

Origin of a lunar meteorite Asuka 881757: REE geochemistry. A. Masuda¹ and K. Takahashi²,
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A consortium study [1] has revealed that the Antarctic lunar meteorite Asuka 881757 is a new type of meteorites [2], distinct from Apollo lunar mare basalts. U-Th-Pb isotopic systematics [3] disclosed its unique characteristics in evolution and gave the oldest formation age.

The REE abundances precisely determined for Asuka 881757 shows a typical cumulate-type REE pattern [Fig. 1] when normalized against the chondrite [4]. The chondrite-normalized pattern of REE in lunar magma which had transiently coexisted with this cumulate in the course of evolution can be estimated by division by the bulk partition coefficients [5-7]. The resultant pattern thus estimated exhibits the melt-type pattern with very slight inclination [Fig. 2]. As compared with the Apollo lunar samples, the 'estimated' REE pattern is relatively similar to those from the Descartes region.

It is worthwhile to note that the resultant slope of pattern is somewhat but evidently gentler than those of the Apollo 16 samples and the 'estimated' REE concentrations are lower than those of these rocks.

The transient melt corresponding to the stage of formation of the Asuka rock under consideration turns out to have the least Eu anomaly. It is reasonable that the lunar gabbro, Asuka 881757, represents the earlier-stage cumulate for the primary lunar magma. Further it can be inferred that the meteorite in question was ejected from the deep-seated layer at non-mare area like the Descartes region.

References: [1] Yanai K. et al. (1993) LPS XXIV, 1555-1556. [2] Yanai K. (1991) Proc. Lunar Sci., **21**, 317-324. [3] Misawa K. et al. (1992) Proc. NIPR Symp. Antarct. Meteorites, **5**, 3-22. [4] Masuda A. et al. (1973) GCA, **37**, 239-248. [5] Masuda A. and Matsui Y. (1966) GCA, **30**, 239-250. [6] Masuda A. (1972) Nature, **235**, 132-133. [7] Masuda A. (1979) J. Earth Sci. Nagoya Univ., **26/27**, 75-92.

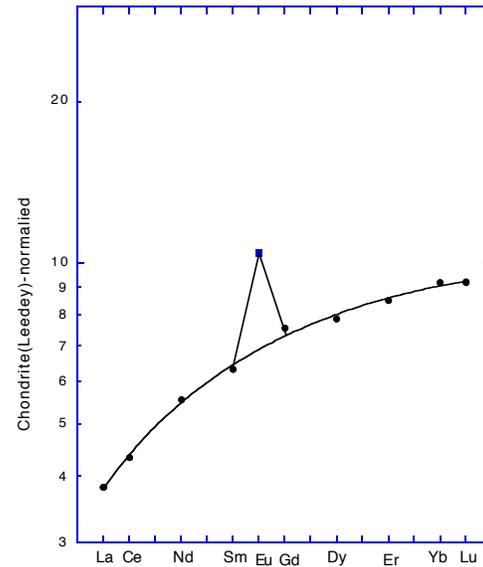


Fig. 1

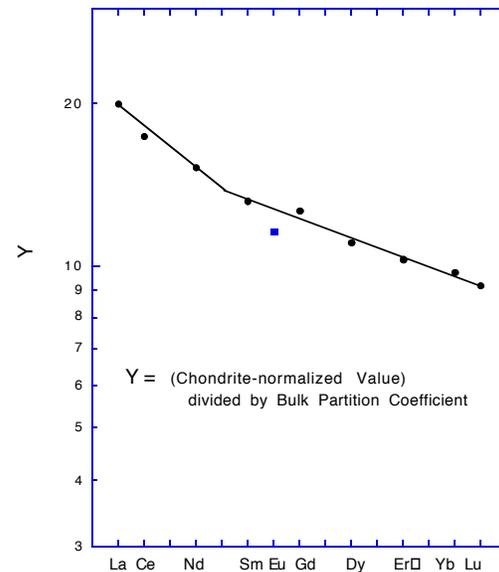


Fig. 2