

Metamorphism and partial melting of lower crust, in the Uetsu area, northern Japan

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Granulite facies metamorphic rocks occur as xenoliths in the Sumikawa granodiorite body, Uetsu area. These rocks thought to be formed by regional metamorphism in the lower crust. Biotite break down reaction (dehydration partial melting reaction) has been occurred, and these rocks has changed to the restite. Mass balance calculation and batch partial melting modeling indicate that the melting degree is 40-60%.

Sometimes spinel + quartz assemblage can be found in the highest grade xenolith. These assemblage thought to be formed by increasing temperature after the partial melting. At this stage, the oxygen fugacity was higher than that of the previous stage. The oxygen fugacity may be important for the formation of this assemblage.