

Silicate liquid immiscibility in the Baima mafic-ultramafic Fe-Ti-(V) oxide deposit, SW China: evidence from late-stage magmatic microstructures

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The Baima mafic-ultramafic layered intrusion, SW China, provide an excellent opportunity to examine the role of silicate melt immiscibility in the formation of Fe-Ti oxide ore of the layered intrusion. The intrusion consists of a Lower zone of net-textured and disseminated Fe-Ti oxide ores, a Middle zone of olivine gabbro and an Upper zone of apatite gabbro. Late-stage microstructures developed in the Baima intrusion comprise various reactive microstructures, including replacive symplectites, fish-hook texture, fine-grained mineral aggregate and corrosion texture. These reactive microstructures are formed at (700-1090°C) and considered to have formed from disequilibrium reactions between immiscible Fe-rich melt and primocrysts such as clinopyroxene, plagioclase and olivine. Their occurrence in the whole intrusion especially in the net-textured and disseminated ores are consistent that the immiscibility occurred in the evolved magma in the Baima magma chamber, forming immiscible Fe-rich and Si-rich melt in the interstitial phases. The immiscible heavy Fe-rich melt percolated down and reacted with primocrysts and eventually accumulated Fe-Ti oxides to form Fe-Ti oxide-rich layers in the Lower zone.