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Mineralogy and thermobarometery of blueschists from Soltan Abad metamorphic complex (NE Sabzevar)

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Abstract: Soltan Abad metamorphic complex cropped out at NE of the Sabzevar ophiolites. There are extensive exposures of bluschist facies rocks inside a serpentinitic groundmass as tectonic mélange in this metamorphic complex. Field investigations, petrography and thermobarometry indicate that these rocks have experienced two metamorphic phases. Paragenesis of the first metamorphic phase consists of oriented Na-amphibole, epidote and phengite and the first generation of garnets that have formed during burial and subduction. Pressure and temperature conditions of the first metamorphic phase have been 11 to 14 Kb and 350 to 420°C respectively. The second metamorphic phase, due to injection of trondhjemitic plutons, resulted in crystallization of coarse porphyroblasts of albite, second generations of garnet and epidote as well as crystallization of Ca-Na amphiboles around Na-amphiboles. Metamorphic conditions of this stage have obtained as P= 4-7 Kb and T=500-580°C. It seems that the collision of Arabian plate with Central Iranian microcontinent and movment of this microcontinet toward the north east, led to subduction of Sabzevar oceanic basin and partial melting and generation of trondhjemite during Middle Paleocene. As a consequence of intrusion, bluschists of the accretionary prisms have undergone retrograde metamorphism.

Keywords: *blueschist; Soltan Abad metamorphic complex; Sabzevar Ophiolites; NE Iran.*

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