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# Evidence of presolar SiC in the Allende Curious Marie calcium–aluminium-rich inclusion

O. Pravdivtseva <sup>1\*</sup>, F. L. H. Tissot <sup>2</sup>, N. Dauphas <sup>3</sup> and S. Amari<sup>1</sup>

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<sup>1</sup>Physics Department and McDonnell Center for the Space Sciences, Washington University, Saint Louis, MO, USA. <sup>2</sup>The Isotoparium, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA, USA. <sup>3</sup>Origins Laboratory, Department of the Geophysical Sciences and Enrico Fermi Institute, The University of Chicago, Chicago, IL, USA. \*e-mail: [olga@physics.wustl.edu](mailto:olga@physics.wustl.edu)

## Supplementary Information for

### Evidence of presolar SiC in the Allende *Curious Marie* calcium aluminum rich inclusion.

O. Pravdivtseva<sup>1</sup>, F. L. H. Tissot<sup>2</sup>, N. Dauphas<sup>3</sup>, & S. Amari<sup>1</sup>.

<sup>1</sup>Physics Department and McDonnell Center for the Space Sciences, Washington University,  
Saint Louis, MO 63130, USA

<sup>2</sup>The Isotoparium, Division of Geological and Planetary Sciences, California Institute of  
Technology, Pasadena, CA 91125, USA

<sup>3</sup>Origins Laboratory, Department of the Geophysical Sciences and Enrico Fermi Institute, The  
University of Chicago, Chicago, IL 60637, USA

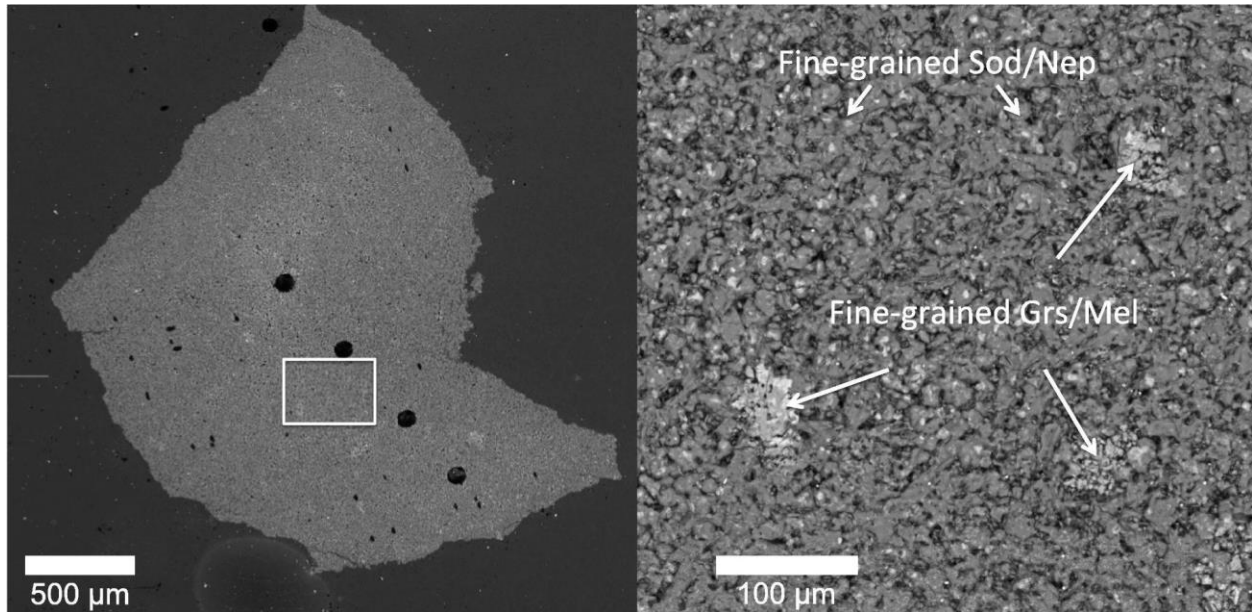
Correspondence to: [olga@physics.wustl.edu](mailto:olga@physics.wustl.edu)

#### **This PDF file includes:**

Supplementary Figure 1

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**Supplementary Figure 1.** Backscattered electron images of the *Curious Marie* CAI. The region outlined in left panel is shown in greater detail to the right. Fine-grained sodalite and nepheline are widely distributed in this heavily altered CAI with a small amount of grossular and melilite. The large dark circles in panel A result from prior laser ablation analyses. Mineral names: sod = sodalite; nep = nepheline; grs = grossular; mel = melilite.



**Supplementary Table 1.** Xenon in the Allende *Curious Marie* CAI. Stated errors are statistical  $1 \sigma$ . Isobaric interferences, blank contributions and instrumental mass discrimination were considered as systematical errors, they were corrected for and correlated error propagated.

