



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE

Rettorato e Direzione Generale  
Sezione Ricerca e Dottorati  
Ripartizione Dottorati

LAST REVISED 16 ottobre 2013

**DOCTORAL PROGRAMME IN  
NANOTECHNOLOGY**

**NOTE:** This attachment provides only partial information. Exhaustive information, including how to register for the selection, is published in the Admission Announcement posted in the web page <http://www2.units.it/dottorati/> >> Admission Announcement.

Deadline for online application	<b>16<sup>th</sup> September 2013 h.11:30 a.m. CET</b>
---------------------------------	--

**GENERAL DESCRIPTION**

**SUBJECT AREA:**

- main area: 02
- other areas: 03; 05; 06; 09

**MACRO RESEARCH FIELDS:**

- main area: 02/B
- other areas: 02/A; 03/A; 03/B; 03/C; 03/D; 05/E; 05/G; 06/A; 06/C 09/D; 09/E

**SCIENTIFIC DISCIPLINARY SECTOR:**

- main area: FIS/03
- other areas: FIS/01; FIS/07; CHIM/01; CHIM/03; CHIM/04; CHIM/06; CHIM/08; BIO/06; MED/08; MED/18; MED/28; MED/30; MED/35; ING-IND/22 ; ING-IND/24; ING-INF/01; BIO/10; BIO/11; BIO/14; AGR/12

**DOMAIN EUROPEAN RESEARCH COUNCIL:**

- main area: PE
- other areas: LS

**ERC PANELS:**

- main area: PE4
- other areas: PE3; PE5; PE8; LS1; LS2; LS9; LS7

Information on the codes can be found online at the address: <http://www.units.it> >> Research >> Doctorates >> Admission >> Admission Announcement and relative attachments  
- Board of Examiners - Eligible Candidates/Merit list

**RESEARCH FIELDS:**

1. Application of nanotechnologies to medical, pharmacological, bio-medical and food sectors
2. Application of Nanotechnology to energy related research
3. Multiscale molecular modelling of materials and relevant phenomena through computational simulation techniques
4. Human health with particular attention to the study and treatment of tumors and degenerative diseases
5. Synthesis of nanostructures
6. Study of the relations between microstructure and the properties of materials and the engineering of nanostructured materials

*Legge 241/1990 - Responsabile del procedimento: Elena Ferraro*

Università degli Studi di Trieste  
Piazzale Europa, 1  
I - 34127 Trieste

Tel. +39 040 558 7953  
Fax +39 040 558 3008  
[Dottorati@amm.units.it](mailto:Dottorati@amm.units.it)

[www.units.it](http://www.units.it) – [ateneo@pec.units.it](mailto:ateneo@pec.units.it)



# UNIVERSITÀ DEGLI STUDI DI TRIESTE

**Rettorato e Direzione Generale  
Sezione Ricerca e Dottorati  
Ripartizione Dottorati**

7. Development of new experimental techniques to investigate process, manipulate and visualize nanostructured materials at a nanometric scale
8. Development of spectroscopic techniques to detect isolated molecules on nanostructured substrates

LOCATION: Trieste

- ORGANIZING DEPARTMENT: Dip. di Fisica

PARTNER UNIVERSITIES::

- Ingegneria ed Architettura
- Scienze Chimiche e Farmaceutiche
- Clinico di Scienze mediche, chirurgiche e della salute
- Scienze della Vita

NON-ACCREDITED PARTICIPATING INSTITUTIONS:

- IOM CNR
- Elettra Sincrotrone Trieste
- CRO Aviano
- Istituto nazionale Tumori
- IRCSS Burlo Garofalo
- ICGEB
- CNR - Istituto di chimica dei composti organo metallici

DURATION: 3 years

MAXIMUM NUMBER OF MONTHS TO BE SPENT ABROAD IN THREE YEAR: 12

OFFICIAL LANGUAGE: english

## ADMISSION INFORMATION

TOTAL NUMBER OF PLACES AVAILABLE: ..... **30**

SCHOLARSHIPS AVAILABLE WITH INDICATION OF FUNDING BODY:

