



UNIVERSITÀ
DEGLI STUDI DI TRIESTE

Sezione Ricerca e Dottorati

Ripartizione Dottorati

LAST REVISED 29/09/2011

DOCTORAL SCHOOL IN
CHEMICAL AND PHARMACEUTICAL SCIENCES AND TECHNOLOGIES

GENERAL DESCRIPTION

SUBJECT AREAS COVERED BY THE SCHOOL:

- main area: CHIM/06
- other areas: CHIM/02, CHIM/03, CHIM/08, CHIM/09, CHIM/12, BIO/15, ING-IND/24

RESEARCH FIELDS:

1. Analytical-and Environmental Sciences
2. Chemical Sciences
3. Food and Natural Products
4. Pharmaceutical Sciences
5. Sciences and Technologies of Chemical Engineering

ORGANIZING DEPARTMENT: Dip. di Scienze Chimiche e Farmaceutiche (Dept of Chemical and Pharmaceutical Sciences)

PARTICIPATING DEPARTMENTS (UNIVERSITY OF TRIESTE):

- Dip. di Ingegneria Industriale e dell'Informazione

OTHER PARTICIPATING INSTITUTIONS (Italian):

- Sprin s.r.l.
- Società Italiana per l'Oleodotto Transalpino
- Indena S.p.A.
- Biostrands s.r.l.
- Biosensor Technologies s.r.l.
- Fincantieri
- Serichim
- Sincrotrone Trieste S.C.p.A.
- CRO Aviano
- IRCSS Burlo Garofalo

FOREIGN PARTICIPATING INSTITUTIONS:

- University of Namur (Belgium)
- US Army Medical Research Institute of Infectious Diseases (USARMID, Fort Detrick, Maryland, USA)
- National Oceanic and Atmospheric Administration – National Ocean Service (Charleston, South Carolina, USA)
- Centre of Excellence in Biocatalysis, Biotransformations and Biocatalytic Manufacturing (Manchester, UK)
- Università di Strasburgo (Francia)
- DSM (Geleen, Olanda)
- ICGEB - International Centre for Genetic Engineering and Biotechnology
- Università di Innsbruck (Austria)
- Università di Lubiana (Slovenia)
- Università di Vigo (Spagna)
- Università di Cambridge (UK)
- Institut Catalan de Investigacion Quimica (ICIQ, Tarragona, Spain)

DURATION: 3 years

MAXIMUM NUMBER OF MONTHS TO BE SPENT ABROAD: 18

OFFICIAL LANGUAGE OF THE SCHOOL: Italian

Università degli Studi di Trieste
Piazzale Europa, 1
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ADMISSION INFORMATION

NUMBER OF PLACES AVAILABLE:	12
- earmarked for the project “ Development of ab initio approaches for the description of molecular strong field phenomena ” – project leader Prof. Pietro Decleva, DSCF), funded by the European Union as Initial Training Network (ITN), project title “ CORrelated Multielectron dynamics in INTense laser Fields (CORINF) ” The successful candidate will sign a contract provided s/he fulfills either of the requirements below: a) Italian citizens must have spent at least 3 years in the past 4 years outside Italy; b) non-Italian citizens must have resided in Italy no longer than 12 months in the past 3 years for study reasons..... 1 <u>Candidates who accept the earmarked project are committed to the pre-assigned topic</u>	
- SCHOLARSHIPS:	8
FUNDING BODY/IES:	
- [cod MD/1] Università degli Studi di Trieste + Dip. di Scienze Chimiche e Farmaceutiche funded by Dip. di Traumatologia, Ortopedia e medicina del Lavoro dell'Università degli Studi di Torino (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences on the topic “ <i>Exploring percutaneous absorption of toxicologically relevant metal nanoparticles</i> ”. Details on this project can be found on the web site of the School (http://www.dschi.units.it/sdstcf/).....	1
- [cod MD/2] Università degli Studi di Trieste + Dip. di Scienze Chimiche e Farmaceutiche funded by INSTM (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences on the topic “ <i>Hybrids of carbon nanostructures and polyoxometalates: new catalysts in mater splitting</i> ” Details on this project can be found on the web site of the School (http://www.dschi.units.it/sdstcf/).....	1
- [cod G/3] MIUR funded by “Fondo Giovani Ricercatori” (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2012 and published on the web site of the School (http://www.dschi.units.it/sdstcf/). The topic of this project must fit within the broader priority topic of the special grant “Improvement of pharmaceutical industry, also through the fine chemistry of natural products for new diagnostic applications and new active principles”).....	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.	
- [cod G/4] MIUR funded by “Fondo Giovani Ricercatori” (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2012 and published on the web site of the School (http://www.dschi.units.it/sdstcf/). The topic of this project must fit within the broader priority topic of the special grant “Advanced materials (ceramics, in particular) for structural applications.”	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.	
- [cod M/5-6] Università degli Studi di Trieste (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2012 and published on the web site of the School (http://www.dschi.units.it/sdstcf/).....	2
- [cod M/7] Università degli Studi di Trieste (The successful candidate will perform the research project at the Department of “Ingegneria Industriale e dell'Informazione”; the topic will be selected among the Priority Projects proposed by this Department for 2012 and published on the web site of the School (http://www.dschi.units.it/sdstcf/).....	1
- [cod D/8] Dip. di Scienze Chimiche e Farmaceutiche (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2012 and published on the web site of the School (http://www.dschi.units.it/sdstcf/).....	1
<u>Candidates who accept an earmarked scholarship are committed to the pre-assigned topic</u>	
NON-FUNDED PLACES:	
- holders of a research grant (see Art. 1.1 - Requirements).....	2



