

Petrochemistry and zircon U-Pb age of "lateritic" metamorphic rocks from the Kitakami Mountains

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Fe- and Al-rich metamorphic rocks were discovered from the Shinkama, Ofunato City, Kitakami Mountains, Japan. These metamorphic rocks underwent contact metamorphism during the intrusion of the lower Cretaceous Goyosan granitic rocks. The rocks from Shinkama are mainly composed of Pl, Bt, Ms, Grt, Crd(+/-), Kfs, Spl(+/-), Ilm, Ap. On the other hand, the rocks from Shinkama east are Pl, Bt, Ms, Grt(+/-), Crd, Kfs, Spl, And(+/-), Sil(+/-), Crn(+/-), Ilm, Ap. These rocks are characterized by low SiO₂ contents (20--47%), high FeO* contents (12--33%) and high Al₂O₃ contents (18--38%). Bulk rock chemistry of the metamorphic rocks are resemble those from "lateritic" rocks from the Abukuma Metamorphic Belt. "Lateritic" rocks from the Abukuma Metamorphic Belt characteristically contains staurolite, however, metamorphic rocks from Shinkama does not include staurolite. This indicates the possibility that the metamorphic rocks in the Shinkama were probably metamorphosed under low pressure conditions than those from the Abukuma Metamorphic Belt.

U-Pb dating of zircons were carried out using Agilent 7500cx quadrupole inductively coupled plasma mass spectrometer (ICP-MS) with a New Wave Research UP-213 Nd-YAG UV (213 nm) laser ablation system (LA) installed at the Kyushu University. The operating parameters of analyses with LA-ICP-MS system are after Adachi et al. (2012). Zircon grains from the Shinkama metamorphic rocks are euhedral crystal (ca. 0.05mm) with remarkable oscillatory zoning, and define a concordant age of 126+/- 3Ma. On the other hand, zircon grains of subhedral crystal (larger than 0.1 mm) with no oscillatory zoning, and define a concordant age of 326+/- 3Ma. The former age correspond to the contact metamorphism of Early Cretaceous, on the other hand, the latter correspond to the hydrothermal alteration event of Carboniferous.

Keywords: laterite, metamorphic rocks, zircon U-Pb age, petrochemistry