

A study of geochemical behavior of whole-rock and mineral chemistry of Biotite and Feldspar in Shear zone, E-Qorveh (Kurdistan)

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Abstract: The studied shear zone is located in E-Qorveh (Kurdistan). The rocks of this zone are granite and granodiorite in composition. In present paper, deformed rocks, protomylonites and mylonites, are investigated in Sangin-Abad, Koh-e-Gazgaz and Poloserkan areas. Petrographic studies show that evidence of tectonic activities are such as myrmekite, recrystallized and slide alkali feldspars, fractured plagioclases, dynamic quartzes, perthitic orthoclase, feldspar crystals with enriched rim from alkalis (mantled texture) with $Or_{91.19-91.54}$. Comparing geochemical data of whole-rocks and primary rock (protolith) reveal that there are varieties in abundances of main elements such as increasing of CaO, MnO, TiO₂ & P₂O₅ in protomylonites and mylonites. Also, quartz-rich veins and plagioclases altered have observed in the zone. These examples are interpreted to present activities of hydrothermal fluids and open system. The Feldspars are sodic-potassic and sodic in composition in Sangin-Abad & Koh-e-Gazgaz, and Poloserkan. Overall, relationship field, microstructural, textural, geochemical and mineral chemistry characteristics confirm role of the shear zone for formation of these features. Many of researchers have approved relationship between forming of microstructures with stress/ strain and hydrothermal fluids. The studied biotite crystals with content of ($\Sigma FeO + MnO \approx 13.4-42.21$) are neoform. They may be occurred by post-magmatic fluids of the Qorveh granitoid batholith. Formation temperature of biotites is ~ 550 to ~ 750 °C which corresponds to this deformation temperature.

Keywords: *shear zone; mineral chemistry; geochemistry; hydrothermal fluid; mylonite; protomylonite; protolith; Qorveh; Kurdistan.*

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