TRACE ELEMENT CHARACTERISTICS OF A LUNAR METEORITE DHOFAR 1428

Y. Hidaka[1], A. Yamaguchi[2], and M. Ebihara[1], [1]Department of Chemistry, Tokyo Metropolitan University, Tokyo 192-0397, Japan. E-mail: hidaka-yoshihiro@ed.tmu.ac.jp. [2]National Institute of Polar Research, Tachikawa 190-8518, Japan.

Introduction: Lunar meteorite, Dhofar 1428 is a 213-gram stone found in Oman [1]. This meteorite was classified as a regolith breccia [2]. We previously showed that major element composition of this rock is similar to those of FANs, but has a slightly high K content [3]. Here, we report additional chemical compositions of Dhofar 1428 for trace elements, rare earth elements (REEs) and platinum group elements (PGEs; Ru, Rh, Pd, Os, Ir, Pt), and discuss the chemical characteristics of Dhofar 1428 lunar meteorite.

Results and Discussion: REEs and PGEs were analyzed by inductively coupled plasma mass spectrometry.

The REE abundances of Dhofar 1428 are ~ CI x 10 and slightly depleted in HREEs. The REE abundances of Dhofar 1428 are within the range of feldspathic regolith breccias, being consistent with the major element data and petrological observation [2,3]. The REE abundances of Dhofar 1428 are slightly higher than those of FANs [3]. Coupled with the high K abundance, Dhofar 1428 seems to contain small amounts of KREEP materials. This is consistent with the presence of KREEP-like clasts found in a polished thin section made from an adjacent chip for the chemical analysis [3]. On the basis of the chemical data, Dhofar 1428 is a mixture ~98 wt%-FAN plus ~2 wt%-KREEP using the values of FAN ([4]; 60025) and KREEP ([5]; SaU 169 KREEP clast).

The PGE abundances of Dhofar 1428 are ~ CI x 0.01 and are not fractionated. The flat PGE pattern implies that the contaminants are mainly chondritic materials. The plots of Pt/Pd vs. Pt/Rh and Pd/Ir vs. Rh/Ir show that compositions of contaminants are similar to those of carbonaceous chondrites, CM and CK. This is consistent with the fact that CM-like materials are main source of the elevated siderophile abundances in Apollo mature soils [6].

We conclude that Dhofar 1428 is mostly composed of FAN materials, ~2 wt%-KREEP materials and ~1 wt%-CM chondritic materials.

References: [1] Bunch T. E. et al. 2006. *Meteoritics & Planetary Science* 41:A31. [2] Zhang A. C. et al. 2009. *Meteoritics & Planetary Science* 44:A226. [3] Hidaka Y. et al. 2009. *Meteoritics & Planetary Science* 44:A91. [4] Nakamura N. et al. 1973. Proceedings of the Fourth Lunar Science Conference. pp. 1445-1465. [5] Gnos E. et al. 2004. *Science* 305:657-660. [6] Wasson J. T. et al. 1975. *The Moon* 13:121-141.