



POLITECNICO
MILANO 1863

The Politecnico di Milano to welcome 13 young researchers winners of the Marie Skłodowska-Curie Postdoctoral Fellowship

The number has doubled in 5 years with €2.5 million in funding

Milan, 6 March 2023 – They come from India, Mexico, Greece, Chile, Colombia, but there are also Italians who are coming home after working abroad to continue their research at the Politecnico di Milano.

They will study asteroids through autonomous guidance and control algorithms for CubeSats, non-invasive medical technologies for treating cancer or imaging for early diagnosis of Alzheimer's, self-repairing materials for building retrofitting, the decarbonisation of the chemical industry, the structural health of railway bridges or the stability of suspension bridges under wind action and the impact of ocean waves.

This year, **13 outstanding PhD researchers**, winners of the prestigious **MSCA Postdoctoral Fellowship**, have chosen the Politecnico di Milano for their research projects.

The European grant is awarded to individual researchers for particularly promising projects in **pioneering scientific fields** or emerging technologies with high innovation potential and of collective interest, with the aim of developing new expertise through **international, interdisciplinary and intersectoral mobility**.

In five years, the MSCA grants awarded to the Politecnico di Milano have doubled from 6 in 2018 to 13 this year, with total funding increasing from €1 million to **€2.5 million**.

As an additional opportunity, the 5 best European MSCA Postdoctoral Fellows hosted at Politecnico di Milano, not funded by the European Commission but awarded a 'Seal of Excellence', will be offered a post-doctoral position for 2 years with a salary of €40,000 a year (gross) and a €20,000 start-up fund for research, training and networking.

The best universities attract the best candidates, also thanks to the support of the supervisors: "senior" scientists, with experience in the specific field,

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who guide the winners through the various stages of the research project, which usually lasts two or three years. This year, many of the supervisors are researchers who have themselves been awarded funding from the ERC.

The winners:

Hernan Felipe Bobadilla Rodriguez from Chile/Spain, the theme of his project is understanding under conditions of uncertainty. His ultimate aim is to explore and exploit the symbiotic relationship between the storyline approach and the philosophy of scientific understanding to promote the legitimacy of the former and advance the philosophical debates within the latter.

Edoardo Bocchi returns from Seville to study how to improve through mathematical analysis the understanding of two main problems of fluid-structure interaction: the stability of suspension bridges under wind action and the impact of ocean waves on oscillating water columns.

Alessandra Bonfanti returns from Cambridge to study new approaches to simulate and predict fracture in soft biological tissues through the development of an accurate numerical model closely supported by clinical and laboratory experiments.

Caterina Brighi returns from Australia to work on developing a new medical imaging technology to improve the effectiveness of radiation treatment on patients with aggressive brain tumours.

Alejandro De La Cadena Perez Gallardo, from Mexico, will develop an imaging platform for revealing in a non-destructive manner the distribution and concentration of pathological features of Alzheimer's disease, paving the way for early diagnosis by ophthalmic imaging in humans.

Carmine Giordano will work on developing autonomous guidance and control algorithms for CubeSat in the vicinity of small bodies, such as asteroids.

Mahesh Nagargoje, from India, will study how to improve the treatment of acute ischaemic stroke using virtual thrombectomy.

Kaustav Niyogi, from India, aims to decarbonise the chemical industry using electrolyser technology, developing sustainable chemical production through CO₂ recycling and renewable electricity.

Andrea Liliana Pacheco Tobo, from Colombia, will work on photonics-based spectroscopy and thermometry methods to visualise and differentiate cancerous tissue from healthy tissue during tumour removal, a technology that will improve surgical guidance, minimising the destruction of healthy tissue and achieving complete tumour resection.

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Federica Sebastiani, who has just returned from Sweden, will study a lipid-based theranostic particle that can, on the one hand, provide genetic material and, on the other, be used as a diagnostic tool.

Chariklia Stoura, from Greece, after studying in Hong Kong and Switzerland, will be the Politecnico di Milano to develop a low-cost vibration-based method of continuously monitoring the structural health of bridges.

Niki Trochoutsou, from Greece, will focus on the development of a new generation of innovative textile-reinforced mortar systems, capable of “feeling” damage and “healing” cracks, for the durable and sustainable retrofitting of our historic buildings.

Chiara Trovatiello, after a period abroad in the USA, aims to bridge the gap between macroscopic and microscopic nonlinear optics by bringing together materials science (Columbia University), nonlinear optics (Politecnico di Milano) and quantum optics (University of Vienna) to unlock new and unexplored nonlinear regimes at the nanoscale.

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