

## A study of controlling factors on the morphology of garnet crystals in metamorphic and igneous rocks of the Hamadan area

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**Abstract:** The study area is a part of the Sanandaj- Sirjan metamorphic belt. The Hamadan metamorphic rocks can be divided into three groups including regional metamorphic rocks, contact metamorphic rocks and migmatites. Garnet crystals are usually common in all of the metamorphic rocks (except for slates and phyllites) and in the igneous rocks (i.e. aplite, pegmatite and monzogranite). These garnets, from point of morphological view, can be divided into three groups: special rhombic dodecahedron form, special trapezohedron form and composite forms that made up of particular dodecahedron form, mature composite forms and particular trapezohedron form. Particular dodecahedron forms are common in these rocks: garnet amphibole schists, seldom in garnet mica schists, rarely in mesosome of migmatites and in garnet mica hornfelses. Garnets in aplites and pegmatites have special trapezohedron form. Garnet crystals in other rocks of the study area have composite forms. The important factor, which is effective in changing these crystal forms, is chemical composition. With increasing of Mn/Ca and (Mn+Mg)/Ca ratio, garnet crystal forms change from dodecahedron to trapezohedron.

**Keyword:** Garnet, special dodecahedron form, special trapezohedron form, composite forms

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