

Hydrothermal veins in the Hira granite pluton, southwest Japan

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Hydrothermal veins have been found in the Hira granite pluton, which is one of the granite plutons around Lake Biwa, in the San'yō zone of southwest Japan. There are rocks of several types in the veins, which have formed by the interaction of a host granite with hydrothermal solution. Blue rocks are quartz syenitic, containing alkali feldspars, hornblende and opaque material. Darker ones have similar mineralogy but are infiltrated by manganese-rich material and other alteration minerals. Leucocratic ones, which may be products at the incipient stage of hydrothermal alteration, consist of quartz and alkali feldspars, which are associated with mafic minerals, iddingsite-like material, opaque minerals, developed along cracks, cleavages and various boundaries. Zn mineralization is weakly recognized in the veins. These vein rocks are characterized geochemically by XRF analyses, comparing to the host granite. Most of them are rich in Fe up to ca. 9 wt% Fe_2O_3 . Black rocks contain are manganese-rich up to 3.65 wt% MnO. Their silica contents are variable from 52 to 87 wt%.