference Centers (INSTM-RC) have been created to make more effective the activity at the Consortium. These Centers often connect research units located in different Universities. Nanotechnology represents a primary (sometime exclusive) objective of their research (reference website: http://87.241.56.172/instm/index.php?id=1,6).

Besides those of INSTM and CNR, the Census has pinpointed also some 40 other University structures active in nanotechnology.

These structures, as shown in Figure 4, represent the 35% of the total, and their activity refers to physics, material science, engineering (in particular electronics), biotechnology/bioengineering, chemistry, pharmaceutical sciences and, in a limited number of cases, mechanics and the environment.

The National Institute of Nuclear Physics (INFN) and the National Body for Energy, Environment and New Technologies (ENEA) are also involved in nanotechnology. As shown by the Census, however, their involvement is at present less intense respect the institutions just mentioned.

At ENEA the R&D activity is carried out within the Department of Advanced Physical Technologies And New Materials (FIM), while at INFN it is concentrated at Frascati National Laboratories (LNF).

Other organizations, not linked/belonging to the institutions above, resulted also involved in nanotechnology. They are research centres and national agencies such as the Italian Institute of Occupational Safety and Prevention (ISPESL) and the Italian Health Institute (ISS), dealing with societal issues, and the National Institute of Metrological Research (INRIM), for metrology.

Industry

The number of Italian enterprises dealing with nanotechnology have steadily increased during the past few years and the 2nd Census has identified 71 companies with activity in this field. A strong increase from the 1st Census made in 2004, when the enterprises involved in nanotechnology resulted to be only 20.

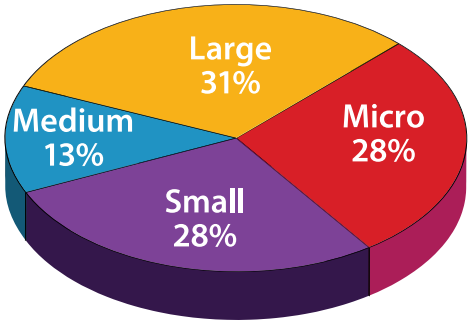

Figure 4. Number of structures (%) with reference to the size of the company

As shown in *Figure 4*, SMEs, which account for most of the increase, represent about 70% of the total. They are often micro (less than 10 people), usually spin off or start ups.

Quantitatively the effort is concentrated within the big companies. They include well known national players such as ENI (energy, catalysts); FIAT Research Centre-CRF (automotive); Basell Polyolefins (polymeric materials); Bracco Imaging (biomed); Colorobbia (materials); Center for Material Science-CSM (materials); CTG-Italcementi (construction); Filatura Miroglio, Mascioni (textiles); Finmeccanica Group, which has recently organized its nanotech activities into the Nanomaterials and Nanotechnology Focus Group bringing together a number of its companies active in this field: Selex Sistemi Integrati, Selex Communications, Alenia Aeronautics, Alcatel-Alenia Space Italy (aerospace, defence); Olivetti i-jet (biomed devices); Pirelli Labs (optoelectroniscs); Saes Getters (vacuum technology); STMicroelectronics (semiconductors, energy, biomed).

SMEs do not have a marginal role and are important to spread the application of this emerging technology. To name a few of them, we can mention: Ape Research, Arterra Biotech, Bioage, Organic Spintronics (instrumentation, sensors); MBN (nanomaterials); Grado Zero Espace (textiles); Moma, Kenosistec, Plasma Solutions, Grinp (surface treatments); Tethis, Nanodiagnostic, Nanovector; Mavisud (biomed).

Considering the objectives of the research, the attention, as is shown in *Figure 2*, is focused on the same thematic areas seen for the public research. Materials are the front runner both for SMEs and large

enterprises (90% of large enterprises and 70% of SMEs do research in this field). Long term research is, obviously, more in fashion with large companies. In the case of instrumentation, small companies seem to prevail, and they seem rather active also in the medical field. About 25% of SMEs reported in the census are involved in this field.

Large enterprises are normally more focused than SMEs as their research is mainly aimed at their core business. SMEs, on the contrary, tend to look at a larger variety of potential applications. They often try to expand in more than one field of application exploiting the multi-sectoral character of nanotechnology.

In conclusion, the 2nd Nanotec IT Census has made evident that there is in Italy a quite intense R&D activity in nanoscience and nanotechnology, which involves both public research and industry. Public research is still prevailing, but the commitment of private enterprises is increasing and it refers to important industrial sectors. This trend is going to continue.

