

Korea Expedition for Antarctic Meteorites (KOREAMET) and Operation of the Meteorite Research Center

http://www.kopri.re.kr/index_eng.jsp

Research Project–2008

In the blue ice field around Thiel Mountains, West Antarctica, 66 meteorites have been discovered. The second Korea Expedition for Antarctic meteorites (KOREAMET) was conducted from 19 December 2007 to 6 January 2008. Sixteen meteorites (with a total mass of 10.6 kg) were recovered by the expedition: 12 at the Moulton Escarpment, one at Bermel Escarpment, two at Mt. Walcott, and one at Mt. Powell. These include 9 ordinary chondrites (OC), three carbonaceous chondrites, one enstatite chondrite, one pallasite, one eucrite and one lodranite.

The meteorites were vacuum-sealed, kept under sub-zero temperatures and shipped to the laboratory in Korea. They were slowly defrosted in a glove box filled with N₂ gas, then cut with a dry saw. Polished sections were made for classification purposes. We classified all the meteorites using microscopic observation, electron microprobe analysis, and laser fluorination oxygen isotope analysis, and reported the results at the 71st Meteoritical Society Meeting, held in Matsue, Japan in July 2008.

The ordinary chondrites are all equilibrated (type 5 or 6) and include 5 H and 4 L chondrites. Most of the ordinary chondrites exhibit only minor amounts of iron oxide coating metallic Fe-Ni grains, consistent with a weathering grade of W1. One enstatite chondrite is classified as EL6. Two reduced CV3 chondrites (18g each) with strongly oriented fabrics were found; they are probably paired. They contain large (mainly >1 mm-diameter) chondrules; Ca-Al-rich inclusions and amoeboid olivine inclusions are large and relatively abundant. One heavily altered CM chondrite (723 mg) was also recovered; it contains abundant tochilinite-cronstedtite intergrowths (PCP), but no unaltered chondrules. A 3.5 kg specimen of a pallasite was found on a moraine near Mt. Powell. This may be paired with the Thiel Mountains pallasite found in 1962, but this potential pairing is necessary to be confirmed by chemical analysis. The eucrite (3.7kg) is heavily brecciated; it has a shiny black fusion crust covering almost the entire surface and a relatively fresh interior. The lodranite is intermediate between normal lodranites and acapulcoites in terms of grain size and modal abundances of troilite and plagioclase.

A laser fluorination oxygen isotope analysis system has been operating since July 2006 to obtain a world-class, high-technology meteorite research. We are developing a systematic classification of meteorites using this system. A radiogenic isotope laboratory was set up in 2008 to find out the isotopic nature and ages of meteorites.

The third KOREAMET was conducted around Thiel Mountains from December 2008 to January 2009 to develop a long-term meteorite recovery program.

Images



(Fig. 1) Skidoo traversing in Antarctic continent by KOREAMET



(Fig. 2) A eucrite chondrite



(Fig. 3) A 3.5 kg specimen of a pallasite chondrite



(Fig. 4) Laser fluorination oxygen isotope analysis