

Fuchsite EPMA method

Analysis of fuchsite was conducted using the Cameca SX100 electron microprobe at the University of Bristol. Silicon, Na, Ca, Cr, Al, K, Fe, Mg, Zn, Mn, Ti, V, and Ni abundances of fuchsite were characterised using a 20kV accelerating voltage, and a 10nA beam current: the same conditions under which chromites were analysed. Reduced counting times and a 10 μm spot size were employed to minimise the migration of alkalis under the electron beam. The fuchsite structural formula was calculated by normalisation to 11 oxygen (Zane & Rizzo, 1999). Individual analyses of fuchsite with total alkalis (Na, Ca, K) of <0.9 apfu were omitted, as this signature is indicative of alkali loss during analysis. Si apfu contents were filtered to include only those between 3.05 and 3.3, to avoid contamination from quartz. These values are lower than those suggested for filtering by Zane & Rizzo (1999), but overlap the compositions recorded for muscovite and fuchsite at Jack Hills by Rasmussen *et al.* (2011), and group 1 muscovite of Hopkins *et al.* (2010). During line scans, secondary fluorescence of both fuchsite and chromite was expected, particularly for elements of interest such as Cr and Fe; such effects were not modelled, and so representative compositions of fuchsite should be taken >20 μm from chromite-fuchsite boundaries.

References

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- Zane, A. & Rizzo, G. (1999). The compositional space of muscovite in granitic rocks. *Canadian Mineralogist* **37**, 1229-1238.