GEOCHEMICAL STUDY OF SOME HOWARDITES AND POLYMICT EUCRITES. B. S. Wee¹, A. Yamaguchi² and M. Ebihara¹. ¹Department of Chemistry, Tokyo Metropolitan University, Tokyo 192-0397, Japan. E-mail: wee@ed.tmu.ac.jp. ²National Institute of Polar Research, Tachikawa, Tokyo 190-8518, Japan.

Introduction: Howardites and polymict eucrites are polymict breccias composed of eucrites, diogenites and other lithologies [1, 2, 3]. Previous studies showed that howardites contain chondritic clasts [e.g., 4, 5]. Howardites and polymict eucrites may contain metals which are related to impactors [6, 7, 8]. On the basis of chemical composition and mineralogical data, we will discuss the provenance of projectile materials in these meteorites.

Methods: Interior chip samples of howardites (Kapoeta,21, Y-7308,120, Y-791573,40) and polymict eucrites (Y-75015,40, Y-74450,40, Y-792769,120) were homogenized for chemical composition analyses using PGA, INAA and ICP-MS. In addition, SEM and electron microprobe are used for direct identification of projectile materials.

Results and Discussion: Kapoeta,21 showed higher siderophile contents than other Kapoeta data from literatures [3, 4]. The Ni/Co, Ni/Ir, Co/Ir and Au/Ir values of Kapoeta,21 are similar to those of chondrites with concentrations of Co, Ni, Ir and Au approximately 10 times lower than chondrite values. On the basis of average chondritic values of Co, Ni, Ir and Au contents, it is estimated that Kapoeta,21 contains 7 to 10 wt% of chondritic projectiles. Textural observations showed that carbonaceous chondrites-like clasts and metal grains are distributed in a PTS made from a chip next to Kapoeta,21.

The Co, Ni, Ir and Au abundances in the polymict eucrites studied here are less variable within a factor of 2.5. Their siderophile elemental ratios are non-chondritic, suggesting other non-chondritic projectiles (e.g., iron meteorites). This is consistent with our previous study that polymict eucrites contain a variety of non-chondritic projectiles [8]. The current study implies that the HED parent body may have experienced multiple impact events caused by chemically variable projectiles.