

## Silicic fluid microinclusions in a metasomatised eclogite from Roberts Victor

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We report preliminary results of a systematic search for fluid/melt microinclusions in mantle minerals. “Dusty” garnets from xenolith XRV6 [1], a heavily metasomatised Type I eclogite from Roberts Victor mine, SA, carry many microinclusions (<1  $\mu\text{m}$ ). FTIR analyses of “dusty” zones indicate the presence of molecular water in the inclusions and hydroxyl groups in the garnet. EPMA analysis of 136 microinclusions constrains the bulk composition of the microinclusions. Compared to the host garnet, they are enriched in  $\text{TiO}_2$ ,  $\text{FeO}$ ,  $\text{CaO}$ ,  $\text{Na}_2\text{O}$  and  $\text{K}_2\text{O}$  and depleted in  $\text{Al}_2\text{O}_3$  and  $\text{MgO}$ . The silica contents seem to be similar to that of the host garnet.

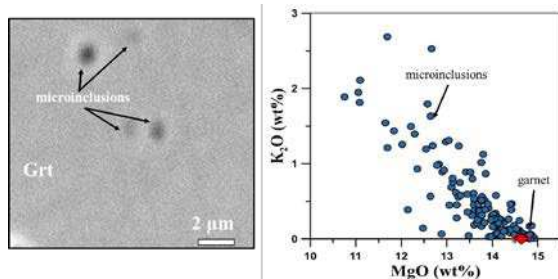


Figure 1: a. Backscatter image of the microinclusions in XRV6 garnet. b.  $\text{K}_2\text{O}$  vs.  $\text{MgO}$  of the clear garnet (red) and the microinclusions (+ their surrounding garnet, blue).

Most of the elements form compositional mixing arrays of microinclusion+garnet (Fig. 1b). The arrays trend away from the compositions of large melt pools or secondary minerals found in the xenolith. They point towards the array of silicic to low-Mg carbonatitic high density fluids (HDFs) trapped in diamonds, indicating the role of such fluids in mantle metasomatism.

[1] Gre’au et al. (2011) *GCA* 75, 6927–6954.