

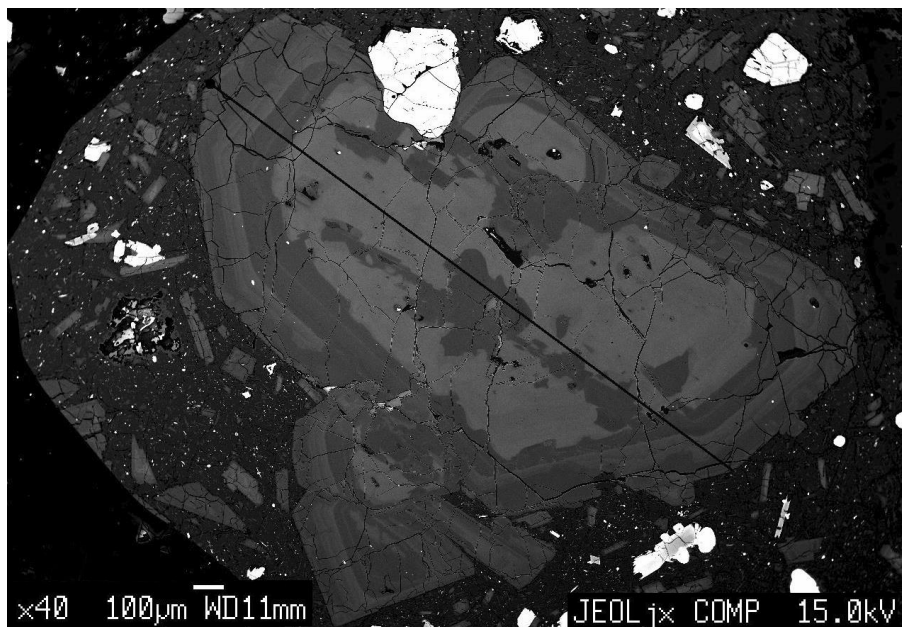
Seminario

Using Sr isotopes in phenocrysts to understand magma evolution: an example from Cabo de Gata, Spain

Martedì, 21 maggio – ore 16:30
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Abstract

Changes in magma composition due to magma chamber processes such as crustal contamination can be preserved as small-scale variations in Sr isotope composition within individual plagioclase phenocrysts. Miocene andesite volcanism in the Cabo de Gata region of southern Spain is related to a westwards-dipping subduction zone and complex tectonic processes that also resulted in the generation of lamproites, crustal melting, and the Messinian Salinity Crisis. LREE-enriched volcanics at Cabo de Gata have highly radiogenic Sr isotope compositions ($^{87}\text{Sr}/^{86}\text{Sr} \sim 0.71$) that are problematic to explain by crustal-level contamination processes alone. Variations in Sr isotope composition in plagioclase phenocrysts from Cabo de Gata, determined by microdrilling, show internal variations that are consistent with complex magma chamber processes and multiple episodes of crustal addition. Highly calcic plagioclase cores suggest that parental magmas had radiogenic Sr isotope compositions due to incorporation of sediments in the mantle source during subduction. Core to rim textural and compositional variations in plagioclase suggest crystallization at varying depths within the lithosphere, and crustal contamination in shallow level magma chambers.

Proponente: **Christine Meyzen**