

# Chemical and chronological characteristics of perovskite in the Allende type-A CAI

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Chemical and isotopic studies of Calcium-Aluminium rich inclusions (CAIs) of carbonaceous chondrites are important to understand thermal structures in the nebula and chemical evolution of early solar system. In our early work, systematic Mg isotopic measurements of the Allende type-A CAI provided higher  $^{26}\text{Al}/^{27}\text{Al}$  ratio,  $(8.0 \pm 0.9) \times 10^{-5}$ , in perovskite than those in other minerals ( $< 5.0 \times 10^{-5}$ ) such as melilite, anorthite, hibonite and grossular. Therefore, in this study, we focus mainly on perovskite in the CAI, and report chemical and chronological characteristics of the perovskite studied from REE abundances and Mg isotopic composition using a Sensitive High Resolution Ion MicroProbe (SHRIMP).

A compact type-A CAI with 0.5 cm-diameter was recovered from Allende. The CAI consists of melilite-rich mantle and 50  $\mu\text{m}$ -wide Wark-Lovering rim (WLR). Several fine perovskite grains (less than 10  $\mu\text{m}$ -diameter) were found in both interior and WLR. As shown in the following figure, C1-chondrite normalized REE patterns are distinctly different between interior and WLR grains. WLR perovskite grains show fractionation affecting the ultrarefractory elements from Gd to Tm and Lu, while interior grains do not clearly show. This suggests redistribution of REE by thermal event. The Mg isotopic measurements of these two types of perovskite are now being carried out to find chronological difference between them.

