

## PETROLOGY OF THE HEMATITE ORE ZONE, WALDENSTEIN, CARINTHIA

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The hematite deposit at Waldenstein is located in the footwall of the Saualpe-Koralpe complex as part of the Eo-Alpine high pressure wedge (SCHMID et al., 2004). It is characterized as epigenetic hydrothermal vein-type ore mineralization (PROCHASKA et al., 1995), which occurs almost entirely in the embedded marble lenses and within layers of metapelites. These host rocks, which strike almost E-W and dip to the N, reflect a Paleozoic origin. In addition concordant and discordant late Variscan (Permian?) pegmatites occur. Petrographic and mineral chemical investigations indicate that alteration is associated with ore mineralisation. This alteration is defined by chloritisation and partial dolomitisation in the mineralized calcite marbles as well as pseudomorphosis of chlorite after biotite and garnet in the metapelites. Investigations on primary fluid inclusions (H<sub>2</sub>O-NaCl-CaCl<sub>2</sub> with ~ 24 wt. % salinity) in quartz, which is associated with hematite precipitation, display homogenisation temperatures from about 180 to 270 °C. On the basis of isochores, combined with oxygen isotopic composition temperatures of hematite, chlorite and quartz at about 300°C after (PROCHASKA et al., 1995), pressures of up to 2.4 kbar at maximum depths of ~7.5 km are proposed.

Secondary fluid inclusions (FIs) in the system CO<sub>2</sub>-H<sub>2</sub>O-NaCl are interpreted as fluid activity of the Lavantal Shear Zone and yield together with the primary aqueous FIs an isothermal decompressional path for the hematite mineralized area at Waldenstein.

PROCHASKA, W., POHL, W., BELOCKY, R., KUCHA, H. (1995): *Geologische Rundschau*, 84, 831-842.

SCHMID, S. M., FÜGENSCHUH, B., KISSLING, E., SCHUSTER, R. (2004): *Eclogae geologicae Helvetiae*, 97, 93-117.