

Cordierite with cyclic radial sixling twin structure of Late Neoproterozoic- Early Cambrian schists in southwest of Zanjan, northwest Iran

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Abstract: Late Neoproterozoic- Early Cambrian schists exposed in southwest of Zanjan in northwest Iran. Intrusion of Tertiary Korramdaragh monzogranite body within these schists have caused crystallization of porphyroblasts of hexagonal cordierite with cyclic radial sixling twin structure. Hexagonal cordierite consists of six optically sectors. Under microscope with crossed polarized, all of the sectors are anisotropic and their optical characters such as extinction positions and optical directions are relatively symmetrical in relation to twin boundaries. This structure could be explained by considering a section perpendicular to six-fold axis of a dipyrmaid hexagonal crystal. In this model, surfaces with Miller indicies of $(\bar{1}100) - (1\bar{1}00), (10\bar{1}0) - (\bar{1}010), (0\bar{1}10 - (01\bar{1}0)$ have identical optical characters. Absence of optical structure within each sectors as well as sharp boundary among twin sectors may indicate that low temperature orthorhombic cordierite is formed on the prismatic surfaces of an intial hexagonal indialite.

Keywords: *Late Neoproterozoic- Early Cambrian schists; Zanjan; indialite; cordierite; cyclic radial sixling twin.*

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