AIRI/NANOTEC IT AS CONTACT POINT

A large part of the organizations reported in the Italian Census of Nanotechnology are members of Nanotec IT (Italian Centre for Nanotechnology).

Nanotec IT is available for any information or support regarding R&D collaboration and partnerships with Italian organizations active in the field.

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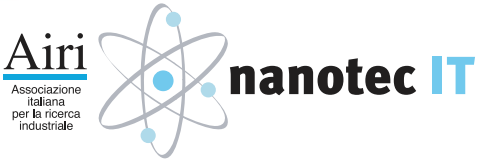

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DESCRIPTION

Nanotec IT - Italian Centre for Nanotechnology- started in 2003 by AIRI- Italian Association for Industrial Research – as an internal division, is a national bridging point connecting industry, public research, and governmental institutions. Its mission is to promote nanotechnology and its applications in Italy and to increase it through the competitive position of the Country.

Nanotec IT contributes to:

- *Monitor and assess research trends and applications;*
- *Disseminate information;*
- *Inform decision-makers for implementing effective policies and actions to support and propel the sector;*
- *Strengthen the cooperation between public research and industry, at national and international levels;*
- *Facilitate technology transfer;*
- *Foster a responsible R&D in nanotechnology;*
- *Promote SMEs participation in national and international projects/initiatives by giving them advice and assistance.*

Most of the leading players of Italian nanotechnology are already members of Nanotec IT. These include the major Italian companies, practically all university structures and public research organisations, and a certain number of SME.

AIRI/Nanotec IT members

UNIVERSITIES AND RESEARCH CENTERS

- CHILAB- Polytechnic of Torino
- CNR (National Research Council) - Molecular Design Department:
  - *ISMAC Institute for the Study of Macromolecules*
  - *ISMN Institute of Nanostructured Materials*
  - *ISTM Institute of Molecular Science and Technologies*
- CNR (National Research Council) - Materials and Devices Department:
  - *IMM Institute for Microelectronics and Microsystems*
  - *IFN Institute for Photonics and Nanotechnologies*
  - *ISM Institute of Structure of the Matter*
  - *IPCF Insitute for Physical-Chemical Processes*
  - *INFM-TASC Advanced Technology and Nanoscience National Laboratory*

- *INFM-MATIS Center for Materials and Technologies for Information and communication Science*
- *INFM-LAMIA Innovative and Aritificial Materials Laboratory*
- *INFM-LUXOR Laboratory for UV and X-RAY Optical Research*
- *INFM-LYCRIL Liquid Crystal Laboratory*
- *INFM-MDM Materials and Devices for Microelectronics National Laboratory*
- *INFM-S3 NanoStructures and bioSystems at Surfaces*
- *INFM-NEST National Enterprise for nanoScience and nanoTechnology*
- *INFM-NNL National Nanotechnology Laboratory*
- *INFM-SL Physics of Matters – Sensor Laboratory*
- *INFM-PolyLab Regional laboratory Polylab*

- CNR- ITIA (Institute of Industrial Technologies and Automation
- CRIM (Centre for Applied Research in Micro and Nano Engineering)
- INSTM (Inter-University Consortium for Material Sciences and Technologies) – representing 44 Italian Universities
- ENEA (National Agency for New Technologies, Energy, Environment), Dept. Of Advanced Physical Technologies And New Materials (FIM)
- INFN (National Institute for Nuclear Physics)
- Fondazione Kessler /IRST- Centre for Scientific and Technological Research
- University of Modena and Reggio Emilia Dep. of Materials and Environment Engineering
- SINCROTRONE Trieste

INDUSTRIAL ORGANIZATIONS

- APE RESEARCH
- BRACCO IMAGING
- CRF - FIAT Research Centre
- CSM – Centro Sviluppo Materiali
- CTG - Group Technical Centre – ItalCementi
- DE NORA Tecnologie Elettrochimiche
- HITECH 2000 s.r.l.
- ENI
- FINMECCANICA
- COLOROBBIA
- PIRELLI LABS
- SAES GETTERS
- SELEX SISTEMI INTEGRATI
- SERVITEC
- STMICROELECTRONICS
- TETHIS
- VENETO NANOTECH

MAIN RESEARCH PROGRAM

Secondary research

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FIELD OF ACTIVITY

The company is a world leader in the use of composite materials and carbon fiber technologies for both military and civil applications, with crucial roles on both the Eurofighter wing and Boeing 787 fuselage and horizontal stabilizer.
To maximize return on its technological base, dual-use is a specific Alenia Aeronautica goal. Materials and processes developed for commercial applications or within specific research projects provide off the shelf solutions for new military or security applications.

