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Origin of tourmaline and garnet in west Qushchi mylonite granite (NW Iran); constrains on petrogenesis of parental rock

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Abstract: The studied mylonite granites are exposed as small bodies at the west of Qushchi in the West Azarbaijan Province. These rocks contain orthoclase, microcline, plagioclase, fish muscovite, tourmaline ± garnet as porphyroclast. The matrix is composed of recrystallized quartz, fine grained muscovite and low abundant epidote. According to petrographic and mineral chemistry studies and BSE images, tourmaline and garnet are chemically zoned. The mineral chemistry characteristics of core of tourmaline and garnet crystals indicate magmatic origin for them, while the composition of rim part for these minerals, especially for garnet, is consistent with metamorphic origin. Presence of tourmaline + muscovite ± Mn-rich garnet in the West Qushchi mylonite granites and occurrence of these rocks as small bodies within metasedimentary rocks suggested that the west Qushchi mylonite granites are formed by low grade partial melting of the metamorphic rocks. On the basis of the mineral assemblage, it seems that the studied rocks belong to Mg-poor peraluminous leucogranite type rocks.

Keywords: *mylonite granite; tourmaline; garnet; peraluminous; Qushchi; NW Iran.*

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