

Diagenetic pyrite as a source for sedimentary copper deposit in Nahand-Ivand area, north of Tabriz, NW Iran

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Abstract

The sedimentary copper deposit in the north of Tabriz, NW Iran is hosted in Qom Red Beds Formation of Miocene age. The formation of organic-rich, laminated sandstone occurred repeatedly during the miocene usually interpreted as a product of anoxic/euxinic bottom water conditions. Based on characteristic textural and chemical features, documented by electron probe microanalysis Three pyrite types were identified in sandstones. The EPMA results from different types of pyrite reveal a Cu contents as high as 0.4, 0.9 and 3.25 wt.% for framboidal pyrite, overgrowth on framboid pyrite and diagenetic pyrite respectively.

Successive increase in contents of majority of trace elements from PyI to PyIII is attributed to continuous supply of copper that replaces framboidal pyrite in turn by the more copper-rich diagenetic pyrite that could be as a source of copper for copper sulfide mineral in sedimentary copper deposit in Nahand- Ivand area.