DESCRIPTION

- Wholly owned by Finmeccanica, Alenia Aeronautica is one of the major European players in aerospace
- Full integration capability through design, manufacture and support of advanced military and commercial aircraft
- Among the world leaders in aerostructures
- Leader in the overhaul, maintenance and modification of military and civil aircraft
- Strong and reliable partner of the most outstanding aerospace companies worldwide.

The ability to design the configuration of entire aircraft systems is the crucial Alenia Aeronautica capability that enables it to be prime or co-prime contractor in advanced programs. The other core capabilities that drive the growth and success of Alenia Aeronautica are international collaborations,

advanced materials and processes, the ability to coordinate a global network of suppliers and the flight test department. To maintain and expand its role, Alenia Aeronautica maintains a comprehensive range of aerodynamics, military aircraft systems and structural labs. In Turin, the advanced wind tunnel, simulation laboratories (including the new leading-edge Sky Light Simulator), systems and avionics rigs enable the company to perform integration, qualification, flight test preparation and certification processes for all Alenia Aeronautica products. The innovative all-composite structures developed for the 787 are tested in a new facility in Pomigliano, near Naples. A full-fledged flight test department, also capable of operating away from its Turin Caselle base, is another key asset in the development and certification of new products to commercial or military standards, as in the case of the C-27J and ATR 42MP.

MAIN RESEARCH PROGRAM

MATERIALS

- *Carbon Fiber Composites with thermosetting or thermoplastic resin;*
- *Nanostructured thermosetting resins;*
- *Fiber Metal Laminate;*
- *Hybrid materials;*
- *Innovative alloys for structural applications;*
- *Adhesives;*
- *Structural Foams for structural applications;*
- *Radar Absorbent Nanocomposite.*

CENTRO ESTERO INTERNAZIONALIZZAZIONE
PIEMONTE *Agency for Investments, Export and Tourism*
Promoted by Regione Piemonte and Chambers of Commerce

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FIELD OF ACTIVITY

Invest in Torino Piemonte is the branch of Piemonte Agency dedicated to fostering inward investment, it is the unique, free reference point for foreign companies that want to locate in Piemonte. The inward investment team collaborates with companies to share knowledge of the many opportunities the region has to offer, and highlights the advantages that Piemonte can bring to a company's strategic vision. It also cooperates with companies which have already invested in Piemonte. Services provided are free, responsive, tailored to the companies' needs and totally confidential. Moreover, Piemonte Agency, commissioned by the Region, manages the Regional Investment Contract, an innovative financial instrument unique in Italy aimed at encouraging the arrival and development in Piemonte of new investments in industry, services and research from abroad. Piemonte Agency is the one-stop shop for companies that have an investment project in Piemonte. It gives the investor guarantees in terms of financial support and time scheduling for the project and provides assistance at every stage of the project.

DESCRIPTION

Piemonte Agency for Investments, Export and Tourism is the organization created by the main public institutions and business associations with the aim of strengthening international development of the region. The first Italian agency dedicated to internationalisation that brings together institutional development actors, the academic and research worlds, Piemonte Agency focuses chiefly on attracting foreign direct investment, increasing the presence of local companies and their competitiveness on international markets, and promoting the region's tourist offer and products worldwide.

MAIN RESEARCH PROGRAM

- *Biotechnology and Life Sciences*
- *Computer Semiconductor and Software*
- *Environment and Energy*
- *Telecommunications and Wireless*
- *Transportation.*

COLOROBBIA Italia S.p.A. - Ce.Ri.Col. Laboratory

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FIELD OF ACTIVITY

Research development and scale up in industrial scale of nanomaterials, application of nanomaterials in ceramic, glass textile, plastic. Development of prototypes.

DESCRIPTION

Colorobbia Italia is one of the companies of Gruppo Colorobbia (Colorobbia Group). Starting from 1999, an internal advanced research laboratory (CE.RI.COL.) has been strategically developed in the premises of Colorobbia Italia. CE.RI.COL. is devoted to different fields of nanomaterial and special glass research. CE.RI.COL. manages more than 15 project lines in different fields of application: textile, ceramic, glass, catalysis, energy, surface coating, biomedical and pharmaceutical. Colorobbia Italia is expert in industrial production of nanoparticles via solution chemistry and the advanced research laboratory is particularly active in the research on nanoparticle synthesis and characterisation. One of the most important fields of research involves the nano TiO2 production and their applications due to the photocatalitic properties of TiO2. Hence CE.RI.COL. activity is focused on production scaling up and surface functionalization with TiO2. CE.RI.COL. can control the production of TiO2 nanoparticles thought the modification of synthesis' parameters. CE.RI.COL.'s ability to control the entire process lead to nanomaterials with defined morphologies, dimensions, crystalline phases and specific properties in term of catalytic behaviour and electric properties.

