Geochemistry and Volcanology

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RESEARCH TOPICS

Researchers in the geochemistry group seek to understand how chemical elements and isotopes are cycled within the Earth System and what they can tell us about the history of the Earth and its environments. Their interest has recently broadened to include the application of geochemical analyses in forensic studies.
Some of the principal research themes in the group include:

- **Marine petrology**: genesis and evolution of the oceanic lithosphere from elemental and isotope geochemistry of abyssal peridotites, gabbros and basalts, and comparison with geophysical data (Mid Atlantic Ridge, South-West Indian Ridge); effect of long-transform cold regime on crust production and on geochemistry of the oceanic lithosphere (Romanche Fracture Zone and Andrew Bain FZ);

- **Mantle Geochemistry**: genetic relationship between peridotitic upper mantle and basaltic oceanic crust through isotopic investigations (Mid Atlantic Ridge, South-West Indian Ridge, Oman Ophiolites, Liguride Ophiolites); metasomatic processes in the mantle from isotope geochemistry of peridotite xenoliths from Patagonia;

- **Creation of oceanic basins**: geochemical processes occurring during the transition from a continental to an oceanic rift (the Red Sea case);

- **Paleoclimate/Paleontology**: dating sedimentary sequences by Sr isotope stratigraphy (carbonate platforms at the Vema and Romanche Fracture Zones, Turkish Carbonate Sequence, Saint Paul Fracture Zone); trace element proxies in marine carbonates for paleoceanographic reconstructions (secondary carbonate veins in the oceanic lithosphere sequence at the Vema Fracture Zone);
- **Environmental Geochemistry**: geochemical monitoring of mud volcanoes in Nirano (Modena, Italy);

- **Forensic isotope geochemistry**: forensic application of stable and radiogenic isotopes for diet and provenance studies (Mummies of Roccapelago, the Isernia La Pineta hominis; isotope analyses of human hair).

CONTACTS

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