- [cod G/1] MIUR "Progetto Giovani Ricercatori" nell'ambito "Salute dell'uomo" (finalizzata al Progetto "Use of vibrational spectroscopies for in-vivo diagnosis and clinical analysis of drugs in sub-micro molar concentrations") ..... 1
- [cod FSE/D/2] Università degli Studi di Trieste cofinanziata dalla Regione Friuli Venezia Giulia, attraverso le risorse del Fondo Sociale Europeo Programma Operativo 2007/13, Asse 5 Transnazionalità e Interregionalità + Dipartimento di Fisica, su fondi ThunderNIL Srl (finalizzata al Progetto "Processing and chemical-physical effects of ultrafast nanoimprint lithography on advanced plastic materials") ..... 1
- [cod FSE/D/3] Università degli Studi di Trieste cofinanziata dalla Regione Friuli Venezia Giulia, attraverso le risorse del Fondo Sociale Europeo Programma Operativo 2007/13, Asse 5 Transnazionalità e Interregionalità + Dipartimento di Fisica, su fondi CNR-IDPA Venezia Programma (finalizzata al Progetto "Development of DNA and protein microarrays based on electrochemiluminescent transduction scheme") ..... 1

Legge 241/1990 - Responsabile del procedimento: Elena Ferraro

**Università degli Studi di Trieste**  
Piazzale Europa, 1  
I - 34127 Trieste

Tel. +39 040 558 7953  
Fax +39 040 558 3008  
[Dottorati@amm.units.it](mailto:Dottorati@amm.units.it)

[www.units.it](http://www.units.it) – [ateneo@pec.units.it](mailto:ateneo@pec.units.it)



# UNIVERSITÀ DEGLI STUDI DI TRIESTE

**Rettorato e Direzione Generale  
Sezione Ricerca e Dottorati  
Ripartizione Dottorati**

- [cod MD/4] Università degli Studi di Trieste + Dipartimento di Fisica su fondi CNR-IOM (finalizzata al Progetto “*New processing protocols for advanced materials for renewable energy harvesting*”).....1
- [cod MD/5] Università degli Studi di Trieste + Dipartimento di Fisica su fondi CNR-IOM (finalizzata al Progetto “*Fabrication of microfluidic devices for single cell biology studies by two photon photopolymerization*”) .....1
- [cod MD/6] Università degli Studi di Trieste + Dipartimento di Fisica su fondi CNR-IOM (finalizzata al Progetto “*Nanoelectromechanical systems for biosensing*”).....1
- [cod MD/7] Università degli Studi di Trieste + Dipartimento di Fisica su fondi PRIN 20105ZZTSE(finalizzata al Progetto “*Study of the physical and chemical properties of graphene-based materials*”) .....1
- [cod MD/8] Università degli Studi di Trieste + Dipartimento di Fisica su fondi MIUR-FIRB Futuro in Ricerca 2010 - cod. progetto RBFR10FQBL\_2 (finalizzata al Progetto “*Structural characterization and measurement of the conductance of single organic hetero-junctions at metal surfaces by low temperature scanning tunneling microscopy*”).....1
- [cod MD/9] Università degli Studi di Trieste + Dipartimento di Fisica su fondi CNR-IOM (finalizzata al Progetto “*Structural and electronic coupling of organic poly- and heteroaromatic molecules on inorganic surfaces of oxides and metals*”).....1
- [cod MD/10] Università degli Studi di Trieste + Dipartimento di Fisica su fondi AZZURRA Ass. Malattie Rare ONLUS (finalizzata al Progetto “*Intracellular DNA delivery using polymeric nanoparticles for lysosomal storage disorders gene therapy*”) .....1
- [cod MD/11] Università degli Studi di Trieste + Dipartimento di Ingegneria e architettura su fondi UE FP7-ICT Iflexis n.611070 (finalizzata al Progetto “*Growth of organic single crystals onto nanostructured matrices*”).....1
- [cod MD/12] Università degli Studi di Trieste + Dipartimento di Ingegneria e architettura su fondi UE FP7-ICT iFLEXIS n.611070 (finalizzata al Progetto “*Studies over electrical transport and photon/matter interactions in organic single crystals*”).....1
- [cod D/13] Dipartimento di Ingegneria e architettura su fondi CRO-Aviano (finalizzata al Progetto “*Targeted delivery systems for antineoplastic drugs*”) .....1
- [cod MD/14] Università degli Studi di Trieste + Dipartimento di Scienze chimiche e farmaceutiche su fondi UE FP7-ICT GRAPHENE (finalizzata al Progetto “*Graphene functionalization for biocompatibility*”).....1
- [cod D/15] Dipartimento di Scienze chimiche e farmaceutiche su fondi MIUR (PRIN 2010BNZ3F2006) CNR-IOM (finalizzata al Progetto “*Pump-probe experiments energy transfer studies in nanostructured materials and their precursors*”) .....1
- **LAST UPDATED ON 04.09.2013!** [cod D/16] Dipartimento di Ingegneria e architettura su fondi ISTE-CNR (finalizzata al Progetto “*Understanding the mechanism that govern potential adverse effects of nanomaterials on biological system*”).....1
- **LAST UPDATED ON 24.09.2013!** [cod D/17] Dipartimento di Fisica su fondi Dip.

