

Oxygen isotopes variation in melt inclusions from MORB samples

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Only a few data of oxygen isotopes in melt inclusions (MI) from different geological settings have been published so far. The existing dataset (e.g., [1] [2]) shows that $\delta^{18}\text{O}$ in MI have variations five times larger than the host rocks or the matrix glasses. This suggests that MI preserved O-isotope ratios of magmas unaffected by superficial processes.

Here we present MI's from ARP MORB samples in the FAMOUS zone (Mid-Atlantic Ridge). The major and trace elements compositions of MI from this region have been found to reflect source heterogeneity as well as melting processes [3]. $\delta^{18}\text{O}$ in MI was analysed using the CAMECA IMS 1280-HR of the SwissSIMS at Lausanne. Reproducibility on standard glasses was 0.2-0.3‰ (2SD). Preliminary results show $\delta^{18}\text{O}$ variability ranging from +4.0 to +5.9‰, in 8 MI of comparable major element compositions. The published bulk average $\delta^{18}\text{O}$ for Atlantic MORB glasses is $+5.5 \pm 0.3\text{‰}$ [4]. The $\delta^{18}\text{O}$ in MI thus record small-scale magmatic processes and/or source heterogeneities during MORB genesis.

[1] Hartley et al. (2013), *GCA*, v.**123**, pp. 55-73 [2] Bouvier et al. (2008), *J. Petrol.*, v.**43**, pp. 1427-1448 [3] Laubier et al. (2012), *J. Petrol.*, v.**53**, pp. 665-698 [4] Eiler et al. (2000), *Nature*, v.**403**, pp. 530-534