

## **FLUID INCLUSIONS IN METAMORPHIC INDEX MINERALS - AN EXAMPLE FROM THE AUSTROALPINE BASEMENT**

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An example from the Eastern Alps of Austria should demonstrate how fluid inclusions in metamorphic index-minerals like garnet and kyanite record the P-T-X conditions of the host rock. We present fluid inclusion and geo-thermobarometric data from the Radentheinit, a coarse grained, Al-rich metapelite primarily comprised of garnet, kyanite, staurolite, chlorite, biotite and quartz. This rock occurs in the Radentheinit basement in the South-Eastern part of Austria and experienced a single metamorphic Cretaceous event. Peak metamorphic temperatures in the range of 550° to 580°C and pressures of 4 to 7 kbar were derived from the Radentheinit paragenesis by cation exchange thermometry, phase diagram calculations and oxygen isotope thermometry. The consistent temperatures of all these methods and the equilibrium textures of the Radentheinit suggest a well preserved equilibrium mineral paragenesis. Microthermometry and Raman spectroscopy yielded that garnet typically hosts pure N<sub>2</sub> and mixed CO<sub>2</sub>-CH<sub>4</sub>-N<sub>2</sub> inclusions of consistently high molar volume. Kyanite, which supposedly grew simultaneously with garnet, hosts texturally primary, CO<sub>2</sub>-H<sub>2</sub>O-N<sub>2</sub> inclusions of variable water content. The original fluid inclusion density and composition was presumably changed by the precipitation of minerals in the fluid inclusions and water loss.