

DEFORMATION MECHANISMS AND LPOS IN ECLOGITES OF THE ALPS

1KURZ, W., 1UNZOG, W. and 2NEUBAUER, F. 1Universität Graz, Austria;
2Universität Salzburg, Austria

Eclogites of different structural and tectonic settings within the Alps have been investigated focusing on the evolution of Lattice Preferred Orientations (LPOs) of omphacite and garnet. Within several settings the eclogite fabrics show continuous transitions from coarse-grained eclogites with relics of gabbroic fabrics to fine grained eclogitic mylonites. Within coarse grained low-temperature eclogites the omphacites show the development of subgrains and LPO patterns that are interpreted to be related to a shape preferred orientation subparallel to the penetrative foliation. At advanced stages of deformation, omphacite shows fabrics that are characteristic for subgrain rotation recrystallization. Very often core and mantle fabrics can be recognized. Within fine grained eclogite mylonites the c-axes of omphacite show cluster distributions near the X-axis of the finite strain ellipsoid. Generally, omphacite shows fabrics that are characteristic for dislocation glide within LT eclogites, and fabrics that are typical for dislocations creep within HT eclogites. The development of LPOs within LT eclogites (at temperatures below 550° C) seems to be primarily related to the shape preferred orientation and rigid body rotation. Within HT eclogites (at ca. 600° C) the LPO evolution is primarily related to crystal plasticity. Furthermore, Garnet does not show a crystallographic preferred orientation below 650°C.