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PŮVODNÍ PRÁCE/ORIGINAL PAPER

Chemické složení granátů v amfibolitech z lomu Libodřice u Kolína (kutnohorské krystalinikum, Česká republika)

Chemical composition of garnets in amphibolites from the quarry Libodřice near Kolín (Kutná Hora Crystalline Complex, Czech Republic)

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Abstract

Three types of garnet-bearing lithologies sampled in the quarry Libodřice near Kolín (Kutná Hora Crystalline Complex, Czech Republic) were studied by means of BSE imaging and electron microprobe analyses. The first type is represented by common garnetic amphibolites, in which garnet forms isolated millimetre-sized porphyroblasts containing numerous inclusions of minerals of the host amphibolite matrix (plagioclase, epidote, amphibole, sulphides). The composition of weakly zoned garnet is $\text{Alm}_{55-56}\text{Grs}_{30-37}\text{Sps}_{1-5}\text{Prp}_{5-12}\text{Adr}_{0-3}$. Second type is garnetite, composed of garnet+quartz or garnet+epidote, in both cases with minor amphibole, which forms rare centimetre-thick bands in amphibolites. The garnetite garnet is distinctly zoned, with cores enriched in spessartine component ($\text{Alm}_{42-51}\text{Grs}_{29-38}\text{Sps}_{11-16}\text{Prp}_{2-8}\text{Adr}_{0-3}\text{Ti-Grs}_{0-1}\text{F-Kat}_{0-1}$) and margins depleted in Sps and enriched in pyrope component ($\text{Alm}_{49-54}\text{Grs}_{28-35}\text{Sps}_{4-10}\text{Prp}_{7-11}\text{Adr}_{0-1}\text{F-Kat}_{0-1}$). The origin of the pronounced enrichment in Mn is interpreted in terms of specific chemical composition of protolith of this garnetite, which was likely represented by a chemogenic precipitate rich in Si, Al, Fe, Mn and in places possibly also Ca. The last found garnetiferous lithology is represented by zoned reaction skarn rimming small xenoliths of calcitic marbles enclosed in amphibolites. The garnet-rich zone of the skarn is dominated by chemically homogeneous grossularite with composition $\text{Grs}_{73-76}\text{Adr}_{16-21}\text{Alm}_{2-5}\text{Ti-Grs}_{1-2}\text{Sps}_1\text{F-Kat}_1\text{Gol}_{0-1}$.

Key words: Libodřice, Kutná Hora Crystalline Complex, Bohemian Massif, garnet, amphibolite, skarn, garnetite

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