

### COMPREHENSIVE STUDIES OF THE HIROSHIMA H-CHONDRITE.

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**Introduction:** The Hiroshima meteorite penetrated the roof of the Distribution Center of EVERTH Co. Ltd., Hiroshima, Japan, and was discovered on Tuesday, Feb. 4th. First information was reported to Hiroshima Children's Museum, and this was identified as a meteorite by Yoneda at the National Science Museum [1]. Its size and mass are 5.8cm x 10.5cm x 4.6cm and 414g, respectively. Date of the fall has not been specified but Saturday, Feb. 1st is most likely because several people in Hiroshima observed a fireball around 22:30 on Feb. 1st [2]. In this paper, we report the results of comprehensive studies of this "fall" meteorite.

**Results:** The first characterization of the Hiroshima meteorite was carried out at the National Science Museum and RIKEN. This meteorite mainly consists of olivine of Fa17.0-18.7 and pyroxene of Fs15.7-18.6 with CaO 1.0-1.7 wt%, whereas clinopyroxenes are rare. Cosmogenic nuclides such as Al-26, Na-22, Mn-54, Sc-46, Co-56, Be-7, Cr-51, and V-48 are detected by gamma ray analysis [3].

Noble gases in Hiroshima meteorites were investigated at Laboratory for Earthquake Chemistry, University of Tokyo. The Ne-21 cosmic exposure age is c.a. 90Ma and estimated K-Ar ages are 4.55±0.23 Ga for stepwise heating method, and 4.24±0.23 Ga for total melting method [4]. Trapped heavy noble gas concentrations of <sup>36</sup>Ar, <sup>84</sup>Kr and <sup>132</sup>Xe are 27.82, 0.267 and 0.147 in 10<sup>9</sup>cm<sup>3</sup> STP/g, respectively [4].

Oxygen isotope analyses was performed at Institute for Study of the Earth's Interior, Okayama University, showing that the Δ<sup>17</sup>O is ~-0.65.

In-situ U-Pb dating of phosphates in Hiroshima meteorites was carried out using Sensitive High Resolution Ion Micro Probe (SHRIMP) at Hiroshima University. In-situ analyses of five phosphate grains resulted in a total Pb/U isochron age of 4.54 ± 0.07 Ga in <sup>238</sup>U/<sup>206</sup>Pb - <sup>207</sup>Pb/<sup>206</sup>Pb - <sup>204</sup>Pb/<sup>206</sup>Pb 3-D space (95% confidence limit).

All of these geochemical data suggest that the Hiroshima meteorite is a typical H5 chondrite.

We thank EVERTH Co. Ltd. for providing us with the Hiroshima meteorite sample.

**References:** [1] S. S. Russell et al. 2003. Meteoritical Bulletin, no. 87, MAPS 38, A189-A248. [2] Japan Fireball Network (JN) [http://www3.cnet.ne.jp/c-shimo/\(in Japanese only\)](http://www3.cnet.ne.jp/c-shimo/(in%20Japanese%20only)). [3] S. Yoneda et al. 2003. Abstracts of the 50<sup>th</sup> Annual Meeting of the Geochemical Society of Japan, 1P40 (in Japanese) [4] J. Park et al. 2003. GCA 67, A374.