T, °C	$^{132}\text{Xe} \times 10^{-10}$ $\text{cm}^3 \text{STP/g}$	$^{132}\text{Xe} \equiv 100$							
		$^{124}\text{Xe}$	$^{126}\text{Xe}$	$^{128}\text{Xe}$	$^{129}\text{Xe}$	$^{130}\text{Xe}$	$^{131}\text{Xe}$	$^{134}\text{Xe}$	$^{136}\text{Xe}$
800	0.159	0.385 0.037	0.340 0.037	10.09 0.21	322.2 2.2	14.92 0.24	79.42 0.70	39.34 0.41	33.39 0.41
1000	0.172	0.434 0.049	0.425 0.030	9.25 0.33	1022.7 5.3	13.48 0.19	73.27 0.54	46.11 0.50	42.56 0.44
1100	0.191	0.470 0.031	0.440 0.043	11.59 0.20	3979 22	12.17 0.19	67.11 0.64	57.67 0.53	56.70 0.52
1150	0.131	0.460 0.047	0.400 0.041	27.10 0.40	17140 110	13.63 0.20	64.93 0.90	61.55 0.99	60.82 0.77
1200	0.119	0.423 0.043	0.602 0.058	44.65 0.69	31410 200	16.79 0.43	66.34 0.61	58.91 0.74	59.88 0.79
1250	0.135	0.467 0.052	0.684 0.040	119.0 0.87	103700 490	30.35 0.42	65.88 0.367	60.73 0.58	59.59 0.56
1300	0.239	0.474 0.037	0.709 0.051	57.41 0.40	46530 230	21.36 0.26	69.71 0.57	54.85 0.54	52.93 0.51
1350	0.096	0.546 0.050	0.634 0.066	35.90 0.41	25610 160	16.17 0.33	64.15 0.93	59.31 0.57	57.81 0.90
1400	0.028	0.45 0.11	0.68 0.16	44.0 1.5	30290 270	14.25 0.51	62.1 1.6	67.6 1.1	69.3 1.4
1450	0.009	0.49 0.20	1.12 0.31	28.4 1.6	3841 58	7.19 0.63	52.9 2.6	82.3 3.7	82.6 3.4
1500	0.003	1.33 0.40	1.23 0.47	58.5 4.3	2422 70	8.0 1.3	64.3 4.0	87.6 5.1	93.9 4.8
1550	0.002	0.02 0.32	0.01 0.50	91.5 5.5	1242 67	5.5 1.8	53.2 4.6	68.6 4.7	76.9 5.5
1600	0.002	0.25 0.31	0.38 0.55	114.7 8.1	640 43	11.3 1.3	77.5 4.6	560.0 4.4	64.5 5.1
1650	0.002	0.41 0.30	0.49 0.30	79.9 6.1	569 32	12.0 1.2	72.6 4.2	50.7 3.0	47.0 3.2
1700	0.004	0.44 0.23	0.52 0.32	45.5 4.1	372 21	13.9 2.2	66.2 5.3	47.6 3.0	40.6 2.9
1770	0.013	0.36 0.11	0.31 0.13	22.5 1.4	249.3 6.3	13.13 0.70	74.22 1.9	47.3 1.9	42.1 1.3

Total	1.306	0.455 0.015	0.535 0.016	38.52 0.17	27142 93	17.101 0.096	69.12 0.24	54.62 0.21	52.76 0.20
1500 blank	0.0004	-3.0 2.0	0.2 1.1	30 33	140 25	6.7 3.2	91 14	30 6	28 6

**Supplementary Table 2.** Krypton in the Allende *Curious Marie* CAI. Stated errors are statistical  $1\sigma$ .

T, °C	$^{84}\text{Kr} \times 10^{-10}$ cm <sup>3</sup> STP/g	$^{84}\text{Kr} \equiv 100$				
		$^{78}\text{Kr}$	$^{80}\text{Kr}$	$^{82}\text{Kr}$	$^{83}\text{Kr}$	$^{86}\text{Kr}$
800	0.475	0.806 0.038	15.46 0.17	24.73 0.20	20.28 0.24	30.45 0.24
1000	0.386	0.945 0.043	239.73 0.93	110.17 0.52	21.64 0.19	30.45 0.27
1100	0.125	1.412 0.078	1345.6 7.5	553.2 3.9	21.89 0.31	30.94 0.59
1150	0.086	1.68 0.10	927.5 9.2	380.4 4.2	21.27 0.47	30.72 0.63
1200	0.094	1.69 0.12	464.3 2.6	197.1 1.6	20.33 0.35	30.43 0.45
1250	0.129	2.03 0.12	335.5 1.5	150.33 0.99	21.12 0.38	31.65 0.45
1300	0.143	1.86 0.11	66.36 0.75	43.77 0.48	21.49 0.26	31.64 0.48
1350	0.093	1.555 0.088	45.24 0.49	35.07 0.33	20.32 0.37	30.95 0.53
1400	0.039	2.28 0.27	51.88 0.63	40.2 1.1	22.06 0.64	30.70 0.64
1450	0.007	6.25 0.77	41.0 1.4	33.2 2.1	24.7 1.5	28.3 1.5
1500	0.003	19.0 2.0	52.7 2.7	39.7 1.7	19.7 1.9	32.4 2.0
1550	0.003	2.78 0.71	49.9 2.8	35.0 2.7	20.9 1.6	34.8 2.0
1600	0.005	11.9 1.3	39.4 1.9	32.5 1.9	20.5 1.3	29.3 2.3
1650	0.006	5.10 0.46	22.36 0.55	17.94 0.71	22.56 0.65	31.22 0.69