MAIN RESEARCH PROGRAM

BIOTECHNOLOGY and LIFE SCIENCES Hyperthermic effect on nanodevices in cancer treatment. Drug deliver and targeting. MRI behaviour of hybrid organic-inorganic nanodevices. Project name: NANOTHERAGNOSTIC

ENERGY Development of rigid and flexible DSSC. Project name NANOCELL

MATERIALS Development of nanostructured functional sufaces (E.g. self cleaning, antibacterial, bacteriostatic, superhydrophilic, superhydrophobic-Lotus effect) Project name: NANOFUN

CENTRO RICERCHE FIAT

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FIELD OF ACTIVITY

HIGH QUALITY PRODUCTS: integrated competences for the development of products and processes.

LICENSES/TRADEMARKS/QUALITY CERTIFICATIONS/PATENTS: more than 760 inventions generating roughly 2000 patents.

INNOVATIVE PROCESSES/SERVICES/PRODUCTS: more than 400 innovative products, processes and methodologies released each year.

NETWORKING: through many years of pre-competitive research within European and international research projects, a collaboration network with more than 750 industrial partners and 150 Universities all around the world has been established.

DESCRIPTION

Centro Ricerche FIAT S.C.p.A. (CRF) was established in 1976 to enable the innovation, research and development needs of the FIAT Group to be satisfied. The main site of CRF is located near Torino (Orbassano) in North-West Italy with three branches in Trento, Bari and Foggia. Moreover, advanced R&D related to lighting and the welding of plastics are conducted at a satellite facility in the Friuli Region of North-East Italy.

With a full-time workforce of more than 850 highly trained professionals, CRF offers a wide range of technical competencies and is equipped with state-of-the-art laboratories for the testing of powertrains, electro-magnetic compatibility, experimental noise and vibration analysis, driving simulation and virtual reality, in addition to facilities for the development of new materials and manufacturing processes, opto-electronics and microtechnologies.

CRF uses innovation as a strategic lever and attributes value to its results by promoting, developing and transferring innovation in order to enhance product competitiveness and distinctiveness. Furthermore the development of effective, creative and competitive solutions is matched by direct technology transfer which also includes “on the job” training of specialised personnel in the different areas.

In this way, CRF provides vital technological support for growth to Fiat Group, its partners and different regions by conducting research and development activities, frequently related to improving the efficiency and safety of mobility and transportation by focusing on the development of vehicles with new architectures and powertrains, innovative materials and advanced solutions for telematics and communications, mechatronics and optics.

MAIN RESEARCH PROGRAM

Transportation

Dipartimento di Ingegneria dei Materiali e dell'Ambiente
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DESCRIPTION

The Department of Materials and Environmental Engineering of the University of Modena and Reggio Emilia consists of a large number of strong individual groups covering a wide spectrum of expertise in materials engineering. The crosswise and multidisciplinary activities are fundamental for the development of the applied researches in the field of ceramic, polymeric and metallic materials.

The Department consists of 25 academic staff, 15 support staff, 10 postgraduate students and 20 post-doctoral research workers who are supported from central funds or by grants from the Italian Ministry, the European Union and industries.

MAIN RESEARCH PROGRAM

ENVIRONMENT, ENERGY

As moving toward more sustainable practices becomes more and more an institutional concern and new environmental induced costs are incurred, facing issues like natural resource depletion and GHG emissions in a cost effective way requires organizations to be more proactive. A life-cycle approach in evaluating available production alternatives forms both environmental and cost perspective is actually performed in the Department in order to appreciate overall advantages from raw material extraction to waste disposal of less energy and scarce resource demanding processes.

MATERIALS

Materials research in the Department embraces a range of length scales from macro to nano and surfaces; it covers the synthesis, analysis and application of new materials with specifically designed physical and chemical properties. Our interest covers applications in chemistry, materials science and engineering. Crystalline and non-crystalline solids and biologically-derived materials are studied as well as the bulk and surface properties. Systems as diverse as new organic-inorganic hybrids, polymer based nanocomposites, metal oxides, nanoparticles and biopolymers are under investigation.

