Immobilization of long-lived iodine after incorporation into apatite matrice

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Iodine-129 being long-lived volatile fission product, among with cesium-135 and technitium-99, represents a challenge for the design of repository-suited matrices [1]. The present study investigates a possibility of iodine incorporation in the forms of iodide and iodate into apatite and hydrotalcite-like matrices. The matrice should meet certain requirements, i.e. being cheap, safe, easy to synthesize, stable and environmental friendly. Optimization of coprecipitation method for synthesis of iodine containing apatite has been done. Obtained matrices will be characterized by SEM and XRD. Stability in the temperature range 100 - 700ºC is studied. Leaching experiments in MQ water and brine will be done as well as radiaton damage (α-, γ-) will be studied before the conference.

[1] Watanabe *et al*. (2009) *Appl. Mater. Interf.* **1**, 1579 – 1584.

The study the granitoid rocks in shear zone in SE-Qorveh (Kurdistan, Iran): With emphasis on geochemical behavior of whole-rock and mineral chemistry of Biotite and Feldspar

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The studied area is located in NW- Sanandaj-Sirjan belt, between 47° 45' to 48° 00' E-Longitude and 35° 00' to 35° 10' N-Latitude in SE-Qorveh , Iran. The investigation is done on the I-type granitic rocks. Enrichment for LILE & Pb, along with the negative anomaly of HFSE & Ba and low ratios of Nb/Y and Rb/Nb indicate that origin of initial magma is lower continental crust that created in a margin of convergent plate. The deformed granitoid rocks, including protomylonites and mylonites, are investigated in Sangin-Abad, Koh-e-Gazgaz and Poloserkan areas. The deformed rocks show variations in microstructural and mineralogical characterstics. Shear sense indicators (e.g. foliation, lineation, shear folds S-shaped, C-S fabric) suggest dipping slip movement. Petrographic evidence of tectonic activities are including myrmekite, recrystallized and slide alkali feldspars, fractured plagioclases, dynamic quartzes, perthitic orthoclase, and mantled feldspars with $Or_{91.19 - 91.54}$. Comparing geochemical data of deformed rocks and protolith show that there are varieties in abundances of main elements such as increasing of CaO, MnO, TiO_2 & P_2O_5 in protomylointes and mylonites. The pattern of element variations is consistent with activities of hydrothermal fluids and open system in this zone. Due to thses conditions, feldspars in mylonites and protomylonites are sodic-potsic to sodic in composition. 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 ($\sum$FeO + MnO ≈ 13.4-42.21) are neoform crystals. They may be occurred by post-magmatic fluids of the granitoid and have formed in ~550 to ~750 ºC which corresponds to this deformation temperature.

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