



**DOCTORAL SCHOOL IN
NANOTECHNOLOGY**

GENERAL DESCRIPTION

SUBJECT AREAS COVERED BY THE SCHOOL:

- main area: FIS/03
- other areas: BIO/06, 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; FIS/03; AGR/12

RESEARCH FIELDS:

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. nanotechnological applications to medical, pharmacological and biomedical areas
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. applications of nanotechniques to energy-focused research

ORGANIZING DEPARTMENT: Dip. di Fisica

PARTICIPATING DEPARTMENTS (UNIVERSITY OF TRIESTE):

- Dipartimento dei Materiali e delle risorse naturali
- Dipartimento di Scienze della vita
- Dipartimento di Elettronica, elettrotecnica e informatica
- Dipartimento di Clinico di biomedicina
- Dipartimento di Scienze chimiche
- Dipartimento di Scienze farmaceutiche
- Dipartimento di Ingegneria Meccanica
- Dipartimento Universitario Clinico di Anestesia, Chirurgia, Anatomia Patologica, Dermatologia, Epatologia e Scienze Molecolari

OTHER PARTICIPATING INSTITUTIONS (Italian):

- Lab. Nazionale TASC-IOM CNR
- Sincrotrone Trieste S.C.p.A.
- ICGEB International Centre for Genetic Engineering and Biotechnology
- IRCCS Burlo Garofolo
- CRO Aviano

DURATION: 3 years

MAXIMUM NUMBER OF MONTHS TO BE SPENT ABROAD: 12

OFFICIAL LANGUAGE OF THE SCHOOL: English

ADMISSION INFORMATION

NUMBER OF PLACES AVAILABLE: 16

- SCHOLARSHIPS: 13

- FUNDING BODY/IES:

- Università degli Studi di Trieste 1



Sezione Ricerca e Dottorati

Ripartizione Dottorati

- MIUR "Progetto Giovani Ricercatori" (Project title "*Nanotechnology for food safety and quality*")..... 1
N.B: This scholarship does not provide extra funding for eventual periods of study abroad within the duration of the doctorate, unless the organizing Department decides to make these funds available.
- Università degli Studi di Trieste + Dipartimento dei Materiali e della Risorse Naturali funded by UE-Nanomodel (Project title "*Molecular Modeling for nanostructured materials and coatings*")..... 1
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR (Project title "*Development of nanostructured arrays for myosin II motors and characterization of myosin- actin cyclic interactions*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project title "*Experimental study on the physics of nanostructured organic photovoltaic*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project title "*Realization of microfluidic devices for the investigation of the biological response of living cells to physico-chemical stimuli by means of vibrational micro spectroscopy*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project title "*Design and development of nanoelectromechanical and plasmonical devices and their use in Raman spectroscopy*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project title "*Low dimensionality magnetic materials: electronic structure and correlation effects*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project title "*Synthesis of ordered semiconductor nanostructures by directed self-assembly for photonic applications*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Università degli Studi di Trieste + Dip. di Fisica funded by Dip. Universitario clinico di Biomedicina funded by Società DentalHabitat s.r.l.e Classimplant s.r.l. (Project title "*Microscopic and ultramicroscopic evaluation and optimization of the interface between tissues and materials in odontology*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Dipartimento di Scienze Chimiche (Project title "*Development and application of TDDFT methodologies for the simulation of core spectra of condensed systems*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate using the 'fondo cessazioni anticipate 2010/2013 Prof Rahman'.
- Università degli Studi di Trieste + Dip. di Scienze della Vita (Project title "*Development of nanoarrays of antibodies and micro/nano fluidic circuits for the detection of secretoma of single cells entrapped in micrometric structures*") 1
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR Istituto Officina dei Materiali (Project title "*Development of electrochemical sensors through Nano technological processes for biological and medical diagnostics.*") 1
N.B: This scholarship does include extra funding for periods of study abroad within the

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UNIVERSITÀ
DEGLI STUDI DI TRIESTE

Sezione Ricerca e Dottorati

Ripartizione Dottorati

duration of the doctorate.

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".

If extra earmarked scholarships become available after candidates have completed their application, they can modify their preference list within the deadline for receiving certificates.

NON-FUNDED PLACES

- holders of a research grant (see Art. 1.1 - Requirements)..... 1
- grant-holders funded by the Italian Ministry of Foreign Affairs sitting the entrance examination in the country of origin 1
- non-EU citizens residing abroad 2

ACADEMIC QUALIFICATION REQUIRED: see Announcement (art. 1.1 - Requirements)

DEADLINE FOR COMPLETION OF DEGREE: 15.11.2010

ASSESSMENT CRITERIA:

Qualifications

FINAL SCORE:..... 100/100

MINIMUM FINAL SCORE REQUIRED: 70/100

QUALIFICATIONS REQUIRED/RELATIVE WEIGHT:

Art. 11 Announcement: all candidates are required to present the following documents, regardless of whether or not a score is assigned to them (see below):

- a. a detailed curriculum vitae et studiorum (including qualifications, degree transcript, certificate of English). The Board will also evaluate the attachment to the cv, eg publications, abstracts, school attendance: 10/70
- b. a copy of the Master's degree thesis and a summary of the results obtained during the Master's course (or equivalent). The Board will especially take into consideration the degree score: 50/70

For students with a degree awarded by a non-Italian university, an abstract of the thesis in English or Italian is sufficient.

as well as

1. Two letters of presentation from scholars/researchers acquainted with the candidate 20/70
 2. A concise research programme in one of the research fields listed in the general description of the School: 20/70
- Qualifications Evaluation Form (unless this form is presented, qualifications and publications CANNOT be assessed by the Examining Board)

MINIMUM SCORE REQUIRED FOR QUALIFICATIONS/PUBLICATIONS: 70/100

ABSOLUTE DEADLINE FOR RECEIVING CERTIFICATES: 15.11.2010

ADDRESSES TO WHICH CERTIFICATES SHOULD BE SENT: Dipartimento di Fisica - sede amministrativa Scuola Dottorato in Nanotecnologie - via A. Valerio, 2 - I piano - Servizio Ricerca e Formazione st. 108 - 34100 TRIESTE

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/default.aspx>

OVERVIEW: 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:

1. the development of new experimental techniques to investigate, process, manipulate and visualize

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- nanostructured materials on a nanometric scale,
2. the development of spectroscopic techniques to detect isolated molecules on nanostructured substrates,
 3. the study of the relations between microstructure and the properties of materials and the 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.

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), Elettra Sincrotrone Trieste, the Oncological Referral Center in Aviano (CRO), and the Advanced Technology and Nanoscience National Laboratory TASC- INFN- CNR just to cite a few.

CHANGES SUBSEQUENT TO 23.07.10

N.B: the original announcement may be subject to continuous modification. Any changes made subsequent to the original date of publication are listed below :

- 1st addition:

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IN PRESS

N.B: the following additions/changes have been requested by the organisers of the Doctorate and will be made official with an supplement to the:

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