

Petrological study of the Barchi-Kol metabasites, western Kokchetav metamorphic belt, northern Kazakhstan

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Barchi-Kol area is located at the westernmost of the Kokchetav metamorphic belt, northern Kazakhstan, and metabasites of from epidote-amphiblite (EA) through high-pressure amphiblite (HAM) to coesite-eclogite (CEC) facies are distributed. Approximately 150 samples of metabasites were collected and metamorphic zonation was made based on their mineral assemblages. Chemistry of the rock forming minerals were also analyzed and the chemical reactions between each mineral zone have revealed. Thermobarometry by several geothermobarometers resulted in 530C, 7.4-9.1kb for EA zone, 720C, 9.4-11.8kb for HAM zone, and 700-850C, 34-40kb for EC zone. This means that the geothermal gradient is convex towards high-T side, and decreases very rapidly above HAM zone.