



## PhD in Energetic and Nuclear Science and Technology

**Research Field: Micro- and nanostructured materials**

<b>Scholarships and Financial support</b>	
Maximum number of scholarships expected to be offered in this research field	1 supported by the Institute of Plasma Physics (IFP), Italian National Research Council (CNR), <a href="http://www.ifp.cnr.it">www.ifp.cnr.it</a>
Yearly value of each PhD scholarship	Approximately € 16.000 + € 1.500 of which approximately € 3.900 held as retirement contributions
Yearly net income of each PhD scholarship	Approximately € 13.600
Award which may be assigned at the end of the last year of the PhD course, upon verification of satisfactory results in the PhD activities	
<b>Context of the research activity</b>	
Number of PhD thesis carried out in this research field in the last 3 years	0
Motivations and objectives of the research in this field	Production of innovative nanostructured thin films and surfaces, and their physical characterization (e.g. morphology, structure and electronic properties). Focus of this PhD program will be on: a) plasma-wall interaction in nuclear fusion systems – first wall materials; See <a href="http://www.nanolab.polimi.it/">http://www.nanolab.polimi.it/</a>
Methods and techniques that will be developed and used to carry out the research	Material production by physical deposition techniques (e.g. pulsed laser ablation); material characterization mainly by scattering techniques (Raman, Brillouin, X-ray) and scanning probe microscopy techniques (scanning tunneling and atomic force microscopy).
Educational objectives	Education of people to be “launched” in the world of research and technology in the field of physics and engineering of materials, able to manage interdisciplinary issues, perform and interpret complex experiments and produce new equipments.
Job opportunities	Private and public R. & D. Highly qualified positions in a wide range of industries related with production, development and use of materials. Positions in institutions and companies working in fusion research.
Composition of the research group	Number of Full Professors: 1 Number of Associated Professors: 2 Number of Assistant Professors: 3 Number of Post-Docs: 4 Number of PhD students: 3

Names of the research directors	Carlo E. Bottani
E-mail address, phone number and web-page	Email: <a href="mailto:carlo.bottani@polimi.it">carlo.bottani@polimi.it</a> Ph: +39-022399-6352 <a href="http://www.nanolab.polimi.it/Persone/Bottani-eng.htm">http://www.nanolab.polimi.it/Persone/Bottani-eng.htm</a>
List of 5 Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	1. Istituto di Fisica del plasma (CNR, Italy) 2. ENEA (Frascati, Italy) 3. EPFL (Losanna, Switzerland) 4. University of Cambridge (UK) 5. University of Oxford (UK)
<b>Additional support</b>	
<u>Housing:</u> financial aid per PhD student per year	1 <sup>st</sup> year foreign students receive also a support from the PhD School, up to max 2500 euros
<u>Educational activities</u> (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): financial aid per PhD student per year	1 <sup>st</sup> year: max 1000 euros per student 2 <sup>nd</sup> year: max 1000 euros per student 3 <sup>rd</sup> year: max 1000 euros per student
<u>Teaching assistanship:</u> availability of funding in recognition of support to teaching activities by the PhD student	There are various forms of financial aid for activities of support to the teaching practice, within the limits allowed by the regulations and the requirements of this specific program.
<u>Computer availability:</u>	1 <sup>st</sup> year: <i>individual use</i> 2 <sup>nd</sup> year: <i>individual use</i> 3 <sup>rd</sup> year: <i>individual use</i>
<u>Desk availability:</u>	1 <sup>st</sup> year: <i>individual use</i> 2 <sup>nd</sup> year: <i>individual use</i> 3 <sup>rd</sup> year: <i>individual use</i>

**Application date: February-April 2009**

**Starting date: January 2010**

**[www.polimi.it/phd](http://www.polimi.it/phd)**