

A Cretaceous A-type granite from the Europe-Adria collisional zone: a marker of geodynamic changes

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Small and disseminated outcrops of peculiar red-coloured, hematite-bearing Cretaceous granite are at Mt. Požeška Gora (N Croatia) in the suture zone between the colliding European and Adria plates closing the western Neotethys branch. This granite is characterized by a highly siliceous composition, an enrichment in alkalis and Al₂O₃, and low CaO, MgO, MnO and FeO* contents. Standard geochemical diagrams point to an A-type granite.

In the primitive mantle normalized spider-diagram (Fig. 1), the studied granite displays significant positive anomalies in LILEs (e.g. Th, U and K) as well as Zr and Pb and relatively clear negative anomalies of the HFSEs (e.g. Nb, P and Ti). The negative Ba and Sr anomalies suggest plagioclase separation and fractional crystallization.

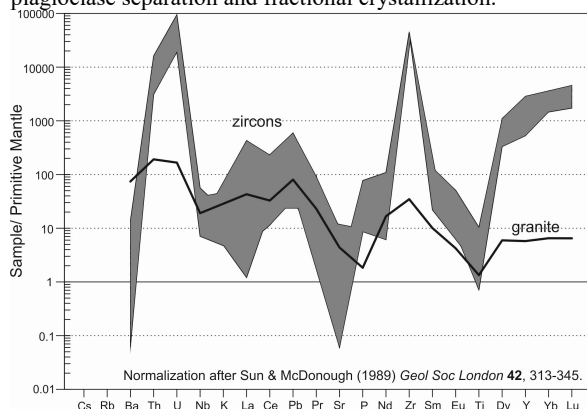


Figure 1: Spider-diagram normalized on primitive-mantle

Zircon typology, inclusions as well as characteristic elemental ratios (Th/U, Zr/Hf) in zircon and high Zr saturation temperatures (up to 878 °C) point to magma genesis at depths close to the crust-mantle boundary. The emplacement level of ca. 20 km is deduced from the intersection of the corresponding Si isopleth for late-crystallized white mica and the solidus. These data on the studied granite as well as Late Cretaceous ages (87.7-85.8 Ma) obtained by zircon LA-ICP-MS dating shed new light on the onset of post-orogenic processes at the aforementioned suture. HRZZ IP-2014-09-9541 grant is acknowledged.