

PhD in CHIMICA INDUSTRIALE E INGEGNERIA CHIMICA / INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING - 40th cycle

THEMATIC Research Field: DEVELOPMENT OF SUSTAINABLE POLYURETHANES FOR CIRCULAR ECONOMY

Monthly net income of PhDscholarship (max 36 months)	
€ 1400.0	
In case of a change of the welfare rates during the three-year period, the amount could be modified.	

Context of the research activity	
Motivation and objectives of the research in this field	The development of polymeric materials based on polyurethanes that allows the synthesis of goods (in particular shoes) that allow to meet required sustainability goals allowing a full recycling of the materials at their life thorough a chemical upgrading. The research to be carried out in this doctorate will be focused on the synthesis of sustainable polymeric materials and their further use in the production of goods that have to be fully recycled. The implementation of these innovative materials will be carried out at the laboratory scale, with a look towards the optimization of the process for larger scale production at least at the pilot scale. The research project is aligned with the strategic emerging topic of the PNRR.
Methods and techniques that will be developed and used to carry out the research	The PhD formation will be based on the application of the chemical engineering and applied physical chemistry concepts, starting from the experimental design, synthesis and validation of novel polyurethane-based polymers and, then, the use of the obtained materials in industrial processes (in particular, but not limited to, to the development of shoes). The PhD will also work on the selection of the starting raw materials, the modification of the polymers in order to satisfy the concept of circular economy: the design of these materials will be carry pout not only to meet the application requests of the final



	goods, but allowing an economical recycling of at the end of its cycle-life through a chemical upgrading.
Educational objectives	To form a PhD able to drive from the literature the design of innovative polymeric materials based on polyurethanes to be used for industrial application in the frame of the circular economy.
Job opportunities	The background of the PhD at the and of his/her pathway will allow a number of possibilities in chemical industry and research centers, with particular advantages in positions related to the development of sustainable polymers and design of novel polymeric products.
Composition of the research group	5 Full Professors 3 Associated Professors 3 Assistant Professors 16 PhD Students
Name of the research directors	Prof. Davide Moscatelli

Telephone: +39.3289072138 Email: davide.moscatelli@polimi.it Web-pages of the research group: https://www.cmic.polimi.it/ricerca/elenco-gruppi-diricerca/cfalab/

Additional support - Financial aid per PhD student per year (gross amount)		
Housing - Foreign Students		
Housing - Out-of-town residents (more than 80Km out of Milano)		

Contacts

Scholarship Increase for a period abroad		
Amount monthly	700.0 €	
By number of months	6	

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Confidentiality:

since this is a thematic scholarship, the management of Confidential Information, Results and their publication is subordinate to the restrictions agreed upon with the funding company. Upon acceptance of the scholarship, the beneficiary must sign a specific commitment.

POLITECNICO DI MILANO



Educational activities (funding for participation in courses, summer schools, workshops and conferences) - financial aid per PhD student per year:

- 1st year: around 1.900 euros per student
- 2nd year: around 1.900 euros per student
- 3rd year: around 1.900 euros per student

Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD student:

There are various forms of financial of 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 regulation.