

**TRACING MAGMATIC HISTORY FROM ZIRCONS
OF THE S- AND H-TYPE GRANITOIDS IN THE EKECİKDAĞ INTRUSIVE SUITE
(CENTRAL ANATOLIA, TURKEY)**

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Abstract

We investigated the morphological, intra-structural and chemical features and growth histories of zircons within S- and H-type granitoids from the Ekecikdag Intrusive Suite (EIS) in central Anatolia. The S- and H-type EIS granitoids are described based on geological, petrographical and whole-rock geochemical features. In accordance with whole-rock geochemistry, S-type granitoids differ from H-type ones by relative depletion in Sr, Ba, Zr, Ti, LREE with lower LREE/HREE ratios, enrichment in Rb, Nb, HREE and variable and larger negative Eu anomalies. Furthermore, mineral chemistry of the essential phases (e.g. biotite, hornblende, plagioclase, orthoclase) also indicates distinct characteristics of S- and H-type granitoids concerned. Zircon is noteworthy mineral which contributes critical information to petrology of the EIS granitoids. In the EIS granitoids, zircon is associated with biotite, plagioclase and quartz, mainly as inclusions. Zircon typology method (cf. Pupin, 1980) shows that the S- and H-type EIS granitoids display similar typologic evolution trends with P-, S- and G-type zircons, while epitaxial-growths are common in S-type granitoid zircons. Cathodoluminescence images reveal that zircons in the S- and H-type EIS granitoids reflected distinct evolution histories. Zircons from H-type granitoids demonstrate igneous zones related to the magmatic evolution histories whereas those from S-type granitoids have overgrowths/epitaxial-growths implying their autochthonous nature. Episodes of resorption and re-growth were evident in zircons of both S- and H-type granitoids in the cathodoluminescence images. Chemical data also point out remarkable variations in growth histories, with significant increase in Zr, Si, U, Th and REE+Y contents at these resorption zones. These zones in H-type granitoid zircons are interpreted to be formed by transient heating of the resident felsic magma due to mafic-melt contribution, at the time of mixing/mingling processes. Resorption stages within S-type granitoid zircons, on the other hand, were probably formed by mantle-derived-melts producing heat for resorption of zircons without direct contribution.

KEYWORDS: Zircon – Typology - H-type - Granitoid - central Anatolia

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