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FIELD OF ACTIVITY

- Thermal Management and Interconnection for electronic devices and circuits
- New packaging materials

DESCRIPTION

ELETTRONICA SpA is one of Europe's leading manufactures of Electronic Defense equipment. The experience in design and production of Electronic Defense equipment and systems, gained in more than 50 years, enables the company to guarantee a reliable, effective and consistent response to the ever-changing requirements of modern defense.

The Company's product lines cover all aspect of electronic warfare, from single stand-alone equipment to complete sophisticated integrated systems, for naval, airborne and ground applications, that are in service of 28 Nations in 5 Countries.

More specifically, ELETTRONICA is specialized in the design, development and manufacture of passive electronic warfare equipment for search, detection, analysis, identification and location of electromagnetic emissions (ESM/ELINT); electronic countermeasure equipment (ECM); radar warning receivers (RWR); ESM/ECM integrated systems.

Also, it can avail itself of a unique in-house capability in the design, development and manufacturing of key electronic components and sub-assembly.

MAIN RESEARCH PROGRAM

- CNT and Fullerenes for Thermal Management and Interconnection of Devices and Circuits
- Nanostructured.

European Centre For Nanostructured Polymers And Nanocomposites S.c.a.r.l. (Centro Europeo Polimeri Nanostrutturati)

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Contact

Prof. Dr. Jose M. Kenny, *President of the Board*
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FIELD OF ACTIVITY

Research centre on polymer nanotechnology.

DESCRIPTION

European focus on coordination and promotion of research, education and transfer technology on polymer technologies (ECNP has been formed by 12 European research institutions and granted by the European Commission through the program "European Networks of Excellence")

ECNP S.c.a.r.l. is the European Centre for Nanostructured Polymers generated in the framework of the European Network of Excellence Nanofun-Poly formed by 26 European universities and research centres (www.nanofun-poly.com, www.ecnp.eu.org)

Founding partners of ECNP are:

- INSTM, Italian Consortium for Science and Technology of Materials, Italy;
- INSA VALOR – Lyon, France;
- Leibniz-Institute of Polymer Research Dresden e.V., Germany;
- Fundacion INASMET – San Sebastian, Spain;
- Foundation for Research and Technology – Hellas, Greece;
- SWEREA SICOMP, Swedish Institute for Composite Materials, Sweden;
- Technical University of Lodz, Poland;
- Umbria Innovation, Italy;
- Academy of Sciences, Czech Republic;
- Foundation Transition, Energy and Processes, Netherlands;

- CSIC – Institute of Polymer Science and Technology, Madrid, Spain.

ECNP is an international organization legally established in Florence on July 14th, 2006 as a not-for-profit consortium society with limited liability. Operative locations have been already established in Terni and Alessandria (Italy) and others will be open soon hosted by ECNP partners.

The major aim of ECNP is the coordination and the execution of joint research, education and technology transfer activities in the field of polymer nanotechnologies, including synthesis, processing, characterisation, advanced applications and environmental impact. Furthermore, the following general objectives have been established in the ECNP Charter:

For external users, ECNP represents the access point to a wide network of excellent research organisations active in polymer nanotechnology, advanced polymer materials technologies and related services (databases, technology assessment and transfer, legal and financial assistance, educational programs), collaborations and partnerships in both scientific and technological networks, access to European and extra-European resources and strategic overview and guidelines.

In summary, ECNP, acting as an international organization, is a partner of excellence for industrial and academic projects. The Chairman of the Board of ECNP is Prof. Josè M. Kenny from the University of Perugia (UdR INSTM, Italy).

MAIN RESEARCH PROGRAM

BIOTECHNOLOGY, LIFE SCIENCES

Nanostructured polymers and nanocomposites for biomaterials: scaffolds, tissue engineering, sensors, drug delivery.

ENVIRONMENT, ENERGY

Nanostructured polymers and nanocomposites for organic photovoltaic applications.

EDUCATION

European Master on Polymer Nanotechnology; European PhD Program on Polymer Nanotechnology.

MATERIALS

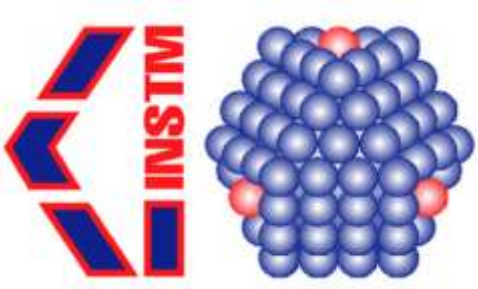
Synthesis, processing and applications of nanostructured polymers and nanocomposites.

