

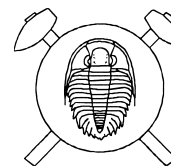
Age and emplacement depth of the Hauzenberg Pluton (Variscides, Germany)

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The Variscan Hauzenberg pluton consists mainly of granite and granodiorite that intruded late- to postkinematically into high-grade metamorphic rocks of the Moldanubian unit at the southwestern margin of the Bohemian Massif (Passauer Wald). The massif consists of a medium- to coarse-grained S-type granite (Hauzenberger granite II), a fine to medium-grained S-type granite (Hauzenberger granite I), granodiorite and diorite (Dollinger 1967).

Samples were taken from the northern part of the massif (quarry Kirchstein, ca. 2 km S of Waldkirchen) and Albrechtbruch (quarry Lindberg, ca. 2.5 km SSE of Waldkirchen).

The isotope analyses were carried out using a solid-source mass-spectrometer (Finnigan MAT 261) at Gießen University To determine the composition of magmatic white micas for geobarometric purposes microprobe analyses were performed using a Jeol Superprobe JXA8900 at Frankfurt University.

The U-Pb datings of zircon and monazite, separated from medium- to coarse-grained biotite-muscovite granite (Hauzenberg granite II), yielded concordant ages at 320 ± 3 and 329 ± 7 Ma, respectively. The zircon age is interpreted to be the best approximation for the time of melt emplacement. Inherited cores were observed and yield a minimum age of 503 ± 3 . The monazite ages (two subconcordant, one concordant monazite) scatter around the U-Pb age and cover a period from 336 to 318 Ma including uncertainties.

U-Pb zircon datings of the granodiorite yielded discordant ages with lower and upper intercepts at 317 ± 2 and $1500 +110/-100$ Ma. The lower intercept should be close to the emplacement age, whereas the upper intercept results from inherited lead.

The pressure during the solidification of the Hauzenberg granite II has been determined at 4.6 ± 0.6 kbar using phengite barometry (Massonne – Schreyer 1987, Massonne – Szpurka 1997) to chemically zoned musco-

vite that has been stable in the magma and during the final crystallization. These values correspond to an emplacement depth of 16 ± 2 km. The necessary temperature estimation relies upon solidus temperatures of Johannes – Holtz (1996).

The new data are compatible with pre-existing cooling ages of biotite and muscovite which indicate that the Hauzenberg pluton cooled below $T = 250-400$ °C in Upper Carboniferous times.

The barometric data are interpreted as a minimum pressure for metamorphism and anatexis of the country-rocks. It is possible that metamorphism reached peak temperatures and pressures similar to those determined by Kalt et al. (2000) for rocks of the northern Bavarian Forest ($321-326$ Ma, $T \sim 850$ °C, $P = 5-7$ kbar). The fact that andalusite and sillimanite occur together in the contact aureole and also in some granites suggests fast syn- to late-intrusive uplift and decompression.

The age of emplacement is similar to ages of the south Bohemian plutons (e.g. Rastenberger granodiorite, 323 ± 2 Ma, Friedl et al. 1993). On the other hand, the Central Bohemian pluton, the plutons at the Bohemian shear zone (e.g. Dörr et al. 1998) and intrusives in the Oberpfalz (e.g. Köhler – Hölzl 1994) are considerably older.

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