



Highly reduced melts in mantle rocks from Cape Verde Archipelago – involvement of material from lower mantle?

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Interstitial glasses in mantle xenoliths from Sal Island, Cape Verde Archipelago contain sulphide globules with included Fe-Ni alloys and in some cases separate metallic phases (typical composition is $\text{Fe}_{0.43}\text{Ni}_{0.56}\text{Co}_{0.01}$). This implies, that oxygen fugacity of these interstitial melts were several log units below the f_{O_2} values of primary mineral assemblages in the investigated lherzolites (close to QMF buffer). Other indications of extremely reducing conditions characteristic of infiltrating melts are very low Fe^{3+} contents in outer parts of spinels grown from intergranular melts and presence of stoichiometric FeS (troilite) in sulphide grains.

The analysis of diffusion profiles in zoned spinels implies that highly reduced melts invaded the mantle rocks several months before the eruption of host lavas.

It is suggested that these melts were generated in the part of Cape Verde plume enriched in metallic material during its residence in the lower mantle where disproportionation of Fe^{2+} into Fe^0 and Fe^{3+} takes place.