

Sr ISOTOPE SYSTEMATICS OF THE ALLENDE CAIs A63 AND SJ101. Y. Amelin¹, P. Koefoed¹, Q.-Z. Yin² and K. Yamashita³, ¹Research School of Earth Sciences, The Australian National University, Canberra ACT 0200, Australia, email yuri.amelin@anu.edu.au, ²Dept. Earth & Planet. Sci., University of California at Davis, USA, ³ Graduate School of Natural Science and Technology, Okayama University.

Introduction: Sr isotopic composition of Ca, Al-rich Inclusions (CAIs), refractory objects found in chondrites, is commonly accepted as the best available proxy of the initial $^{87}\text{Sr}/^{86}\text{Sr}$ of the Solar System. However, not all CAIs are equally suitable for determination of the initial $^{87}\text{Sr}/^{86}\text{Sr}$. CAIs from the CV chondrite Allende CAIs have been most extensively studied, and show considerable variations in the degree of disturbance of the Rb-Sr system [1-3]. CAIs from CV chondrite NWA 4502 with different history of secondary processes studied recently [4] showed the evidence of extensive exchange of Sr with terrestrial environments. Here we report Rb-Sr isotopic data from two CAIs from Allende: a recently discovered CAI A63 1-C-1 [5] (referred to as A63 hereafter), and FoB-type CAI SJ101 [6 and references therein]. The aim of this study is to evaluate the variations in the open Rb-Sr system behaviour among the Allende CAIs, and to identify the best CAIs for determination of the initial $^{87}\text{Sr}/^{86}\text{Sr}$, as well as $^{84}\text{Sr}/^{86}\text{Sr}$ isotopic ratios.

Methods: Rb and Sr concentration measurements and Sr isotopic analyses were performed on solutions after Pb and U extraction, using the same procedures as [5].

Results: Similarly to [5], we found that Sr from both CAIs is easily extracted from the CAIs by mild leaching. However, unlike NWA 4502 CAIs [5] and most previously studied Allende CAIs, the CAI A63 contains uniform initial $^{87}\text{Sr}/^{86}\text{Sr}$ in all dissolution steps, which yields weighted average initial $^{87}\text{Sr}/^{86}\text{Sr}$ of 0.698951 ± 0.000007 (0.0011%) on 9 leaching steps of three mineral fractions. The same fractions yielded $\epsilon^{84}\text{Sr} = +0.88 \pm 0.14$, consistent with other reports [3,5,7,8]. Preliminary data for the CAI SJ 101 show higher content of Rb in the early leaching steps, making this CAI less suitable than A63 for determination of the initial $^{87}\text{Sr}/^{86}\text{Sr}$.

Discussion: Our data show that the degree of disturbance of the Rb-Sr system varies considerably among the Allende CAIs. The CAI A63 has well Rb-Sr and U-Pb [5] isotopic systems, and is well suited for the studies of isotopic and geochemical systems that are sensitive to the secondary processes.

References: [1] Gray C.M. et al. (1973) *Icarus* 20, 213 [2] Podosek F.A. et al. (1991) *GCA* 55, 1083 [3] Hans U. et al. (2013) *EPSL*. 374, 204 [4] Amelin Y. et al. (2014) *Goldschmidt Conference*, #5244. [5] Yin Q.-Z. et al. (2015) This conference, #5088. [6] Amelin, Y. et al. (2010) *EPSL*. 300, 343. [7] Moynier F. et al. (2012) *ApJ*. 758, 45 (7pp) [8] Paton C. et al. (2013) *ApJ*. 763, L40 (6pp).