

DOCTORAL SCHOOL IN NANOTECNOLOGIE

GENERAL DESCRIPTION

SUBJECT AREAS:

- main area: FIS/03
- other areas: BIO/06, BIO/18, CHIM/03, CHIM/04, CHIM/08, FIS/01, ING-IND/22, ING-INF/01, MED/08, MED/18, MED/28, MED/30, ING-IND/24, FIS/07, CHIM/01, MED/35 BIO/10, BIO/11, BIO/14, MED/25, MED/26, MED/06

FIELDS OF RESEARCH:

1. the development of new experimental techniques to investigate, process, manipulate and visualize nanostructured materials on a nanometric scale
2. the development of spectroscopic techniques to detect single molecules on nanostructured substrata
3. the study of the relations between microstructure and the properties of materials and engineering of nanostructured materials
4. the synthesis of nanostructures
5. the applications of nanotechniques to energy-focused research
6. the multiscale molecular modelling of materials and relevant phenomena through computational simulation techniques
7. human health with particular attention to the study and treatment of tumours and degenerative diseases
8. nanotechnological applications to medical, pharmacological and biomedical areas

ORGANIZING DEPARTMENT:

Dip. di Fisica

OTHER DEPARTMENTS:

- Dip. dei Materiali e delle risorse naturali
- Dip. di Scienze della vita
- Dip. di Elettronica, elettrotecnica e inginformatica
- Dip. di Ingegneria chimica, ambiente e materie prime
- Dip. Clinico di Biomedicina
- Dip. di Scienze chimiche
- Dip. di Scienze farmaceutiche
- Dip. Clinico di Scienze chirurgiche generali
- Dip. Clinico di Scienze chirurgiche specialistiche
- Dip. Clinico di scienze cliniche

FOREIGN PARTICIPATING BODIES:

- Lab. Nazionale TASC
- Soc. Sincrotrone TS
- ICGEB
- IRCCS Burlo Garofolo
- CRO Aviano

PROGRAMME LENGTH IN YEARS: 3

MAXIMUM PERIOD OF STUDY ABROAD IN MONTHS: 12

OFFICIAL LANGUAGE OF THE SCHOOL: English

ADMISSION INFORMATION AND REQUIREMENTS

PLACES AVAILABLE: 16

SCHOLARSHIPS: 8

FUNDING BODIES:

- Università degli Studi di Trieste+Dip. Fisica su fondi Fondazione Callerio (finalizzata al Progetto "Interazione a livello molecolare di antitumorali coniugati con acido ialuronico in tumori umani") 1
PLEASE NOTE: funding for a maximum of four months abroad is granted
- Università degli Studi di Trieste+Dip. Fisica su fondi CNR/INFM su Progetto UE (finalizzata al Progetto "Development, design and characterization of Metamaterials with negative refractive index") 1
- Università degli Studi di Trieste+Dip. Fisica su fondi CNR/INFM su Progetto UE (finalizzata al Progetto "Design, fabrication and characterization of plasmonic structures for solar cell light harvesting enhancement") 1
- Università degli Studi di Trieste+Dip. dei Materiali e delle Risorse Naturali su fondi Fondo Trieste (finalizzata al Progetto "Utilizzo di tecniche spettroscopiche su materiali e tessuti di ambito bio-medico") 1
- Dip. di Scienze Chimiche su fondi CNR - Istituto di Chimica dei Composti OrganoMetallici - ICCOM (finalizzata al Progetto "Nuove strutture catalitiche per la produzione sostenibile di energia da risorse rinnovabili (New catalytic structures for the sustainable production of Energy from renewables)") 1
PLEASE NOTE that this scholarship does not ensure extra funding for periods abroad.
- Dip. di Fisica su fondi Sincrotrone Trieste - ScpA (finalizzata al Progetto "Attività sperimentale con luce di sincrotrone su nanostrutture") 1

- MIUR "Giovani Ricercatori" (finalizzata al Progetto "Rilancio dell'industria farmaceutica anche attraverso la chimica fine dei composti naturali per nuove applicazioni diagnostiche e nuovi principi attivi: *Nano particelle di oro per il rilascio di principi attivi idrofobici*: ").....1
PLEASE NOTE that this scholarship does not ensure extra funding for periods abroad.
- MIUR "Giovani Ricercatori" (finalizzata al Progetto "Risparmio energetico e micro generazione distributiva: *Studio di sistemi modello di catalizzatori con tecniche di fisica delle superfici*").....1
PLEASE NOTE that this scholarship does not ensure extra funding for periods abroad.

