

University of Milano-Bicocca
PhD Course in Chemical, Geological and Environmental Sciences
Call for Interest 41st cycle – session II - Curriculum Environmental Sciences

		Supervisor	Maurizio Gualtieri, Luca Ferrero
Title	Advancing Air Quality Monitoring through Citizen Science and Low-Cost Portable Sensors		
<p>Air pollution is a critical environmental and public health challenge globally, especially in urban settings.</p> <p>Traditional air quality monitoring systems, while very accurate, are typically expensive, sparse, and limited in spatial coverage.</p> <p>This research aims to explore and develop a novel framework for air quality monitoring based on citizen science through the deployment of low-cost, portable devices, addressing key pollutants of concern such as PM2.5 and PM10. These innovative devices can be employed in both outdoor and indoor settings, thus potentially offering a novel perspective on air quality by enabling the integration of data collected along typical “urban days” made of both outdoor mobility and indoor activities.</p> <p>Focus areas might include: (1) technical assessment and optimization of previously developed low-cost air quality monitoring devices; (2) development of scalable citizen science methodologies for data collection; (3) design and management of monitoring campaigns; (4) data analysis in comparison with other data sources (e.g. institutional monitoring networks) and in relation to other datasets of interest (e.g. citizen lifestyles/mobility patterns and/or respiratory diseases).</p> <p>By empowering communities to actively participate in data collection and environmental stewardship, this approach has the potential to complement institutional monitoring networks, democratize access to environmental data, raise public awareness and foster more sustainable and conscious lifestyle choices.</p>			
Supervisor webpage: https://www.unimib.it/luca-ferrero ; https://www.unimib.it/maurizio-gualtieri			
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