JAPANESE ANTARCITC METEORITES: PAST, CURRENT, AND FUTURE.

A. Yamaguchi[1], N. Imae[1], M. Kimura[1], and T. Noguchi[1,2], [1]National Institute of Polar Research, Tokyo 190-8158, Japan (yamaguch@nipr.ac.jp), [2]Kyushu University, Fukuoka 819-0395, Japan

In December, 1969, an inland survey team of the 10th Japanese Antarctic Research Expedition (JARE-10) found a total of nine meteorites with at least five distinct types (E, H, L, CK chondrites, a diogenite) in the bare ice fields near the Yamato Mountains [1]. The discovery of Yamato meteorites led to systematic searches for meteorites in Antarctica that resulted in the recovery of a large number of meteorites. The success of meteorite expeditions stimulated the international community. By 2019, more than 38,000 Antarctic meteorites have been collected, comprising ~64% of world collections. The recovery of Antarctic meteorites led to expanding our understanding of the early Solar System and geologic history of the Moon and Mars. In addition, micrometeorites are collected from moraines and snow. These micrometeorites contain a large number of pristine types including possible cometary dust. Therefore, Antarctica is a treasure trove of extraterrestrial materials.

Although several sample-return missions are planned or on-going, meteorite studies are still important for planetary sciences. Meteorites represent the most diverse materials from the Solar System which provide the information of chemical and isotopic heterogeneity of the early Solar System. Secondary, meteorite collection has also provided material to complementary to sample-return missions. Centimeter scale samples provide a hint to understand lithologic types of small samples collected by missions (e.g., Hayabusa2). Finally, Antarctic meteorites were kept at low-temperature conditions on ice, collected by scientific teams and curated in institutions, which is especially important for organic chemistry.

JAREs comprising 24 parties, collected over 17,000 meteorites. About 11,600 meteorites have been classified so far. Recently, we published 6 issues of Meteorite Newsletter (Vol. 21-26) from 2012 to 2018 [2-7]. The total number of classified meteorites is 4,936. They include Yamato, Asuka, and Belgica meteorites collected by JARE as well as the Japan-Belgium joint expeditions (Asuka 09, 10, and 12 meteorites). Meteorites in Newsletters 21-26 include 53 carbonaceous chondrites (CM, CO, CV, CR, CH, CK, and ungrouped), 4 enstatite chondrites (EH and EL), 7 R chondrites, 196 HED meteorites, 7 ureilites, 10 primitive achondrites (acapulcoites, lodranites, and winonaite), 2 mesosiderites (A 09545 and A 10143 [3]), 1 angrite (A 12209 [5]), and 3 martian meteorites (shergottites) (Y 002192 and Y 002712 [4], and A 12325 [6]). We also published the bulk chemical compositions of 1,162 meteorites, including chondrites, HEDs, martian meteorites, and others, analyzed by the wet chemical method [8]. We are going to publish an issue Meteorite Newsletter including several hundred meteorites including some iron meteorites.

We attempt to continue the search for meteorites and micrometeorites in Antarctica for the next several years. Expedition to Nansen icefield for Asuka meteorites is planned. Expeditions to Yamato mountains will be difficult because of logistical and financial problems. We are going to make a proposal for the Yamato expeditions in Phase X (2022-2027). Micrometeorites are recovered from fresh snows in other areas (e.g., Dome Fuji) in Phase IX of JARE planned from 2016 to 2021 (JARE 58-63).

References: [1] Yosida M. (2010) *Polar Science* 3:272-284. [2] Yamaguchi A. et al. (2012) *Meteorite Newsletter* Vol 21, 33 pp. [3] Yamaguchi A. et al. (2013) *Meteorite Newsletter* Vol 22, 32 pp. [4] Yamaguchi A. et al. (2014) *Meteorite Newsletter* Vol 23, 16 pp. [5] Yamaguchi A. et al. (2015) *Meteorite Newsletter* Vol 24, 20 pp. [6] Yamaguchi A. et al. (2016) *Meteorite Newsletter* Vol 25, 25 pp. [7] Yamaguchi A. et al. (2018) *Meteorite Newsletter* Vol 26, 29 pp. [8] Kimura M. et al. (2018) *Polar Science* 15:24-28.