

東南極リュツォ・ホルム岩体かすみ岩に産出する酸性～塩基性変成岩類の変成作用

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Metamorphism of felsic to mafic orthogneisses from Kasumi Rocks, Lützow-Holm Complex, East Antarctica

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We report new petrological data of felsic to mafic orthogneisses from Kasumi Rocks located in the amphibolite-facies region of the Lützow-Holm Complex, East Antarctica. The samples were corrected during the operation of 52nd Japanese Antarctic Research Operation (JARE-52) in 2010-2011. The felsic orthogneiss (meta-granodiorite) is a coarse-grained equigranular rock composed mainly of plagioclase, quartz, microcline, biotite, and calcic amphibole, with accessory titanite, muscovite, zircon, and apatite. Mafic orthogneiss (amphibolite) comprises greenish calcic amphibole, microcline, plagioclase, and biotite with accessory epidote, titanite, and apatite. Geochemical data of felsic orthogneiss plotted on several discrimination diagrams suggest volcanic-arc granite affinity, which is also supported by the enrichment of LILE, negative Nb, Ta, P and Ti anomalies, and relatively constant HFSE of the samples. Amphibolite also suggests calc-alkaline basalt affinity. The geochemical features thus suggest felsic to mafic arc magmas could be the protolith of Kasumi orthogneisses. Application of hornblende-plagioclase geothermometer to the samples yielded peak (?) temperatures of 710–740°C, which confirms amphibolite-facies condition of this region and also increase of metamorphic grade from east to west of the Lützow-Holm Complex as argued by Hiroi et al. (1991). Recent geochronological data of Kasumi Rocks suggest Early Neoproterozoic (984±6.9 Ma) magmatic event without any Latest Neoproterozoic thermal record, suggesting that the Kasumi orthogneisses could be correlated with Kadugannawa Complex in Sri Lanka (Tsunogae et al., 2015).

References

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