



UNIVERSITÀ DEGLI STUDI DI TRIESTE

Rettorato e Direzione Generale
Sezione Ricerca e Dottorati
Ripartizione Dottorati

ATTACHMENT 6

LAST REVISED 01/06/2015

PhD IN NANOTECHNOLOGY OVERVIEW

IN BRIEF

Lines of research	1	Development of new techniques for the study, manipulation and visualization of nanostructured materials at the nanoscale
	2	Development of sensors for the detection of bio-molecules or compounds present on a very low concentration
	3	Study of the relationship between structure and properties of materials
	4	Synthesis of and engineering of nanostructured materials
	5	Applications of nanotechnology and nanostructured materials for research in the energy sector
	6	Multiscale molecular modeling of nanostructured materials and phenomena of interest with computational simulation techniques and theoretical studies of nanomaterials with ab initio methods
	7	Application of nanotechnology in the medical, pharmaceutical, biomedical and agri-food
Administrative location		University of Trieste
Organizing Department		Department of Physics
		Department of Engineering and Architecture
Participating Departments		Department of Chemical and Pharmaceutical Sciences
		Department of Life Sciences
		Department of Medicine, Surgery and Health Sciences
Duration		3 years
Maximum number of months to be spent abroad by each PhD student		18
Official language		English
Subject Area	02	PHYSICS
	03	CHEMISTRY
	05	BIOLOGY
	06	MEDICINE
	09	INDUSTRIAL AND INFORMATION ENGINEERING
Macro Research Fields	02/B	PHYSICS OF MATTER
	02/A	PHYSICS OF FUNDAMENTAL INTERACTION
	03/A	ANALYTICAL AND PHYSICAL CHEMISTRY
	03/B	INORGANIC CHEMISTRY AND APPLIED TECHNOLOGIES
	03/C	ORGANIC, INDUSTRIAL AND APPLIED CHEMISTRY
	03/D	MEDICINAL AND FOOD CHEMISTRY AND APPLIED TECHNOLOGIES
	05/B	ANIMAL BIOLOGY AND ANTHROPOLOGY
	05/E	EXPERIMENTAL AND CLINICAL BIOCHEMISTRY AND

		MOLECULAR BIOLOGY
	06/F	INTEGRATED CLINICAL SURGERY
	06/M	PUBLIC HEALTH
	09/D	CHEMICAL AND MATERIALS ENGINEERING
Scientific Disciplinary Sector	FIS/01	EXPERIMENTAL PHYSICS
	FIS/03	MATERIAL PHYSICS
	CHIM/02	PHYSICAL CHEMISTRY
	CHIM/03	GENERAL AND INORGANIC CHEMISTRY
	CHIM/06	ORGANIC CHEMISTRY
	CHIM/08	PHARMACEUTICAL CHEMISTRY
	ING-IND/22	SCIENCE AND TECHNOLOGY OF MATERIALS
	ING-IND/24	PRINCIPLES OF CHEMICAL ENGINEERING
	BIO/10	BIOCHEMISTRY
	CHIM/02	PHYSICAL CHEMISTRY
	MED/28	ODONTO-STOMALOGICAL DISEASES
MED/44	OCCUPATIONAL MEDICINE	
Domain European Research Council	PE	PHYSICAL SCIENCES AND ENGINEERING
ERC Panels	PE3	CONDENSED MATTER PHYSICS: STRUCTURE, ELECTRONIC PROPERTIES, FLUIDS, NANOSCIENCES
	PE4	PHYSICAL AND ANALYTICAL CHEMICAL SCIENCES: ANALYTICAL CHEMISTRY, CHEMICAL THEORY, PHYSICAL CHEMISTRY/CHEMICAL PHYSICS
	PE5	SYNTHETIC CHEMISTRY AND MATERIALS: MATERIALS SYNTHESIS, STRUCTURE-PROPERTIES RELATIONS, FUNCTIONAL AND ADVANCED MATERIALS, MOLECULAR ARCHITECTURE, ORGANIC CHEMISTRY
	PE8	PRODUCTS AND PROCESSES ENGINEERING: PRODUCT DESIGN, PROCESS DESIGN AND CONTROL, CONSTRUCTION METHODS, CIVIL ENGINEERING, ENERGY SYSTEMS, MATERIAL ENGINEERING
	LS1	MOLECULAR AND STRUCTURAL BIOLOGY AND BIOCHEMISTRY: MOLECULAR BIOLOGY, BIOCHEMISTRY, BIOPHYSICS, STRUCTURAL BIOLOGY, BIOCHEMISTRY OF SIGNAL TRANSDUCTION
	LS7	DIAGNOSTIC TOOLS, THERAPIES AND PUBLIC HEALTH: AETIOLOGY, DIAGNOSIS AND TREATMENT OF DISEASE, PUBLIC HEALTH, EPIDEMIOLOGY, PHARMACOLOGY, CLINICAL MEDICINE, REGENERATIVE MEDICINE, MEDICAL ETHICS
	LS9	APPLIED LIFE SCIENCES AND BIOTECHNOLOGY: AGRICULTURAL, ANIMAL, FISHERY, FORESTRY AND FOOD SCIENCES; BIOTECHNOLOGY, CHEMICAL BIOLOGY, GENETIC ENGINEERING, SYNTHETIC BIOLOGY, INDUSTRIAL BIOSCIENCES; ENVIRONMENTAL BIOTECHNOLOGY AND REMEDIATION
Erasmus Subject Area Codes	13.2	PHYSICS
	06.7	MATERIALS SCIENCE
	06.9	OTHERS – ENGINEERING, TECHNOLOGY
	12.3	DENTISTRY
	12.7	PUBLIC HEALTH
	13.1	BIOLOGY
	13.3	CHEMISTRY

WHO'S WHO

Chair

Prof. Lucia PASQUATO - Department of Chemical and Pharmaceutical Sciences - University of Trieste – phone N. 040.5582406; email lpasquato@units.it

Vice	Prof. Alessandro BARALDI – Department of Physics – University of Trieste – phone N. 040.375.8719/331/342 – 040.558.3373; email baraldi@elettra.trieste.it
Web site	http://www.nanotech.units.it/default.aspx
Email	dottorato.nanotecnologie@units.it
Learning outcomes	The main objective is to teach researchers to plan, build, characterize 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 nanotechnology to energy-focused research, the multiscale molecular modelling of materials and relevant phenomena through computational simulation techniques, DFT calculations/predictions of nanomaterials properties, human health with particular attention to the study and treatment of tumors 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), Elettra Sincrotrone Trieste, the Oncological Referral Center in Aviano (CRO), and the Istituto Officina Materiali-CNR TASC Laboratory just to cite a few.
Job placement opportunities	Doctorates from previous years are nearly all employed in industries or research centers Italian and foreign. This usually happens within a few months after graduation, and in some cases immediately after the end of the scholarship. This justifies an excellent employment outlook for recent PhDs in Nanotechnology. In particular, for this PhD course, the employment status of those who have earned the title in the 2010-2014 period, for a total of 37 former PhD students, is as follows: 83.9% of entries related to the title, 13.5% of entries are not related to the title and 2.70% of non-employed (or information not available).
Main cooperating international Universities and Research Institutions	<ol style="list-style-type: none"> 1 IOM CNR 2 Elettra Sincrotrone Trieste 3 CRO Aviano 4 ICGEB 5 University of Udine