Candidates who accept an earmarked scholarship are committed to the pre-assigned topic

Candidates have to list (in order of preference) which scholarships they apply for in the comments box at the bottom of the "qualifications evaluation form".

NON-FUNDED PLACES

- research grant-holders: 1
- grant-holders funded by the Italian Ministry of Foreign Affairs permitted to sit the entrance examination in the country of origin 1
- non-EU citizens resident abroad 2

ACADEMIC QUALIFICATION REQUIRED: see Announcement (art. 1-Requirements)

DEADLINE FOR COMPLETION OF DEGREE BEFORE APPLICATION:..... 05.11.2009

ADMISSION REQUIREMENTS:

qualifications

FINAL SCORE:..... 100/100

FINAL SCORE (MINIMUM REQUIRED):..... 70/100

QUALIFICATIONS REQUIRED (RELATIVE WEIGHT):

Art. 11 University Rules for Doctorates:

1. a detailed curriculum vitae et studiorum (with all the academic qualifications), a transcript of the exams and scores; a certificate of knowledge of English, publications, abstracts, attendance of schools: max 10/100
2. degree thesis and abstract of the results of the degree thesis, in particular the degree score: 50/100
3. two letters of recommendation by professors / researchers who know the applicant's work: 20/100
4. a concise research proposal relevant to one of the topics of the Doctorate: 20/100

DEADLINE FOR RECEIVING CERTIFICATES / PUBLICATIONS: 05.11.2009

ADDRESS TO WHICH CERTIFICATES / PUBLICATIONS SHOULD BE SENT: Dip. Di Fisica.

Applicants who have completed their degree within the deadline for applications are allowed to upload their certificates / publications through a web interface instead of sending them in hard copy.

CONTACT INFORMATION

DIRECTOR OF THE SCHOOL: Prof. Maurizio FERMEGLIA - Dipartimento di Ingegneria Chimica, dell'Ambiente e delle Materie Prime - Università degli Studi di Trieste - tel. 040/558.3438 fax 040/569823 e-mail mauf@dicamp.units.it

VICE-DIRECTOR: Prof. Alberto MORGANTE – Dipartimento di Fisica - Università degli Studi di Trieste - tel. 040/558.3373 fax 040/558.3350 e-mail morgante@tasc.infm.it

WEB SITE: <http://www.nanotech.units.it>

OVERVIEW: The mission of the school is to provide students with knowledge and training in the field of nanotechnology and to provide the necessary background to become 21st century scientists and technicians. The approach is cross-disciplinary: physicists, chemists, biologists, engineers, physicians, pharmacologists, odontologists, biotechnologists and agronomists combine and reinforce their specific competences and skills while developing the ability to carry out their research in synergy and in a wider perspective. The main objective is to teach researchers to plan, build, use and test nanotechnological tools and devices that meet the growing needs of the society in diverse fields of application. PhD graduates will be professional researchers and technological developers. They will apply their knowledge and their critical evaluation skills to the development of methods to design, produce and evaluate new materials and to improve the existing ones. The target is to make industrial production more efficient, economical and sustainable both in terms of consumption of resources and environmental impact.

The research aims and objectives are: (i) the development of new experimental techniques to investigate, process, manipulate and visualize nanostructured materials on a nanometric scale, (ii) the development of spectroscopic techniques to detect single molecules on nanostructured substrata, (iii) the study of the relations between microstructure and the properties of materials and engineering of nanostructured materials, (iv) the synthesis of nanostructures, (v) the applications of nanotechniques to energy-focused research, (vi) the multiscale molecular modelling of materials and relevant phenomena through computational simulation techniques, (vii) human health with particular attention to the study and treatment of tumours and degenerative diseases, (viii) nanotechnological applications to medical, pharmacological and biomedical areas.

This is made possible by the availability of top rate facilities and equipments in the University laboratories and in the public and private research bodies partnering with the University, i.e. the International Centre for Genetic Engineering and Biotechnologies (ICGEB), Sincrotrone TS, the Oncologic Referral Center in Aviano (CRO), and the Advanced Technology and Nanoscience National Laboratory TASC- INFN- CNR just to cite a few. The school started recently a procedure to arrive at an European Consortium of graduate schools in Nanotechnology aiming to give out the title of European Doctor in Nanotechnology.