Legge 241/1990 - Responsabile del procedimento: Elena Ferraro

Università degli Studi di Trieste  
Piazzale Europa, 1  
I - 34127 Trieste

Tel. +39 040 558 7953  
Fax +39 040 558 3008  
[Dottorati@amm.units.it](mailto:Dottorati@amm.units.it)

[www.units.it](http://www.units.it) – [ateneo@pec.units.it](mailto:ateneo@pec.units.it)



# UNIVERSITÀ DEGLI STUDI DI TRIESTE

**Rettorato e Direzione Generale  
Sezione Ricerca e Dottorati  
Ripartizione Dottorati**

Scienze Mediche e Biologiche dell'Università di Udine su fondi: Unione Europea VII PQ/Programme IDEAS/ERC-Adg Grant Agreement n. 269051-QUIDPROQUO FIRB 2010 Cod. Progetto RBAP11Z4Z9 Progetto FIERCE (finalizzata al Progetto "Mechanical properties of cells and their influence on their adhesion to substrates and among themselves") .....1

**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 by specifying the corresponding codes in the "[Integration to the Application](#)". If extra earmarked scholarships become available after candidates have completed their application, they can modify their preference list within the deadline for receiving certificates.**

PLACES WITH JOINT SUPERVISION OF THESIS: students from foreign universities may be admitted to the Ph.D. programme with a joint supervision of their thesis

ACADEMIC QUALIFICATION REQUIRED: see Announcement (art. 2 - Requirements)

1. Italian Master's Degree "Laurea Specialistica/Magistrale" or Degree awarded prior to approval of Ministerial Decree D.M. n. 509 of 3 Novembre 1999, updated with D.M. n. 270 of 22 October 2004, n. 270, (or a qualification corresponding to a Master's -second level- degree);
2. an equivalent foreign academic qualification awarded abroad
3. an academic qualification awarded abroad which is considered to be equivalent to the Italian degree that allows the holder to undertake Ph.D. studies for duration, level and area of study

DEADLINE FOR COMPLETION OF DEGREE: ..... **25.10.2013**

ASSESSMENT CRITERIA: qualifications + project

- FINAL SCORE (the final score is based on the sum total of marks obtained in the project plus the points given for qualifications and publications): .....100/100
- MINIMUM FINAL SCORE REQUIRED: .....70/100

WEIGHTING OF THE QUALIFICATIONS:

- "Integration to application" (unless this form is presented, qualifications and publications CANNOT be assessed by the Examining Board):
  - a. a detailed curriculum vitae et studiorum: 20/100
  - b. full copy or abstract of the MA thesis in Italian or English (Italian MA theses may be from "Laurea vecchio ordinamento" or "Laurea specialistica/magistrale"): 40/100.
  - c. two reference letters from lecturers/researchers who have followed the candidate in his/her studies: 20/100
  - d. a short research project in one of the research areas listed in the announcement: 20/100

Project assessment shall take into account:

- 1 the value of the Research Project in relation to set objectives
- 2 the quality of the Research Project with specific attention to adopted methodology and chronogram of activities

