crystallinity indicates around 200°C for both deposits. This is in good correlation with existing data (e.g. Rantitsch and Russegger, 2005). From field observations, like ductile boudinage of anhydrite bodies, a deformation of anhydrite together with rock salt is supposed. However, the conditions of isotropic pressure (burial depth) and shearing (differential stress) of anhydrite rock are not yet exactly known.

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40Ar/39Ar ages of crystallisation and recrystallisation of rock-forming polyhalite in Alpine rocksalt deposits

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To assess the potential of the mineral polyhalite [$K_2Ca_2Mg(SO_4)_4 \cdot 2H_2O$] as a new geochronometer, the $^{40}Ar/^{39}Ar$ method was combined with microstructural analysis. Polyhalite rocks of the Alpine Haselgebirge Formation expose various diagenetic fabrics of polyhalite - intergrown with anhydrite, crystallized in mudrock and vein infills. The crystals developed between c. 235 and 210 Ma. Mylonites of fine-grained polyhalite rock indicate several subsequent stages of tectonothermal overprint between c. 155 and 105 Ma. The latter ages fit roughly to previously measured $^{40}Ar/^{39}Ar$ ages of feldspar and muscovite (Spötl et al., 1998, Frank & Schlager, 2006). Illite crystallinity indicates temperatures of around 200°C. The peak temperature of overprint was at c. 180°C in the Berchtesgaden mine (vitrinite reflectance, fluid inclusions) and > 240°C in the Altaussee mine (fluid inclusions). The data is in good correlation with existing data (e.g. Rantitsch & Russegger, 2005). These temperatures are below the value of 255°C, where polyhalite starts to dehydrate (Wollmann, 2008). Disturbed age spectra pattern result from multiphase polyhalite growth, but single phases yielded good results. In future studies, polyhalite may characteristically serve as a geochronometer for diagenetic and very low-grade metamorphic processes.

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