TRANSPORTATION

Nanostructured polymers and nanocomposites for automotive and aerospace applications.

OTHER

Life Cycle Analysis of processes and products based on nanostructured polymers and nanocomposites.



I.N.S.T.M. Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali

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FIELD OF ACTIVITY

INSTM coordinates and promotes the research activities of 44 Italian Universities which basically represent all the Universities where research on Material Science and Technology is carried out. Through the creation of a "critical mass' of knowledge, INSTM competes at the highest levels, with innovative pure and applied research projects at national and international levels.

DESCRIPTION

Non profit National Research Organization.

Research and development in material science and technology, with more than 500 associated researchers being involved inthe fields of nanotechnology and nanostructured material for different applications. Research areas include molecular machines, nanocomposites, nanoporous materials, biomaterials, materials for electronics and photonics, structural materials and function-tailored materials, and protective coatings (thin, thick films) to improve wear and corrosion resistance.

MAIN RESEARCH PROGRAMS

ENVIRONMENT, ENERGY

Material for energy production

MATERIALS

INSTM is involved in all the strategic areas of material science and technology, such as: molecular materials for electronics and photonics, polymeric, composite, metallic and ceramic materials for structural and functional applications, nano-materials, bio-materials and protective coatings.

The INSTM scientific activities is currently organized in the following thematic sections plus a working group on materials for cultural heritage:

- *Section 1: Crystalline and Amorphous Inorganic Materials*
- *Section 2: Materials Engineering and Technology*
- *Section 3: Surfaces, Thin Layers and Technology*
- *Section 4: Functional Molecular Materials*
- *Section 5: Biomaterials and Biocompatible Materials*
- *Section 6: Functional and Structural Polymeric Materials*
- *Section 7:Theoretical and Experimental Methodologies*
- *Section 8: Functional Nanostructures*

TRANSPORTATION

Materials for advanced mechanics

CURRENT COLLABORATIONS

INSTM is involved in a large number of collaborations with the main Italian, European and international organizations and laboratories, working in the area of material science and technology.

NANO_MATES (Research Centre for NANOMAterials and NanoTEchnology at Salerno University)

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FIELD OF ACTIVITY

NANO_MATES benefits from extensive scientific competences and available facilities supporting a cross-disciplinary approach to either the comprehension of basic mechanisms or the realization of novel products and processes in the framework of academic and industrial collaborations.

The advanced equipments for characterization and nanofabrication provides excellent interdisciplinary educational experiences in nanoscience and nanotechnology for PhD students and post docs.

DESCRIPTION

The Research Centre NANO_MATES, established at the University of Salerno in August 2007, is a research network within the University Campus aiming at accomplishing a strong synergy between 70 staff scientists and more than 100 research associates, Ph.D., post doc students active in nanoscience and nanotechnology at the Departments of Chemical and Food Engineering, Chemistry, Electrical and Information Engineering, Mathematics and Informatics, Mechanical Engineering, Pharmaceutical Sciences, and Physics.

MAIN RESEARCH PROGRAMS

BIOTECHNOLOGY, LIFE SCIENCES

Reconstruction of membrane rafts to develop targeted drugs

COMPUTER SEMICONDUCTOR

Organic electron devices (led, memories, thin-film transistors)

SOFTWARE

Modeling laboratory for nanostructures and catalysis

ENVIRONMENT, ENERGY

Nanomaterials for photocatalytic processes.

EDUCATION

International PhD course

MATERIALS

Synthesis and applications of carbon nanotubes (field emission, interconnects, sensors). Nanomaterials for optoelectronics. Polymer nanocomposites (basic properties, melt compounding, electrospinning). Nanoporous supramolecular architectures

TRANSPORTATION

Nanolubricants

OTHER

Thin films and heterostructures

CURRENT COLLABORATIONS

- Graduate School of Electronic Science and Technology and School of Education, Shizuoka University, (Japan)
- University of Missouri-Columbia, Columbia, MO (US)
- Max Planck Institute for Polymer Research, Mainz (Germany)
- Philips, Eindhoven (The Netherlands)
- Smoltek, Goteborg (Sweden)
- Seoul National University, Seoul (Korea)
- University of Bremen, Bremen (Germany)
- Monash University, Clayton (Australia)
- National Institute for Research and Development in Microtechnologies, Bucharest (Romania)
- University Paul Sabatier, Toulouse (France)
- University of Kentucky, Engineering College, Lexington (US)
- University of Latvia, Riga (Latvia)

Scriba Nanotecnologie S.r.l.

