

## The study of disequilibrium textures and mineral chemistry in ultramafic - mafic rock suite East of Fariman, NE Iran

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**Abstract:** On the basis of petrographic observations and electron microprobe analyses data set on major and minor minerals from ultramafic- mafic rock suite with komatiitic to picritic - tholeiitic affinity, East of Fariman, we have investigated some of the petrological features of their parental magmas and condition of minerals crystallization. Major minerals in ultramafic rocks show various disequilibrium textures, including elongated hopper olivines with sharp tips, and spray to acicular, skeletal and hopper elongated pyroxenes, while in mafic rocks disequilibrium textures are dendritic pyroxene - plagioclase intergrowth. Such textures must have been produced by rapid growth of crystals due to undercooling of a previously superheated melt. High Fo contents of olivines is necessary the equilibrium of these crystals in a hot melt with high MgO content. On the basis of maximum Fo content of an olivine crystal in a komatiitic sample, we have estimated MgO percent and temperature of parent melt as much as 23.74% and 1470°C -1535 °C respectively. High TiO<sub>2</sub> contents of pyroxene and spinel crystals indicate that their host magma must have been originated from a fertile mantle source, similar to OIB and /or LIP sources, indicating the probable role of a mantle plume in petrogenesis of these rocks.

**Keywords:** Northeast of Iran - Fariman - ultramafic-mafic rocks - mineral chemistry - crystallization temperature – komatiite.