

# Origin of the HFSE-rich picrite from Mt. Funafuse, Mino belt, SW Japan

# Yuji Ichiyama[1]; Akira Ishiwatari[1]

[1] Earth Sci., Kanazawa Univ.

The HFSE-rich picrite occurs as a sill in the Middle to Late Permian chert in the Funafuse-yama area, Jurassic Mino accretionary complex. This area consists mainly of limestone, chert and greenstone and is regarded as fragments of accreted ancient seamounts (Sano 1988). This picrite closely resembles the Late Permian meimechite from Siberia and the HIMU picritic basalt from Polynesia in major and trace element chemistry.

The HFSE-rich picrite contains the phenocrysts of olivine (pseudomorph), Ti-augite and kaersutite, and the olivine phenocryst is abundant (30 vol.%) and very fine-grained (1 mm). The groundmass consists of chlorite, biotite and apatite. The picrite contains 15-20 wt.% MgO and high TiO<sub>2</sub> (3 wt.%) and P<sub>2</sub>O<sub>5</sub> (0.9 wt.%). The picrite sill and the associated lava and hyaloclastite are characterized by high concentration of HFSE such as Nb (60 ppm) and Zr (250 ppm). The hyaloclastite represents an evolved picritic magma, and serves as an evidence for the Middle to Late Permian age of the picritic magmatism.

The published results of melting experiments and trace element calculations of primitive mantle composition cannot explain enriched HFSE nature of the picrite, if it originated in a full-peridotite source. It has been proposed that the meimechite and HIMU picritic basalt may be produced by melting of the source involving subducted oceanic crust (eclogite or pyroxenite) (Arndt et al. 1998, Chauvel et al. 1992). These HFSE-rich magnesian volcanic rocks match the melt compositions produced by melting experiments and trace element modeling of a mixed peridotite + oceanic crust source. The correlation between MgO and TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> among these rocks indicates that their melting regions were deeper in order of the HIMU picritic basalt, Mino picrite and meimechite. Tostumi et al. (1998) links the HIMU type magmatism to the superplume activity. Our study indicates superplume activities in the Middle to Late Permian time over both continental and oceanic settings.