Textural and mineral chemistry features of the Qorveh granitoid complex (Kurdistan): evidence for magma mingling/mixing processes

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Abstract: The study area is located in the southern part of Qorveh granitoid complex. Investigation of textural and mineral chemistry evidence in granitoid host with composition of granodiorite, granite, qtz-monzonite, and mafic microgranular enclave (MME) with composition of qtz-diorite to meladiorite, are focused in this paper. Microscopic study and data of microprobe analyses in host and enclave rocks reveal disequilibrium textures and compositional (such as, tabular plagioclase with inclusions, sieved, zoned and resorbed plagioclases, needles of apatite, overgrowth of felspars and zoned amphiboles) in the granitoid host and mafic microgranular enclave. Because of agreement between the textural and mineralogical evidence, we accept the Elburg theory that globules (drops) of mafic magma and host granitoid rock have mixed and effective process in formation of enclave is a simple mechanical magma mixing (magma mingling), ceased by mafic magma stopping in a felsic magma chamber. This fact is linked to geochemical conditions and tectonic setting of the complex in Sanandaj-Sirjan Zone, as a remained zone of subduction setting.

Keywords: granitoid; enclave; mingling; magma mixing; Qorveh; Kurdistan.

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