

丹沢山地マフィック変成岩の層状構造は転位クリープ起源? Dislocation creep induced layer structures ? in mafic rocks, Tanzawa Mountain

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Tanzawa plutonic complex is located in the northern part of Izu-Bonin-Mariana (IBM) arc. The complex has been exposed by the collision of IBM arc and Japan islands. The exposed process is related to uplifting of Tanzawa plutonic complex along the Kannawa fault. Mafic rocks near the Tanzawa plutonic complex show metamorphosed and deformed textures. The purpose of this study is to reveal microstructures of metamorphosed mafic rocks occurred near the Tanzawa plutonic complex. They are highly deformed and show well-developed layer structures. The mafic rocks consist mainly of amphibole and plagioclase. Amphibole grains are elongated. Plagioclase grains are polygonal. The mean grain sizes of amphibole are in a range between 30 and 110 micron, whereas those of plagioclase are in a range between 25 and 115 micron. Within the well layered rocks, aspect ratios become smaller, as increasing grain sizes. Crystal-preferred orientations (CPOs) of amphibole and plagioclase were measured by a scanning electron microscope (SEM) equipped with electron back-scattered diffraction (EBSD). Amphibole CPOs show (100) [001] patterns. Plagioclase CPOs show (001) [100] patterns. It suggests that their deformation mechanisms are dominantly dislocation creep. Some elongated amphibole grains have grain boundaries perpendicular to the foliations, which appear to be also an evidence of dislocation creep. Consequently, the mafic rocks could result from dislocation creep during the development of layer structures associated with uplifting of the Tanzawa plutonic complex.

Keywords: amphibolite, Tanzawa, amphibole, plagioclase, CPO