

Unusual Alloys in Garnet Peridotite from the Chinese Continental Scientific Drilling Project (CCSD) Main Hole in Sulu

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Cuttings of garnet peridotite were collected between 603.2 and 683.5 m in the CCSD Main Hole on the Sulu ultrahigh pressure(UHP) metamorphic belt. Minerals were separated by various methods and handpicked under a binocular microscope. Several groups of alloy have been discovered and identified by SEM-EDS, microprobe, Laser Raman, and EDXD(Synchrotron X-ray Diffraction). They are Fe-Cr-Si group; Fe-Cr-C group; Fe-Cr-Ni group; Ni-Co-Cr; Al; Mn; W; group; Fe-Si-C group; Fe-Si-Ti group; Fe-Si-Ni group and Fe-P group. They are characterized by spheroidal in shape with diameters of about 100-300 μ m. Some of them contain various mineral inclusions and micro-crystals. This is the first report of natural alloys in garnet peridotite in an ultrahigh pressure metamorphic terrane. There are also a number of unusual minerals have been recognized from the cuttings, e.g., moissanite, wüstite, native Fe, native Cr, native Ni, native Au, native Cu, native Al, taenite, kamacite. The alloys and unusual minerals in garnet peridotite in CCSD Main Hole can be compared in structure and composition to the minerals founded in the Luobusa podiform chromitite, however, they occur in different tectonic background. Further study on their genesis and formational conditions is underway.