

Description form for PhD position

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- (1) University: University of Genoa
 (2) Course and Curriculum: **Nanoscience**
 (3) Enrolling date: 01/03/2026
 (4) NUMBER OF POSITIONS: 2

Short title (6 words max)	Automated functional nanomaterials discovery
Expanded Title	Data-Driven Innovation in hybrid layered structures
	The self-intercalation of organic and inorganic components in two-dimensional layered hybrids brings up new avenues for the structural engineering. While prior investigations mainly use random selection of the building blocks, our Automated Nanomaterials Engineering Unit aims to explore an experimental approach based on the integration of synthesis parameters, molecular descriptors, and automated workflows, to identify and define optimal conditions and tools to accelerate the discovery of high-performance nanomaterials.
<i>Description</i>	In this PhD project, you will develop automated protocols for an automated robot-based workflow and create data routines. The project covers the complete process from the initial experimental conditions, the development and implementation of an autonomous evaluation of the data, to the preparation of new layered structures. You will have the opportunity to implement scripts and software tools to streamline data handling and ensure accuracy and consistency. The materials prepared through the automated workflow will be structurally and optically characterized in a closed loop. Your work will play a crucial role in advancing the field of automated synthesis, driving innovation, and improving efficiency in nanomaterial research.
<i>References</i>	
<i>Main Supervisor</i>	Dr. Milena Arciniegas milena.arciniegas@iit.it
<i>Additional Supervisor(s)</i>	
<i>Essential expertise (please provide always 4 criteria)</i>	
i)	Excellent Master Degree in chemistry, chemical engineering, computational chemistry or related fields
ii)	Highly motivated
iii)	Creative
iv)	Excited to work in an interdisciplinary team
<i>Desirable expertise (please provide always 4 criteria)</i>	
i)	Knowledge on programming languages such as Python or MATLAB
ii)	Experience in automated synthesis
iii)	Knowledge in materials wet-chemical synthesis
iv)	Experience with data analysis and machine learning technique