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- grant-holders funded by the Italian Ministry of Foreign Affairs sitting the entrance examination in the country of origin1
- non-EU citizens residing abroad1
- non-EU citizens residing abroad with ministerial authorisation and permitted to sit the entrance examination in the country of origin.....1

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

DEADLINE FOR COMPLETION OF DEGREE: 11.11.2011

ASSESSMENT CRITERIA: qualifications + oral interview.

- FINAL SCORE: the final score is based on the sum total of marks obtained in the interview plus the points given for qualifications and publications:: 120
- MINIMUM FINAL SCORE REQUIRED: 84/120
- MAXIMUM NUMBER OF POINTS AWARDED FOR QUALIFICATIONS + PUBLICATIONS: 60
(relative weight: max 50%)

QUALIFICATIONS REQUIRED (RELATIVE WEIGHT):

- Art. 11 Rules for Doctorates: 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: 30/60
 - b. a copy of the Master's degree thesis: 24/60For 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. publications: 6/60
2. letters of presentation (maximum 2): 0/60

- Qualifications Evaluation Form (unless this form is presented, qualifications and publications CANNOT be assessed by the Examining Board)

MINIMUM SCORE REQUIRED FOR QUALIFICATIONS/PUBLICATIONS:..... 42/60

- ORAL EXAMINATION MARK OUT OF (relative weight: max 50%):..... 60

MINIMUM SCORE REQUIRED FOR INTERVIEW: 42/60

ABSOLUTE DEADLINE FOR RECEIVING CERTIFICATES: 14.11.2011

ADDRESSES TO WHICH CERTIFICATES SHOULD BE SENT: by mail or in person to the Director of the School, Prof Enzo Alessio, Dipartimento di Scienze Chimiche e Farmaceutiche, Via L. Giorgieri 1, Università di Trieste, 34127 Trieste

EXAMINATION SCHEDULE:

- INTERVIEW: **25.11.2011 at 09.30 a.m.** at Dipartimento di Scienze Chimiche e Farmaceutiche (Edificio C11 – C11 building), Via Giorgieri 1, "Sala del Consiglio" (1st floor)

FOREIGN LANGUAGE FOR THE INTERVIEW: English

CEFR LEVEL: --

CONTACT INFORMATION

DIRECTOR OF THE SCHOOL: Prof. Enzo Alessio - Dipartimento di Scienze Chimiche e Farmaceutiche - Università degli Studi di Trieste – Via L. Giorgieri, 1 - tel. 040/558.3961 fax 040/558.3903 e-mail alessi@units.it

VICE-DIRECTOR: Prof. Maurizio Prato - Dipartimento di Scienze Chimiche e Farmaceutiche - Università degli Studi di Trieste - tel. 040/558.7883 fax 040/52572 e-mail prato@univ.trieste.it

WEB SITE: <http://www.dscf.units.it/sdstcf/>

SCIENTIFIC PROJECT: As detailed above, the School comprises 5 broad Research Areas. For each Area, the School provides the Ph D students with an interdisciplinary training that requires the acquisition of concepts, expertise, research methods and experimental techniques. In more detail:

To the Ph. D. students in the Areas of Food and Natural Products, and Analytical-Environmental Sciences the School will give the opportunity to:

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- improve their knowledge on foods, food supplements, herbal drugs and their derivatives, acquire expertise on food quality and safety control and learn chemical and biological techniques for the study of foods and herbal drugs, also according to EU regulations;
- learn research techniques and experimental design methods for the control, improvement and certification of food quality and for improving the efficacy and safety of food supplements, herbal drugs, and phytotherapeutic agents;
- acquire an in-depth knowledge of environmentally relevant analytical techniques and of advanced methodologies for the correct treatment of the experimental data, develop models for the space and time distribution of chemical species in ecosystems, as well as in urban and industrial settings;
- acquire expertise on environmental pollutants and toxins of natural origin, in particular in marine ecosystems;
- learn analytical techniques based on physical models and on structure-activity relationships for determining the exposure-related toxicity of chemical species.

The Ph. D. students in the Area of Chemical Sciences will:

- develop a cultural background, acquire advanced expertise and research competence in one or more fields among theoretical and computational chemistry, molecular spectroscopy, inorganic and bio-inorganic chemistry, homogeneous and heterogeneous catalysis, bio-crystallography, supramolecular chemistry, organic and bio-organic chemistry, nano-sciences and nano-technologies;
- learn how to perform advanced research in an up-to-date chemistry laboratory, acquiring a sound knowledge in modern research techniques and instrumentations;
- learn how to plan, develop, manage and bring to conclusion a research project on a chemistry topic, both from the point of view of the scientific interest and of the potential applications.

To the students in the Area of Pharmaceutical Sciences the School will provide specific competence for:

- the design of new drugs, their synthesis through both traditional and innovative methodologies, their structural and physical-chemical characterization, and the determination of their technological properties;
- the investigation of the molecular properties that affect the pharmacokinetic and pharmacodynamic behaviour of pharmacologically active compounds;
- the investigation of structure-activity relationships in biologically active molecules;
- the design and development of controlled-release pharmaceutical preparations for oral administration.

The students in the Area of Sciences and Technologies of Chemical Engineering will:

- improve their knowledge on the processes involving exchange of matter, heat, and momentum from the molecular level to the micro-, meso-, and macroscopic scale;
- develop the techniques of molecular simulation for systems that are of industrial or bio-medical interest;
- acquire a sound knowledge in the design and modelling of complex systems for the controlled release of pharmaceutically active compounds;
- learn the methodologies for the development and simulation of the processes of purification and remediation from pollutants.

EDUCATIONAL AIMS AND RESEARCH TOPICS: The Ph. D. School in Chemical and Pharmaceutical Science and Technology is a centre for advanced academic education in the area of chemistry, open to young graduates from Italy and abroad. Its primary objective is that of training doctors with a sound scientific qualification, capable of performing autonomous research projects.

The School involves a large number of Academics from two Departments, that provide a broad range of competence and expertise in the fields of Chemistry, Pharmaceutical Sciences and Chemical Engineering, and offer to the students highly qualified research projects and teaching courses. The School is managed by a Board of Teachers, composed by 20 full-time Professors and Researchers, all strongly involved in research activities, whose excellent level is testified by the large number of scientific publications (more than 500 in the period 2005-2010, as shown in the 2010 report 'Anagrafe dei Dottorati') and by the many national and international collaborations. It is worth noting that 4 out of the 20 members of the Board of Teachers of the School are among the 109 Italian chemists who belong to the list of 'Top Italian Scientist' (http://www.topitalianscientists.org/top_italian_scientists.aspx) that comprises 2050 Italian scientists having



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an h factor higher than 30. The vice-Director of the School, Prof. Maurizio Prato, ranks in 4th position among the 109 chemists.

The School comprises 5 broad Research Areas: Chemical Sciences, Pharmaceutical Sciences, Sciences and Technologies of Chemical Engineering, Food and Natural Products, Analytical-Environmental Sciences. For each Area, the School provides the Ph D students with a broadly interdisciplinary training that requires the acquisition of concepts, expertise, research methods and experimental techniques. Finally, the students are part of a scientifically stimulating environment, comprising academics and undergraduate and Ph. D. students and young post-doctoral associates from Italy and other Countries.

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