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**The formation of Fe-Ti oxide ore deposits via magma mixing from an experimental perspective**

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Mafic layered intrusions of the Emeishan Large Igneous Province, SW China, host massive Fe-Ti oxide ore deposits – mainly composed of magnetite (Mt) and ilmenite (Ilm). Magma replenishment and mixing [1] are considered as possible formation processes. As experimental evidence is still pending, magma mixing experiments were performed at a range of  $T$  and  $fO_2$  conditions, while pressure was fixed at 200 MPa, with the aim to investigate the stability of the oxides as only stable solid phases.

The results show that the stability field of the ‘oxides only’ is much larger, and that the modal abundances of the oxides are higher at oxidising conditions (nominal  $\Delta FMQ+3.3$ ), thus, promoting cumulus formation. Furthermore, Mt and Ilm-Hm<sub>ss</sub> can coexist without any other mineral phase present, whereas at more reducing conditions (nominal  $\Delta FMQ+2$ ), the stability field is composed of titano-Mt only.

This suggests that the oxides may have formed at quite oxidising conditions. However, the lower limit of the stability field does not significantly shift due to mixing indicating that other processes were involved.

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[1] Howarth, G.H. et al. (2013) *Lithos* 170-171, 73-89.

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