

# Politecnico di Milano

## PhD in Industrial Chemistry and Chemical Engineering

**Research Title: The role of the protein corona in the interaction between engineered nanoparticles and cell membrane model systems**

<b>Scholarships and Financial support</b>	
Monthly gross income of PhD scholarship (max 36 months)	€. 2350 €/month
Number of scholarships	1
Beginning of PhD	1/5/2015
Deadline for application	10/04/2015
<b>Context of the research activity</b>	
Motivations and objectives of the research in this field	Multifunctional nanotherapeutics, also called <i>theranostics</i> (TN), function simultaneously as therapeutic tools and diagnostic probes offering multimodal platforms, which could significantly improve the prognosis in a variety of diseases. Study the interactions of these nanotherapeutics with cell membrane in the biological environment for highlighting the role of the protein corona.
Methods and techniques that will be developed and used to carry out the research	The interactions between the nanoparticles and cell membrane model systems will be carried out by d-QCM and neutron reflectometry. Moreover, cell culture experiments will be also performed.
Educational objectives	Expertise in research design and analysis; - Responsible research conduct; - Communicate and report effectively; - Ability to lead, motivate, and manage collaborative team science of undergraduate students; - Utilization of multi-level cultural proficiency.
Job opportunities	Nanomedicine has started to gather momentum in recent years, and cutting-edge jobs abound for those with the right training. SMEs, spin-off, and start-up

	companies are particular involved since people trained in nanomedicine will be in demand as the University develops high-tech platforms to be licensed and commercialized.
Composition of the research group	<a href="http://nfmlab.chem.polimi.it/">http://nfmlab.chem.polimi.it/</a> <a href="http://nanomedicen.eu/">http://nanomedicen.eu/</a> Number of Full Professors 3 Number of Associate Professors 5 Number of Assistant Professors 3 Number of Post-Docs 7 Number of PhD students 6 Number of contracted researchers 1
Names of the research directors	Francesca Baldelli Bombelli, Pierangelo Metrangolo,
E-mail address, phone number and web-page	Francesca Baldelli Bombelli, <a href="mailto:francesca.baldelli@polimi.it">francesca.baldelli@polimi.it</a> +39 0223994745 Pierangelo Metrangolo <a href="mailto:pierangelo.metrangolo@polimi.it">pierangelo.metrangolo@polimi.it</a> +39 0223993041 <a href="http://www.chem.polimi.it/people/faculty/pierangelo-metrangolo/">http://www.chem.polimi.it/people/faculty/pierangelo-metrangolo/</a>
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	ILL (Institute Laue-Langeven) – Grenoble Research activity will be carried out both in Politecnico di Milano and in ILL, during first year the PHd student will mainly operate in Milan.
<b>Additional support</b>	
<u>Housing:</u> financial aid per PhD student per year (gross amount)	<i>No additional support</i>
<u>Educational activities</u> (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year	<i>1<sup>st</sup> year: euros per student (facoltativo)</i> <i>2<sup>nd</sup> year: euros per student (min € 1370 obbligatorio)</i> <i>3<sup>rd</sup> year: euros per student (min € 1370 obbligatorio)</i>
<u>Teaching assistanship:</u> availability of funding in recognition of supporting teaching activities by the PhD student	There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.
<u>Computer availability:</u>	<i>shared use</i>
<u>Desk availability:</u>	<i>shared use</i>