Subgreenschist facies metamorphism of quartiztes of the eastern cover of the Žulová pluton (NE Bohemian Massif)

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The eastern cover of the Žulová pluton consists of gneisses, amphibolites and quartzites of supposedly Devonian age, considered to be metamorphosed within the sillimanite zone (Souček 1978, Cháb – Žáček 1994). The metamorphic grade of quartzites was assumed by analogy with the gneisses. The quartzite outcrop stretching from Jeseník (Czech Republic) to Gierałcice (Poland) is dominated by feldspar quartzites, commonly with K-feldspar prevailing over plagioclase. Detailed petrographic study (Puziewicz et al. 2003) shows quartz, feldspar and small amounts of decomposed biotite to be detrital minerals. Pumpellyite, actinolite/ferroactinolite, clinozoisite, chlorite, white mica, titanite and graphite/carbonaceous matter are the metamorphic minerals. They originate due to brittle deformation – enhanced feldspar decomposition and recrystallization of sedimentary "allophane". The composition of pumpellyite is typical of the pumpellyite-actinolite facies. Other metamorphic minerals have also composition typical of low – grade metamorphic rocks. The equilibrium was reached only on a local (few-grains) scale in the quartzites. The mineral assemblage and mineral compositions indicate the subgreenschist (pumpellyite-actinolite) facies of the quartzites. Thus, the quartzites were supposedly tectonically emplaced into the eastern cover of the Žulová pluton after the high-grade metamorphism of the neighbouring gneisses.

References

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