



DIPARTIMENTO DI SCIENZA DEI MATERIALI
Università degli Studi di Milano-Bicocca,



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The State University of Milano-Bicocca was founded just ten years ago, in June 1998. It is set on an area, called Bicocca, in the northern part of Milan which was the kernel of its past industrial activity with a lot of the largest Italian factories in steel processing, chemical manufacturing, and electro-mechanics. Nowadays the production lines are far from town, and part of advanced industrial research and managing are still in the borough of Bicocca. For this reason the State University of Milano-Bicocca has strong technological vocation. In the faculty of science non-traditional degrees, from B.Sc. to PhD in materials science, biotechnology and environmental science are coupled to the conventional ones in physics, mathematics, biology, chemistry, computation and earth science. Very exciting atmosphere, up-to-date laboratory training, several research groups of international level and officially rated among the top in Italy, have attracted a lot of students; at the present the whole University hosts more than 30000 students.

PhD studies in Materials Science.

The Materials Science PhD course is organized in two curricula: the former devoted to basic research and the latter to applied one. The curriculum B, funded by Pirelli Company is devoted to provide strong scientific as well as applied knowledge suitable to the development of new materials in an industrial environment. Students are required to follow some courses: among them fundamentals of finance, economics for research management, and elements of Intellectual Property, management and protection, can be chosen. Furthermore students have to spend a minimum six month period at a foreign research laboratory, selected together with their own tutors. This doctorate allows students to obtain the credits also for a European Ph.D. in Physics and Chemistry of Advanced Materials (PCAM) by doing part of their research and training at one of the Universities belonging to the network PCAM. They are: beside State University of Milano-Bicocca (Italy), State University of Milano (Italy), Autonomia University (Madrid, Spain), University of the Basque Countries (Spain), University Pierre and Marie Curie (Paris, France), University of Bochum (Germany), University of Oldenburg (Germany), University of Southern Denmark, Jagiellonian University of Cracow (Poland), Institute of Nanotechnology (Kaunas, Lithuania), Lomonosov State University (Moscow, Russia), Institute of Technology (Cluj-Napoca, Romania).

Local and European PCAM coordinator:

[Professor Gian Paolo Brivio,](#)

[Dean of Doctorate Studies in Materials Science](#)

Scientific activities within the doctorate

The scientific activities of the doctorate are developed in the Department of Materials Science, where the students work in research laboratories under the supervision of the faculty staff. The aim of this of the doctorate is to train graduate students in investigating fundamental, applicative and industrial topics, either experimentally or theoretically/computationally. Research activities spans such a result is accomplished by courses all areas constituting the modern materials science and the technological innovation. The main topics comprise innovative chemical processes, synthesis and application of organic semiconductors, electrochemistry, new functional and structural materials, materials for the energy production and storage, nano-structured materials, microelectronics, smart sensor systems, laser optoelectronics, theoretical and computational modeling. In particular, perspective PhD students in materials science could choose their research subject among:

- Functional materials for photonics, micro- and optoelectronics and radiation detection
 - Molecular semiconductors
 - Semiconductor quantum structures
 - Organic non-linear optical materials
 - Glass and ceramic materials
- Sensing materials

Materials for energetics

Hydrogen storage materials

Organic and hybrid photovoltaic materials

High efficiency silicon photovoltaic materials with surface treatments

Fuel cells electrode and electrolyte materials

Rechargeable Li-ions battery materials

Advanced NMR techniques for materials

Culture heritage and luminescence dating

Surface science

Crystal growth

OMB Deposition

Theory and materials computation

- Classical and quantum molecular dynamics: simulations of growth processes and of tailoring of microelectronics and photonics materials

- Density Function Theory, Many-Body methods and quantum modelling for magnetic nanostructures, magnetic scanning tunneling spectroscopy, and excited states in surface science
- Theoretical chemistry for catalysis
- Ab initio models for hydrides

A full list of research groups and their interests may be accessed via the [Department of Materials Science web site](http://www.mater.unimib.it/it/index.html) (<http://www.mater.unimib.it/it/index.html>).

EIGHT PH.D. SCHOLARSHIPS ARE AVAILABLE FROM JANUARY 2011

Application deadline: Oct 08 (Fri), 2010

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Job description: 8 PhD studentships in materials science, starting on January 2011 for 36 months (salary about 1200 Euro per month), are available at the Department of Materials Science of the State University of Milano-Bicocca (Italy).

2 studentships are reserved to non-EU students.

3 studentships are on any research topic developed in the above Department.

5 studentships are on:

- 1) Advanced materials for structural applications.
- 2) Energy saving.
- 3) New generation photovoltaic materials.
- 4) Nano-dimensional fillers for elastometers.
- 5) Study of catalytic oxidation systems.

For application form and further details, please consult the website:

<http://www.unimib.it/open/news/Announcements-english-version/4675468496671378412>