*Legge 241/1990 - Responsabile del procedimento: Elena Ferraro*

**Università degli Studi di Trieste**  
Piazzale Europa, 1  
I - 34127 Trieste

Tel. +39 040 558 7953  
Fax +39 040 558 3008  
[Dottorati@amm.units.it](mailto:Dottorati@amm.units.it)

[www.units.it](http://www.units.it) – [ateneo@pec.units.it](mailto:ateneo@pec.units.it)



# UNIVERSITÀ DEGLI STUDI DI TRIESTE

Rettorato e Direzione Generale  
Sezione Ricerca e Dottorati  
Ripartizione Dottorati

ONLY FOR CANDIDATES SELECTING THE ESF SCHOLARSHIP: Submit the research project using the form that can be downloaded from the following link <http://www.units.it> >> Ricerca >> Dottorati di Ricerca >> Ammissione al Dottorato >> Modulistica

MINIMUM SCORE REQUIRED FOR QUALIFICATIONS/PUBLICATIONS: .....70/100

**DEADLINE FOR SUBMITTING QUALIFICATIONS AND PUBLICATIONS AND**

**PROJECT (IF FORESEEN): ..... 25.10.2013**

QUALIFICATIONS AND PUBLICATIONS MAY BE SUBMITTED (art. 5.1.4 of the Ph.D. Announcement):

- as an attachment to the online admission application (upload)

**LAST UPDATED ON 10.09.2013! NOTE:** Only letters of recommendation should not be uploaded by the candidate but sent directly by professors/writers to:

[dottorato.nanotecnologie@units.it](mailto:dottorato.nanotecnologie@units.it)

Indicating in the subject: Letter to – Surname Name

The e-mail must be received no later than 24.00 CET on the day 25.10.2013

- only for publications that are voluminous or not available in electronic format, as long as they are listed in the form "Integration to application" (digital format preferable): by email (scan documenti, file zip max 10 MB) to [segrfistica@ts.infn.it](mailto:segrfistica@ts.infn.it)

ALTERNATIVE LANGUAGE TO ITALIAN: english - CEFR level: C1

## CONTACT INFORMATION

CHAIR: Prof. Lucia PASQUATO - Dipartimento di Scienze chimiche e farmaceutiche - Università degli Studi di Trieste - tel. 040/558.2406 e-mail [lpasquato@units.it](mailto:lpasquato@units.it)

DEPUTY CHAIR: Prof. Alessandro BARALDI – Dipartimento di Fisica - Università degli Studi di Trieste - tel. 040/558.3373 e-mail [baraldi@elettra.trieste.it](mailto:baraldi@elettra.trieste.it)

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

**EDUCATIONAL AIMS:** 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: the development of new experimental techniques to investigate, process, manipulate and visualize nanostructured materials on a nanometric scale, the development of spectroscopic techniques to detect isolated molecules on nanostructured substrates, the study of the relations between microstructure and the properties of materials and the engineering of nanostructured materials, the synthesis of nanostructures, the applications of nanotechniques to energy-focused research, the multiscale molecular modelling of materials and relevant phenomena through computational simulation techniques, human health with particular attention to the study and treatment of tumours and degenerative diseases, nanotechnological applications to medical, pharmacological, biomedical and food-science 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),

*Legge 241/1990 - Responsabile del procedimento: Elena Ferraro*

Università degli Studi di Trieste  
Piazzale Europa, 1  
I - 34127 Trieste

Tel. +39 040 558 7953  
Fax +39 040 558 3008  
[Dottorati@amm.units.it](mailto:Dottorati@amm.units.it)

[www.units.it](http://www.units.it) – [ateneo@pec.units.it](mailto:ateneo@pec.units.it)



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE

**Rettorato e Direzione Generale**  
**Sezione Ricerca e Dottorati**  
**Ripartizione Dottorati**

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

*Legge 241/1990 - Responsabile del procedimento: Elena Ferraro*

**Università degli Studi di Trieste**  
Piazzale Europa, 1  
I - 34127 Trieste

**[www.units.it](http://www.units.it) – [ateneo@pec.units.it](mailto:ateneo@pec.units.it)**

Tel. +39 040 558 7953  
Fax +39 040 558 3008  
[Dottorati@amm.units.it](mailto:Dottorati@amm.units.it)