High spessartine content (42 %) and the fairly homogeneous element distribution point to a magmatic origin of these garnets. The Sm-Nd result is therefore interpreted as primary crystallization age, probably reflecting the time of emplacement of the pegmatite melt. The obtained Variscan age is compatible with high precision zircon datings from the Tatric unit, where the data range between 340–360 Ma (Poller et al. 2000), recording a main granite-forming event in the Western Carpathians during the Carboniferous. Our results also show that Alpine metamorphism at a temperature of 550–580 °C did not reopen the Sm-Nd isotope system in magmatic Variscan garnet.

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Recrystallisation of zircons during granulite facies metamorphism (Germany, Central Erzgebirge)

M. TICHOMIROWA

TU Bergakademie Freiberg, tichomir@mineral.tu-freiberg.de

High pressure granulites occur in various parts of the Variscan collisional belt. They form small volumes in the Central Erzgebirge within muscovite orthogneisses („Red Gneisses“). Willner et al. (1997) determined maximum PT conditions of 700–800 °C and 13–20 kbar for granulite gneisses, whereas in adjacent muscovite gneisses maximum conditions do not exceed 10–12 kbar and about 700 °C. Dating of euhedral zircons indicates a protolith age of 480–500 Ma for muscovite ortho-gneisses (Kröner – Willner, 1995; Rötzler et al., 1997; Tichomirowa et al., 2001; Tichomirowa, 2003). Near spherical zircons from granulite gneisses yield $^{207}Pb/^{206}Pb$-evaporation ages of about 340 Ma, interpreted as the age of metamorphic zircon growth during granulite peak conditions (Kröner – Willner, 1995; Mingram – Rötzler, 1999).

In this study samples for zircon dating were selected within a granulite gneiss body and at different distances to this body in the adjacent muscovite gneiss. Zircons of the granulite gneiss are obviously rounded with mostly near spherical and stubby shapes. With increasing distance to the granulite gneiss body zircons of muscovite gneiss samples show less rounded shapes and are more euhedral and prismatic. These changes in morphology are accompanied by an increasing mean $^{207}Pb/^{206}Pb$ zircon evaporation age of the muscovite gneiss samples. Cathodo-luminescence images of zircons show various indications of metamorphic overprint (cores, bright recrystallised zones, low luminescence zones, bright overgrowths, fir-tree zoning). U/Pb spot analyses with ion microprobe within different zones of these zircons are in progress and should contribute to a better understanding of resorption and recrystallisation processes as well as U/Pb reset of zircons during granulite facies metamorphism.

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