

Fluffy type A CAI 中メリライト結晶の酸素同位体ゾーニングと結晶成長の関係 Relationship between oxygen isotope zoning and crystal growth in melilite crystals from fluffy type A CAI

片山 樹里¹, 伊藤 正一^{1*}, 坂本 尚義¹
Juri Katayama¹, Shoichi Itoh^{1*}, Hisayoshi Yurimoto¹

¹ 北海道大学大学院理学研究院

¹Department of Natural History Sciences, Hokkaido University

The oxygen isotopic microdistributions within melilite measured using in situ secondary ion mass spectrometry correspond to the chemical zoning profiles in single melilite crystals of a fluffy Type A Ca-Al-rich inclusion (CAI) of reduced CV3 Vigarano meteorite. The melilite crystals show chemical reverse zoning within an individual single-crystal from the akermanite-rich core to the akermanite-poor rim. The composition changes continuously with the crystal growth. The zoning structures suggest that the melilite grew in a hot nebular gas by condensation with decreasing pressure. The oxygen isotopic composition of melilite also changes continuously from ¹⁶O-poor to ¹⁶O-rich with the crystal growth. These observations suggest that the melilite condensation proceeded with change consistent with an astrophysical setting around the inner edge of a protoplanetary disk where both ¹⁶O-rich solar coronal gas and ¹⁶O-poor dense protoplanetary disk gas could coexist. Fluffy Type A CAIs could have been formed around the inner edge of the protoplanetary disk surrounding the early sun.

キーワード: FTA, SIMS, oxygen isotope, CAI

Keywords: FTA, SIMS, oxygen isotope, CAI