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FIELD OF ACTIVITY

We have developed the first optically micro-encoded digital tags with info density up to 100 kByte/cm^2. The tags are read by standard photodigital equipment and therefore can transform any kind of package in a multimedia data storage.

DESCRIPTION

Scriba Nanotecnologie is a spin off company of the Italian National Research Council (CNR) owned by 3 senior nanotechnologists and IMA SpA, the leading company in the field of pharmaceutical packaging. Scriba has fully developed the tagging system NU-CODE™ that allows the permanent recording of digital data, on specially modified holograms.

Digital data recorded on the EN-TAG™ can be easily read either by commercial digital cameras or custom designed cameras. NU-CODE™ is the proper tool to implement the RESPONSIBLE PACKAGING criteria for pharmaceutical products.

MAIN RESEARCH PROGRAMS

Computer software, Government defense, Materials

SELEX Sistemi Integrati S.p.A., a Finmeccanica Company

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DESCRIPTION

SELEX Sistemi Integrati, a Finmeccanica company, is a world leader in Defence Systems and Sensors and Commercial Systems for Air Traffic Management and Control. The company provides state-of-the-art solutions for Air Defence, Homeland Protection, Vessel Traffic Management, Coastal Defence, Battlefield C4I, Mission Critical Naval Command Systems, and Air Traffic Management Systems. With over 3200 dedicated personnel mainly employed in the design and development of high technology SELEX Sistemi Integrati can boast enormous capabilities in Systems Integration, Simulation, Engineering, Software Design and Production, combined with comprehensive and advanced customer support solutions. SELEX Sistemi Integrati invests in Research and Developments more than 160 Million Euro (> 17% of our turnover). Heterogeneous System of Systems development and integration with a complete suite of related technologies are in our core business.

FIELD OF ACTIVITY

- Defence, Security and Homeland Protection Sensors, Systems and System of Systems.
- Radars for Ground, Naval, Meteo and ATC applications. Multifunctional Radars. MultiDomain and MultiRole Systems.
- Platform Centric, Network Centric and Mobile Middlewares; Compact and Digital Receivers; Photonics technologies (Lithium Niobate Foundry); Gallium Arsenide and Gallium Nitride Foundries; Transmit-Receive Modules for Active Array Antennas.

MAIN RESEARCH PROGRAMS

- *NanoValves (Reverse NanoTriode with CNTs for TeraHertz Amplifiers)*
- *Nanotechnology Thermal Management and Interconnection of Devices and Circuits (Flip Chip and Face Up configurations).*
- *Nanotechnology Radio Frequency Selective Surfaces and Nanotechnology Radar Absorbing Materials.*
- *Chemical NanoSensors with CNTs*
- *Nanotechnology X Ray generation with CNTs*
- *Photonic Sensors (Photonic Band Gap & Brag Cells).*
- *Photonic Analog to Digital Converters*

TETHIS

Tethis S.r.l.

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Massimo Gatelli, *General Manager*

FIELD OF ACTIVITY

Tethis specializes in gas-phase synthesis and deposition of nanoparticles. Pulsed Microplasma Cluster Source (PMCS) is used for the production of nanostructured thin film.

PMCS is a high-intensity nanoparticle source for vacuum thin film technology allowing the generation of nanostructured layers with high surface area and porosity as well as micro and nanoscale topography.

Nanopowder synthesis by flame-spray pyrolysis is the second backbone of the Tethis Nanotechnology platform.

Flame spray pyrolysis is a promising, scaleable and cost-effective route for synthesis of a wide spectrum of nanoparticles. With the **NanoPowder Synthesizer nps10** Tethis now offers a bench-top flame spray pyrolysis unit for nanoparticle development at the research and early product development level.

DESCRIPTION

Tethis is a technology development company active in the emerging field of nano- biotechnology. The company is organized in three different business areas:

Tethis Systems focuses on the design and sale of nanoparticle synthesis and nanocoating units allowing customers to develop their own nanotech-products in-house.

Tethis Technology Services supports customers with nano and biotech product development by technical consulting and by opening Tethis' platform technologies for services such as tailor-made coatings or nanopowder development.

Tethis Research targets on the incorporation of nanotechnology in devices, for instance by the integration of nanotechnology, biotechnology and microfabrication. Many of our research projects are based on collaborations with industries, universities and research centers reflecting our motto "Integration through collaboration".

