

Supporting Information

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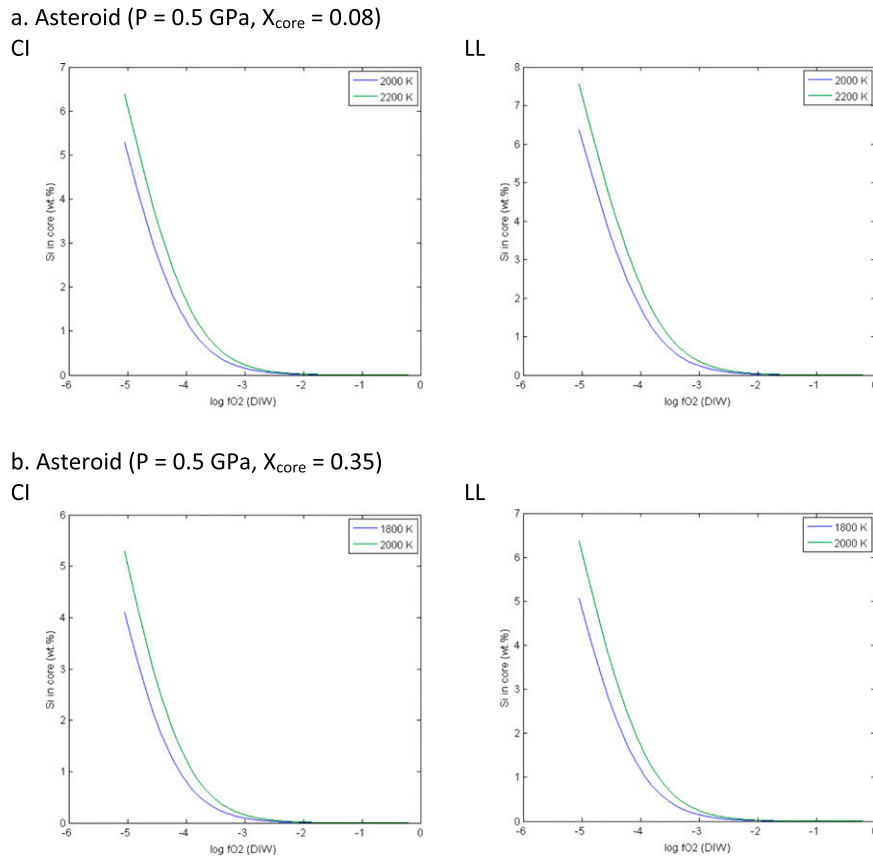


Fig. S1. Modeled oxygen fugacity (expressed as deviation from the iron-wüstite buffer) during metal-silicate equilibration as a function of Si content in the core for different angrite parent body scenarios, including (A) asteroid with 8% core by mass and (B) asteroid with 35% core by mass and corresponding estimates of pressure (P), core mass fraction (X_{core}), and temperature. Elemental Si abundances in the APB are modeled for two end-member cases: CI chondrite composition (10 wt% Si) and LL chondrite composition (18 wt% Si). A full description of the Si core-mantle partitioning model is given in ref. 1.

1. Pringle EA, Savage PS, Badro J, Barrat J-A, Moynier F (2013) Redox state during core formation on asteroid 4-Vesta. *Earth Planet Sci Lett* 373:75–82.

Table S1. Silicon isotope data for standard and meteorite samples relative to terrestrial basalt BHVO-2 as the bracketing standard

Sample	Group	$\delta^{29}\text{Si}_{\text{BHVO-2}}$	2 SD	2 SE	$\delta^{30}\text{Si}_{\text{BHVO-2}}$	2 SD	2 SE	n
NBS28		0.15	0.05	0.02	0.28	0.07	0.03	7
Angrites								
D'Orbigny	Quenched	0.03	0.04	0.01	0.04	0.04	0.01	8
NWA4590	Plutonic	0.03	0.05	0.02	0.06	0.06	0.02	7

$\delta^{29}\text{Si}_{\text{BHVO-2}}$ and $\delta^{30}\text{Si}_{\text{BHVO-2}}$ are the Si ratios expressed relative to BHVO-2 as the bracketing standard. 2 SD, $2 \times \text{SD}$; 2 SE, $2 \times \text{SD}/\sqrt{n}$, where n is number of measurements.

Table S2. Calculated Si in the core for angrite parent body models

Parent body model	T, K	P, GPa	X_{core}	Fractionation factor	Si in core, wt%
Asteroid	1,800	0.5	0.35	Shahar et al., 2011 (1)	2.7 ± 0.8
				Hin et al., 2014 (2)	4.4 ± 1.3
Asteroid	2,200	0.5	0.08	Shahar et al., 2011 (1)	17.1 ± 4.9
				Hin et al., 2014 (2)	28.8 ± 8.3

1. Shahar A, et al. (2011) High-temperature Si isotope fractionation between iron metal and silicate. *Geochim Cosmochim Acta* 75(2):7688–7697.

2. Hin RC, Fitoussi C, Schmidt MW, Bourdon B (2014) Experimental determination of the Si isotope fractionation factor between liquid metal and liquid silicate. *Earth Planet Sci Lett* 387: 55–66.