

# **Geology, Geochemistry, Genesis of the Nakhjir-Kuh celestite deposit, central Iran, central Iran**

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Nakhjir-kuh celestite deposit is located at 195 Km SE of Tehran. Qom formation which is the country rock of celestite has an approximate thickness of 280m. in this area consisting of limestone, marl, mudstone and gypsum.

During sea level fluctuation in Oligomiocene, the relationship of open sea with lagoon has been disrupted and evaporitic basin formed. As a result, increasing of salinity, precipitate micrite, gypsum and probably celestite syndimentary. During the early diagenesis, celestite has formed from pore water, as a primary and replacement mineral. In the burial diagenesis, Sr – rich brine obscured the main parts of syndimentary and early diagenetic features and formed DCR in addition to replacement of celestite after gypsum. Crystallisation of celestite in pressure solution planes, geode formation and cross cutting stratabound features occurred in this stage.

Fluid inclusion investigations on horizon (III) ores has shown five types of fluid inclusion, mostly one phase (liquid). They indicate the homogenization temperature of 150-300°C and salinity of 9.5-20.6 wt% NaCl equivalent.

SEM studies indicate a different distribution of Na, Ba, Ca, Mg, Sr in various three generations of DCR.

The field observations, geochemical studies and facies analysis indicate that, the Nakhjir-kuh celestite deposit is a sedimentary – diagenetic stratiform deposit which has formed during the early diagenesis and its concentration and enrichment has occurred mostly in burial diagenesis.