Established in 2004, Tethis is the result of an integration of scientific experience coming from top-end university research and economic know-how at the SME as well as the international market level. Since July 2005, the company is part of the Genextra Group, fostering the development of new products that crosslink nano and biotechnologies

MAIN RESEARCH PROGRAMS

BIOTECHNOLOGY LIFE SCIENCES

Tethis is developing nanotechnological solutions based on innovative nanostructured biomaterials for the biomedical field. Features like biocompatibility, high surface area, transparency, patterning and compatibility with microfabrication technology make our coatings a material of choice for an optimized interaction with biomolecules and cells in a variety of applications. We are integrating our novel coatings with tools like microarrays, high content cell-based assays and microfluidic platforms for approaching a range of different biological assays.

MATERIALS

Tethis Research concentrates on the development of devices based on nanostructured materials as well as corresponding pilot-scale process equipment. Cutting-edge application-oriented research is carried out at Tethis labs in the framework of collaborations with industrial and academic partners. Our joint efforts focus on the realization of proof-of-concept devices based on the synergetic contribution of nano-, bio-, and microfabrication technologies.

Politecnico di Torino

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DESCRIPTION

The laboratory is committed to the development of micro and nanotechnologies and to their application in various fields. Its aims span all the spectra from basic research to technological transfer. Fundamental and applied activities are developed at the level of material growth, process development, device layout and realisation, and testing. Chilab is a laboratory of the Politecnico of Torino dedicated to the design and realization of micro and nano systems with a specific focus on the technological transfer. The laboratory collects both technological and fundamental knowledge in various fields. The competences on material development and analysis as well as those on processes, device and circuit design are integrated for the realisation of MEMS and NEMS for wide range applications. In 2005, the Italian Ministry for University and Research funded Chlab for the creation of a Centre of Excellence involved in public and private research in the strategic fields of nanotechnologies applied to biotech. LATEMAR (Miniaturised Electrobiochemical Technologies for Research and Analysis Laboratory) is a clustered laboratory that merges and coordinates the excellences in the basic research related to the development of micro and nano-devices and sensors for genomic, post-genomic and biomedicine together with R&D centres of Companies. Focus of the Lab is the development of advanced devices for diagnostics and therapeutics in the biomedical, pharmacological and food fields, in particular for DNA, RNA, proteins and cells analysis.

MAIN RESEARCH PROGRAM

BIOTECHNOLOGY, LIFE SCIENCES

Device for genomics and proteomics analysis.

ENVIRONMENT, ENERGY

MEMS and NEMS sensor design for environment analysis.

EDUCATION

Politecnico di Torino is one of the most important Universities in Italy.

MATERIALS

Material coating and analysis.

Veneto Nanotech S.c.p.A.

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Contact

Federica Lodato, *External Relations Manager*

FIELD OF ACTIVITY

National Cluster for Nanotechnology.

DESCRIPTION

Veneto Nanotech is a company established by the Universities of Padua, Venice and Verona as well as by the Veneto Region in cooperation with the Italian Ministry of University and Research (MIUR), numerous public institutions and private companies aiming at coordinating the initiatives and at unifying the strategic vision of the Italian nanotechnology Cluster.

Veneto Nanotech's goal is to familiarize companies with nanotechnologies in order to promote process and product innovation as well as the creation of high-tech companies.

Furthermore, Veneto Nanotech aims at fostering and developing private investments in research and at supporting high-tech centres for the development of research projects and promotion of high-tech transfer.

NANOFAB: Laboratories with scientific focus on surface treatments, nano-structured and nano-treated materials, chemical and bio-chemical nano-sensors development and microarrays.

CIVEN: Association among the Universities of Padua, Venice and Verona for basic research and training activities.

ECSIN: Centre for studying the nanotechnology impact on human health and environment and for evaluating the ethical aspects on the society.

ICN: International Campus for Nanotechnologies - for education in the field of nanotechnology at various levels.

LaNN: Laboratory for Nanofabrication of Nanodevices focused on nanophotonics, plasmonics and nanolithography.

MAIN RESEARCH PROGRAMS

BIOTECHNOLOGY, LIFE SCIENCES

Micro arrays, Biosensors.

ENVIRONMENT, ENERGY

Risk assessment of NPs, Nanophotonic for Cleantech (solar cells, photovoltaic).

EDUCATION

Master on Nanotechnology.

MATERIALS

Nanostructured materials, Thin films, Coating.

NANOTECH 2008 June 1-5, 2008

Hynes Convention Center - Audi, Second Level

Boston, Massachusetts