

University of Milano-Bicocca
PhD Course in Chemical, Geological and Environmental Sciences
Call for Interest 42nd cycle – session II - Curriculum Environmental Sciences

		Supervisor	Riccardo Castellanza
Title	Development of a Multidisciplinary Research Lab Platform: Designing innovative, sustainable, and digital methodologies for the management and enhancement of existing and new university research infrastructures		
<p>This PhD project aims to develop a Multidisciplinary Research Lab Platform aiming to the management, valorization, and sustainability of university research infrastructures, both existing and newly established. In a context characterized by the increasing complexity of research laboratories, the critical need to optimize resource utilization, the digital and green transition goals promoted at the European level, the project aims to define integrated, innovative methodologies to support the entire lifecycle of scientific infrastructures.</p> <p>The research will adopt a multidisciplinary approach combining digitalization tools, data management, performance analysis, economic assessment, and environmental sustainability. Specifically, digital models and frameworks will be developed for monitoring, planning, and sharing laboratory resources, thereby fostering a more efficient, transparent, and interoperable management of research infrastructures. A central element of the project will be the integration of the Life Cycle Assessment (LCA) methodology to evaluate the environmental impacts associated with the various phases of design, implementation, management, and decommissioning of both the infrastructures and their related scientific equipment. The aim is to develop decision-making tools and guidelines capable of supporting universities, research centers, and stakeholders in defining strategies oriented toward sustainability, resource optimization, and the maximization of the scientific, economic, and social value generated by research infrastructures. Expected results include the creation of a replicable methodological and digital platform capable to create innovation processes, interdisciplinary collaboration, and the sustainable management of research infrastructure assets. Ultimately, the project will contribute to the development of new governance models for scientific infrastructures, promoting alignment with the principles of Open Science, the circular economy, and the digital transition, with potential applications at both national and international levels.</p>			
Supervisor webpage: https://www.unimib.it/riccardo-pietro-castellanza			
<i>Notes:</i>			

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	Supervisor	Andrea Franzetti
Title	Development of functionalized biochar for the bioremediation of hydrocarbon-contaminated soils and sediments	
<p>The PhD project is part of the industrial research project "Graphene Oxide- and Biosurfactant-Functionalized Biochar for Biological Remediation of Hydrocarbon-Contaminated Sediments and Soils" (UNIMIB – ENI). The position focuses on the microbiological and aerobic bioremediation components, specifically on the development of functionalized biochar formulations for application to soils and sediments contaminated by recalcitrant (weathered) hydrocarbons. The PhD candidate will be involved in the selection and characterization of hydrocarbon-degrading bacterial strains, optimization of biochar functionalization with biosurfactants, study of microbial community ecology in contaminated matrices using molecular approaches (qPCR, 16S rRNA sequencing), and assessment of hydrocarbon biodegradation in laboratory-scale and semi-pilot microcosm experiments.</p>		
Supervisor webpage: https://www.unimib.it/andrea-franzetti		
<i>Notes: Possible publication as part of the supplementary decree</i>		