University of Milano-Bicocca
PhD Course in Chemical, Geological and Environmental Sciences
Call for Interest 40th cycle – session II - Curriculum Geological Sciences

n. 1		**Supervisor**	**Andrea Luca Rizzo**
Title	**The cycle of carbon and light noble gases in the Earth's interior: relation with the planet geodynamics and geophysical evidence, impact on climate evolution**		
The research focuses on the cycle of carbon and light noble gases in the Earth's interior, evaluating the evolution of these volatiles from subduction environments to the mantle underlying the zones of intra-plate magmatism, up to the ascent and degassing from submarine and subaerial volcanism. To this end, magmatic rocks and/or mantle-derived ultramafic xenoliths erupted in selected geological-geodynamic contexts (mainly oceanic islands) representative of the global mantle heterogeneity will be studied. The rocks [partly already available, partly to be sampled (~2% of 36 months)] will be first characterized for their petrographic features, mineralogical and fluid inclusions composition, then studied for the chemical and isotopic composition of carbon and light noble gases (He, Ne, Ar) under mass spectrometry technique (~20% of 36 months). The results will be put into an interdisciplinary context that regards the geological-geodynamic framework of the study areas. The final goal is to better understand the physical-chemical processes that regulate the cycle of the aforementioned volatiles in the Earth's interior, their budget, and the resulting impact on the climate, marine ecosystems and their evolution. This project involves the University of Palermo and INGV, or the Université Claude Bernard Lyon1 or Wien, depending on the selected geological-geodynamic context, where periods abroad for sampling and/or analytical purposes (6 months) could be necessary. Any budget necessity for analytical purposes will be integrated by the project 2023-CONT-1139.		
Supervisor webpage: https://www.unimib.it/andrea-luca-rizzo			
Notes: scholarship funded by INGV			