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**To celebrate the first UNESCO International Geodiversity Day, the Institute of Geosciences and Earth Resources, CNR, organises on 6th October 2022 at 10 AM CEST the online seminar**

# SCIENTIFIC DRILLING IN THE IVREA-VERBANO ZONE: A DIVE INTO GEOCHEMICAL DIVERSITY

**Alberto Zanetti**

*Institute of Geosciences and Earth Resources, National Research Council*

LINK: https://meet.goto.com/173012757

What makes planet Earth unique? Together with water and life, it is plate tectonics. One of its characteristic processes is chemical differentiation, forming a $SiO_2$-rich continental crust that is continuously shaped and reworked throughout Wilson cycles. The continental crust (CC) covers 41% of Earth's surface and sits at higher elevation compared to the oceanic crust that is then largely subducted. The $SiO_2$-rich rocks that dominate the upper portions of Earth's continental crust are unique in the Solar System and are ultimately linked to the presence of liquid water on Earth. But what does the bottom of the continental crust look like? And how deep can we find life within the crust? The upper crust is accessible for geological sampling and measurements, but its deeper portions, especially the crust–mantle transition zone (the "Moho"), are usually beyond reach. As this zone acts as a primary density and enthalpy filter, it holds critical information on how mantle-derived magmas are modified by chemical differentiation, hybridization and mixing processes.

Scientific Drilling in the Ivrea-Verbano Zone (project DIVE, supported by ICDP), the worldwide known natural laboratory to address the questions about the roots of the continents (and area of the UNESCO Sesia - Val Grande Global Geopark) will literally DIVE to the targeted depths to unravel the petrological sections of the Lower CC and its transition to the upper mantle, the physical characteristics of the crust–mantle transition zone through its geophysical signatures, the rheology of continental roots through the distribution of brittle and ductile deformation, the lower crust as a dynamic environment for fluid flow, fluid-rock reactions, and volatile cycles, and the extreme niches for hosting microbial activities in planetary interiors. Acquiring data to address the aforementioned overarching objectives will enable fundamental progress towards understanding the structure, composition, dynamics and geodiversity of the Earth's lower crust and its transition to the mantle, as well as its potential importance for life on Earth.