SYMPLECTITES IN HIGH PRESSURE GRANULITES FROM THE GFÖHL UNIT (DUNKELSTEINERWALD, NÖ)

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Symplectites in a high pressure granulite from the granulite unit in Dunkelsteinerwald (Gföhl Unit) are investigated. The granulite has an exotic but homogeneous bulk rock composition rich in Mg and Al (14 % normative corundum). It contains garnet (Grt) (app. 50 % pyrope), clinopyroxene (X_{Mg}=0.95; Al_2O_3: 9 wt.%), hornblende (Hbl) (X_{Mg}=0.88; Al_2O_3: 15 wt.%), and plagioclase (Pl) (X_{An} up to 0.83). The primary microstructure is granular, medium- to fine-grained and well equilibrated. Cpx often shows exsolution lamellae and inclusions of Hbl.

Garnets with a size of 2-3 cm are not unusual, but more often they are resorbed and significantly smaller. The large garnets show numerous inclusions, e.g. of kyanite. Along the margins of and along cracks within large garnets, symplectites replace garnet as a breakdown product during decompression at about 700 °C. Different types of symplectite can be discerned comprising Al-Cpx, sapphirine (Spr), spinel (Spl), corundum (Crn), Pl ($X_{An} > 0.95$), orthopyroxene (Opx) and Hbl. Frequently, fine symplectites are enclosed in coarser symplectite phases. Plagioclase forms the symplectite matrix phase and frequently exhibits chemical zoning with decreasing X_{An} towards the symplectite-garnet interface.

Symplectitic growth leads to the formation of chemical zoning within the garnet adjacent to the symplectite replacement front. The composition variation is continuous and takes the form of a diffusion profile. Given that the temperature of symplectite formation can be estimated by Opx-Cpx thermometry, diffusion modelling can provide a clue on the duration of the symplectite forming event.