Geochemistry of tourmalines in aplitic and pegmatitic dikes from Alvand plutonic and metamorphic rocks of the Hamedan area

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Abstract: The pegmatitic and aplitic dikes in the Alvand plutonic complex and metamorphic rocks of its contact aureole (hornfelses) are the latest magmatic phase in this area. In addition, at distances away from the Alvand plutonic complex, various pegmatitic-aplites intruded in the regional metamorphic rocks. Tourmalines from Alvand dikes, observed as nodules and sometimes with graphic intergrowths between tourmaline-feldspar and tourmaline-quartz and as sun tourmalines (luxolianite). While in the pegmatite from the Zaman abad-Mangavie area tourmalines have pegmatitic euhedral shapes. The studied tourmalines lie in alkali tourmaline group and have short-dravite composition. Based on the observed trends in diagrams, replacement reaction in these tourmalines is \{□Al\} {(Mg,Fe)Na}, replacement of Al in Y position and AlNa,Mg. Based on the geochemical characteristics of these tourmalines such as variation of Fe/(Fe+Mg) ratio, plotting of some samples between proton and alkali deficient vectors and some samples out of these two vectors and wide range of F in these samples; both magmatic and hydrothermal processes involved in the formation of these tourmalines. The studied tourmalines are related to Li-poor granitoids and associated pegmatites and aplites.

Key words: geochemistry; tourmaline; magmatic; hydrothermal solutions; Alvand; Hamedan.

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