Institutul Național de Fizică și Inginerie Nucleară
Horia Hulubei

IFIN-HH

Seminar general

Isotope geosciences in the 21st century - from conventional and classic to new tools in geochronology and forensic geology and provenance science

Professor Mihai Ducea

University of Arizona, Department of Geosciences
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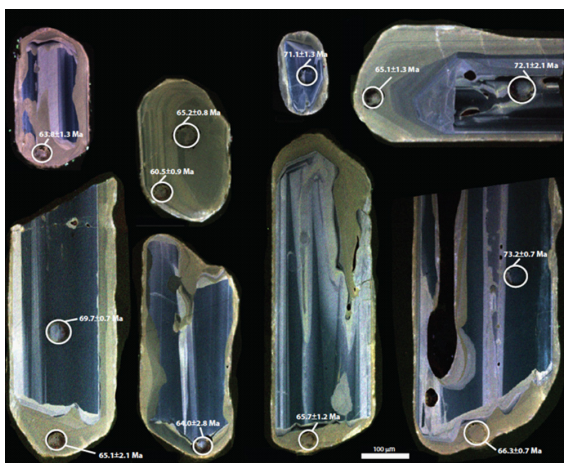
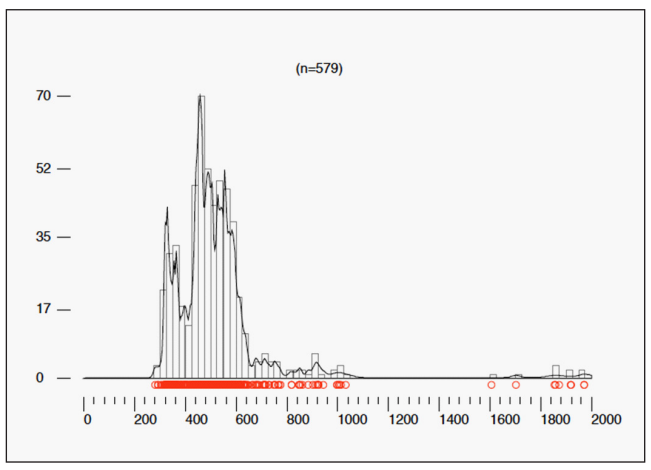
Radiogenic isotopes used in geology are systems decaying with half lives of millions to many billion years. They are conventionally measured in thermal ionization mass spectrometers that have primarily been developed for geoscientists. Newer analytical techniques, mostly multicollector ICP-MS have broadened the analytical line-up and triggered a new wave of measurements, some using the spatial control provided by laser ablation techniques. These isotopic systems are used by geoscientists either as geochronometers and thermochronometers or as tracers of geologic processes. I will summarize the main conventional applications in both these directions and exemplify with some recent studies aimed at understanding the origin and evolution of continental crust. More recently, the provenance direction – identifying sources of rocks, minerals, gems, food, drugs, nuclear materials, anything on planet Earth that is linked to the lithosphere via soils water, etc. – has taken a new direction and many applications classically useful to geochemists only are now being used in food science, archaeology, forensics, etc. Some of these applications will be illustrated and detailed.



In Situ zircon U-Pb ages



Typical age spectrum (kernel probability distribution of zircon U-Pb ages) of Carpathians basement terrains

Volcan Arizaro (Andes, Argentina)

Miercuri, 20 noiembrie 2019, ora 11^{00}
Sala de seminar Prof. Marius Petraşcu (DFN)