

## **Complex chemical zoning in eclogite facies garnet reaction rims at feldspar-biotite contacts from the Saualpe crystalline Basement (Eastern Alps)**

Prenzel, Jannis<sup>1</sup> Abart, Rainer<sup>2</sup> Keller, Lukas<sup>3</sup>

<sup>1</sup>Free University Berlin, Malteserstraße 74-100, 12249 Berlin, Germany <sup>2</sup>Free University Berlin, Malteserstraße 74-100, 12249 Berlin, Germany <sup>3</sup>Free University Berlin, Malteserstraße 74-100, 12249 Berlin, Germany

### **Abstract**

In metapelites of the Saualpe complex (Eastern Alps) continuous 10 to 20  $\mu\text{m}$  wide garnet reaction rims formed along pre-existing biotite-plagioclase and biotite-perthite interfaces. The pre-existing mineral assemblages are remnants of low pressure high temperature metamorphism of Permian age. The garnet reaction rims grew during Cretaceous eclogite facies overprint. Reaction rim growth involved transfer of Fe and Mg components from the garnet-biotite interface to the garnet-feldspar interface and transfer of Ca component in the opposite direction. The garnets show complex, asymmetrical chemical zoning, which reflects short circuit diffusion along grain boundaries within the polycrystalline garnet reaction rims. It is demonstrated by numerical modeling that the spacing between grain boundaries, i.e. the grain size of garnet in the reaction rim is a first order control on its internal chemical zoning.

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