

Using amphibole geochemistry in tectono-metamorphic evolution of the Deh-Salm metamorphic complex, east of Iran

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Abstract: Studying of the ferromagnesian rocks, including metaperidotite and metabasite, as well as the calcium-bearing ones such as calc-silicate in the different parts of the Deh-Salm metamorphic complex (DMC) in the east of the Lut block caused a widespread recognition of various parageneses of amphiboles. Focused EPMA studies represent amphiboles with the different compositions and PT conditions. The most important amphiboles in the metaperidotite are composed of magnesium type, including anthophyllite, and calcium type, including tremolitic hornblende, magnesium-hornblende, and tremolite. While in the metabasite mineral assemblage, especially in the amphibolites, pargasite and tschermakite are the main constituents. The clear changes in the amphibole's compositions can be attributed to the two reasons of the different protoliths and the physical conditions of metamorphism. The thermo-barometry conditions of the metamorphism based on amphibole chemistry document a respectively mean temperature and pressure of 527.8 °C and 6.24 Kbar for the Galugah's metabasites and the comparable amounts of 707.7°C and 5.86 Kbar for the DMC. The measured P-T conditions may represent that the eastern part of the DMC, which have been in direct contact to the late Jurassic felsic intrusions and the migmatitic zones, exhumed to the higher levels than its colder western part. This uplifting may be occurred due to ascending of the ShahKuh pluton and the activity of the associated NS-trending main faults in the studied area such as the Kahur fault.

Keywords: *Metaperidotite and metabasite of Deh-Salm and Galugah; Geochemistry of amphiboles; thermo-barometry; Lut block.*

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