Mineral chemistry of apatite in the Lar igneous complex, North of Zahedan

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Abstract: The Lar igneous complex (LIC) is located in the Sistan Suture Zone. The igneous rocks occur as stock, dike, lava and pyroclastic. As a result of hydrothermal fluids, Cu-Mo mineralization was formed in the stocks. Apatite is one of the most abundant accessory minerals in the igneous rocks that occurs as prismatic and brecciated. EPMA data indicate that apatites are fluorapatite in composition with low contents of chlorine indicating they were equilibrated with a relatively hydrous and oxidized melt/fluid. The mentioned melt/fluid fall in the field of the worldwide mineralized systems. The low chlorine contents of the apatites and high-K (shoshonitic) character of their host rocks indicate Cl–K decoupling of the primary magma due to involvement of dehydrated sediments in the deep lithospheric mantle source and occurrence of fractional crystallization.

Keywords: Apatite chemistry; shoshonitic igneous rocks; Lar igneous complex; Sistan suture zone.

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