1700	0.010	4.21 0.46	13.20 0.63	22.8 1.0	20.1 1.4	32.0 1.5
1770	0.041	1.97 0.15	12.61 0.46	23.82 0.78	20.91 0.55	31.72 0.97
Total	1.658	1.416 0.025	272.5 1.2	123.43 0.52	21.04 0.10	30.79 0.13
1500 blank	0.002	1.0 2.0	3.5 1.2	26.0 1.4	21.8 0.8	32.4 1.5

**Supplementary Table 3.** Neon in the Allende *Curious Marie* CAI after correction for blank. Stated errors are statistical  $1 \sigma$ . Ne isotopic composition above 1450°C was consistent with the 1200°C, 1500°C and 1780°C procedural blanks. The 1780°C blank was subtracted from all temperature steps resulting in a slight overcorrection (negative  $^{20}\text{Ne}$  concentrations in Table 3) for the extractions above 1450°C.

T, °C	$^{20}\text{Ne} \times 10^{-10}$ $\text{cm}^3 \text{STP/g}$	$^{20}\text{Ne} \equiv 100$	
		$^{21}\text{Ne}$	$^{22}\text{Ne}$
<b>800</b>	73.58	118.60 0.19	208.89 0.33
<b>1000</b>	11.25	85.83 0.44	140.94 0.52
<b>1100</b>	6.56	89.23 0.55	140.1 1.3
<b>1150</b>	5.18	93.60 0.63	138.1 1.2
<b>1200</b>	4.32	106.07 0.72	151.6 1.2
<b>1250</b>	4.54	112.46 0.79	162.4 1.3
<b>1300</b>	6.44	107.06 0.48	160.52 0.93
<b>1350</b>	3.76	124.23 0.84	190.7 1.6
<b>1400</b>	4.00	118.60 0.92	183.1 1.5
<b>1450</b>	2.05	131.3 1.5	208.4 2.9

1500	-0.12	22 10	35 11
1550	-0.53	5.9 1.0	5.1 7.0
1600	-0.20	5.3 3.4	12 19
1650	-0.26	8.3 2.6	12 14
1700	-0.28	11.3 2.3	13 13
1770	3.0	9.29 0.37	12.3 1.3
Total	123.0	110.31 0.17	184.39 0.30
1500 (blank)	2.2	8.60 0.21	12.0 1.2

Only temperature steps shown in bold were used in the calculations and are shown in Figure 3.

**Supplementary Table 4.** Ar in the Allende *Curious Marie* CAI. Stated errors are statistical 1  $\sigma$ .

T, °C	$^{20}\text{Ne} \times 10^{-8}$ cm <sup>3</sup> STP/g	$^{36}\text{Ar} \equiv 1$	
		$^{38}\text{Ar}$	$^{40}\text{Ar}$
800	4726	0.0830 0.0041	9762 148
1000	13073	0.0199 0.0004	2699 13
1100	211	0.1064 0.0003	2412 13
1150	132	0.1428 0.0005	2384 6
1200	60	0.1373 0.0019	1286 7
1250	31	0.3855 0.0039	1549 11
1300	39	0.3459 0.0042	981 7

1350	17	0.3097 0.0049	1323 16
1400	4.5	0.3821 0.0110	1083 18
1450	3.6	0.5301 0.0144	245.7 4.8
1500	3.3	0.3512 0.0057	249.7 2.6
1550	3.5	0.2494 0.0038	266.2 2.4
1600	4.3	0.1969 0.0029	268.9 1.9
1650	4.7	0.2000 0.0028	270.3 1.6
1700	5.5	0.2025 0.0028	271.4 1.8
1770	14	0.2071 0.0020	280.2 1.6
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1500 blank	485	0.2223 0.0034	272.2 2.2
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Total	18332	0.1716 0.0068	982.7 2.8
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