



Seminario

Micro-scale analysis methods for mountain-scale problems: the many facets of modern petrology

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Aula Arduino

Relatore: **Patrick J. O'Brien**

University of Potsdam, Germany

Abstract:

Rocks, Earth's building blocks, contain an encoded history of the creation, movement and destruction of continents, the formation, shaping and peneplanation of mountains, and the concentration of elements necessary for life, evolution and sustainable civilisation. In order to interpret such large-scale processes, however, we still need to understand how mineral assemblages and mineral compositions have changed in rocks over time: by necessity a investigation at the microscopic scale. Developing steadily from classical field study and optical microscopy, modern petrology now has access to numerous micro-analytic tools that enable in situ microstructural, major element, trace element and isotopic analysis at micron or even sub-micron scale. Integrating this data with knowledge from experimental studies allows us to quantify formation conditions of rocks, their ages and even large segments of their history. As a result we can properly calibrate and refine thermo-mechanical models of dynamic Earth processes and thus explain the past and also reliably predict possible future changes.

Proponente: Bernardo Cesare
