

## Secondary chemical zoning of partially resorbed garnet

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Transitional lithologies at mafic-felsic granulite contacts in the Gföhl unit (Moldanubian zone, Lower Austria) bear garnet with a peculiar sieve microstructure. The up to a few millimetre-sized garnets are partially replaced by plagioclase and subordinate clinopyroxene, whereby in 3D the plagioclase forms several 10s of micrometres wide and several 100 micrometres long finger-like structures or corrosion tubes producing the sieve-like microstructure in 2D sections. The corrosion tubes are accompanied by concentrically arranged compositional zoning of the relic garnet with a decrease of  $X_{\text{gro}}$  from 0.4 to 0.18 and a concomitant increase of  $X_{\text{pyr}}$  from 0.40 to 0.52 and of  $X_{\text{alm}}$  from 0.20 to 0.30. These compositional patterns are interpreted as secondary zoning that was imprinted on the garnet during or after formation of the corrosion tubes. The secondary zoning is ascribed to intracrystalline diffusion in the course of re-equilibration of the garnet during changing P, T or chemical conditions. The enrichment halo of Fe extends substantially deeper into the garnet than the depletion halo of Ca, which is compatible with the notion that  $D^*_{\text{Fe}} > D^*_{\text{Ca}}$ , where  $D^*$  means tracer (self) diffusion coefficient. This leads to a local minimum in Mg-concentrations at the position where Fe has already arrived and Ca has not yet left. The observed compositional patterns allow to constrain the proportions of  $D^*_{\text{Fe}}/D^*_{\text{Mg}}/D^*_{\text{Ca}}$ , and indicate short duration of the re-equilibration event.