Textures and REE geochemistry in Gian copper occurrence

Taghipour, N. and Moore, F.
Department of Geology, Shiraz University,
n.taghipoor@graduate.uk.ac.ir

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Abstract: The Upper Devonian - Lower Carboniferous Sourian complex, is composed of clastic - carbonates, volcanic, metamorphic rocks and quartz lenses hosts copper mineralization in Gian area of Fars province.

This complex is metamorphosed to green schist facies. This metamorphism resulted in massive to disseminated sulfide mineralization in the direction of schistosity and within quartz lenses.

Low-grade green schist facies metamorphism is recognized with cataclastic flow and fracturing of pyrite crystals, infilling of fractures of pyrite with chalcopyrite, pressure shadow of chalcopyrite around pyrite, recrystalization and presence of triple junctions in pyrite.

Distribution pattern of REE in schists of Gian copper shows a decreasing trend from La to Lu. The ratio of \( \sum \text{LREE}/\sum \text{HREE} \) is more than one and the ratio of \( \text{La}_N/\text{Yb}_N \) is less than 15. This indicates that schists are formed by the metamorphism of shales and the ratio of \( (\text{La}/\text{Lu})_{cr}>1 \) indicates that the transfer of REE has been affected by surface adsorption. It may be concluded that this copper occurrence is the result of ore-bearing shale metamorphism.