Table S1: The Li- and O-isotope compositions of chondrule constituents in the Sahara 97103 EH3 chondrite. Error is 1σ.

chd	phase	compo	Li spot	δ^7Li	σ_δ	[Li]	σ_{ab}	O spot	δ^{18}O	σ_{18}	δ^{17}O	σ_{17}	Δ^{17}O	σ_Δ
I6p	enstatite	$En_{98.8}Fs_{0.9}Wo_{0.2}$	liso-en-I6p@4779	0.60	0.56	4.79	0.40	oxy-opx-I6p@8714	5.49	0.2	3.43	0.4	0.56	0.2
		$En_{98.7}Fs_{1.0}Wo_{0.3}$	liso-en-I6p@4780	0.28	0.49	6.26	0.24	oxy-opx-I6p@8715	5.48	0.2	3.22	0.3	0.37	0.2
		$En_{98.8}Fs_{0.9}Wo_{0.4}$	liso-en-I6p@4781	1.25	0.44	3.75	0.12	oxy-opx-I6p@8716	5.81	0.2	4.01	0.4	1.00	0.2
		$En_{98.8}Fs_{0.7}Wo_{0.4}$	liso-en-I6p@4782	0.05	0.45	6.07	0.21	oxy-opx-I6p@8717	5.44	0.1	3.08	0.4	0.25	0.2
		$En_{98.5}Fs_{1.0}Wo_{0.5}$	liso-en-I6p@4783	-0.77	0.48	3.24	0.12	oxy-opx-I6p@8718	5.34	0.1	3.53	0.3	0.75	0.2
		$En_{98.9}Fs_{0.7}Wo_{0.4}$	liso-en-I6p@4784	-0.47	0.52	1.81	0.23	oxy-opx-I6p@8713	5.78	0.2	3.21	0.4	0.20	0.3
		$En_{98.7}Fs_{0.7}Wo_{0.7}$	liso-en-I6p@4785	0.35	0.68	2.17	0.10	-	-	-	-	-	-	-
	glass	$An_{1.2}Ab_{94.3}Or_{4.5}$	liso-gl-I6p@4900	1.10	3.00	0.57	0.03	oxy-gl-I6p@9160	7.92	0.1	5.54	0.3	1.42	0.2
		$An_{0.3}Ab_{97.4}Or_{2.3}$	liso-gl-I6p@4901	-3.30	3.20	1.88	0.21	oxy-gl-I6p@9159	8.81	0.1	5.95	0.3	1.37	0.2
		$An_0Ab_{92.7}Or_{7.3}$	-	-	-	-	-	oxy-gl-I6p@9161	8.00	0.1	5.15	0.3	0.99	0.2
		$An_{1.9}Ab_{92}Or_{6.1}$	-	-	-	-	-	oxy-gl-I6p@9162	7.25	0.2	4.49	0.3	0.73	0.2
		$An_{1.1}Ab_{91.7}Or_{7.1}$	-	-	-	-	-	oxy-gl-I6p@9163	5.60	0.2	3.84	0.3	0.92	0.2
		$An_{1.3}Ab_{90.4}Or_{8.3}$	-	-	-	-	-	oxy-gl-I6p@9164	7.65	0.2	4.60	0.3	0.62	0.2
	cristobalite	-	-	-	-	-	-	oxy-SiO2-I6p@9234	8.83	0.1	4.94	0.4	0.35	0.2
		-	-	-	-	-	-	oxy-SiO2-I6p@9230	5.69	0.2	3.40	0.3	0.45	0.2
		-	-	-	-	-	-	oxy-SiO2-I6p@9231	8.24	0.2	4.64	0.3	0.37	0.2
		-	-	-	-	-	-	oxy-SiO2-I6p@9232	10.49	0.1	5.61	0.3	0.17	0.2
		-	-	-	-	-	-	oxy-SiO2-I6p@9233	7.47	0.2	3.39	0.3	-0.49	0.2
D6a-1	enstatite	$En_{96.6}Fs_{3.2}Wo_{0.2}$	liso-en-D6a@4717	-2.50	1.10	1.36	0.06	-	-	-	-	-	-	-
		$En_{96.7}Fs_3Wo_{0.3}$	liso-en-D6a@4718	-0.30	1.10	0.70	0.07	oxy-opx-D6a@8721	5.32	0.2	3.15	0.4	0.38	0.3
		$En_{96.8}Fs_{2.9}Wo_{0.3}$	liso-en-D6a@4719	-1.20	1.10	0.72	0.05	oxy-opx-D6a@8733	5.97	0.2	3.24	0.4	0.14	0.3
		$En_{96.7}Fs_{2.9}Wo_{0.4}$	liso-en-D6a@4720	-3.79	0.87	1.73	0.11	oxy-opx-D6a@8722	5.64	0.2	2.08	0.5	-0.85	0.3
		$En_{96.9}Fs_{2.7}Wo_{0.4}$	liso-en-D6a@4721	-5.07	0.88	0.94	0.06	oxy-opx-D6a@8734	6.01	0.2	3.27	0.3	0.15	0.2
		$En_{96.8}Fs_{2.9}Wo_{0.3}$	liso-en-D6a@4722	-5.20	1.10	0.77	0.05	oxy-opx-D6a@8735	5.54	0.2	3.28	0.4	0.40	0.2
	glass	$An_0Ab_{94.3}Or_{5.7}$	-	-	-	-	-	oxy-gl-D6a@9165	7.32	0.2	4.03	0.4	0.22	0.2
		$An_{2.7}Ab_{94.0}Or_{3.3}$	-	-	-	-	-	oxy-gl-D6a@9166	5.58	0.2	3.31	0.4	0.40	0.3
		$An_{4.2}Ab_{93.5}Or_{2.3}$	-	-	-	-	-	oxy-gl-D6a@9167	5.87	0.1	2.87	0.4	-0.18	0.2
		$An_0Ab_{98.5}Or_{1.5}$	-	-	-	-	-	oxy-gl-D6a@9168	7.38	0.1	5.23	0.3	1.39	0.2
		$An_{1.9}Ab_{93.1}Or_{5.0}$	-	-	-	-	-	oxy-gl-D6a@9169	6.20	0.2	3.32	0.3	0.09	0.2
	cristobalite	-	-	-	-	-	-	oxy-SiO2-D6a@9238	6.39	0.1	3.43	0.4	0.11	0.2
		-	-	-	-	-	-	oxy-SiO2-D6a@9236	8.13	0.2	4.86	0.3	0.64	0.2
		-	-	-	-	-	-	oxy-SiO2-D6a@9237	5.22	0.2	2.69	0.3	-0.03	0.3
		-	-	-	-	-	-	oxy-SiO2-D6a@9239	6.70	0.2	3.31	0.4	-0.17	0.2
D6a-0	enstatite	$En_{96.3}Fs_{3.3}Wo_{0.5}$	liso-en-D6a@4723	1.20	1.00	0.83	0.11	oxy-opx-D6a@8736	5.64	0.1	3.22	0.4	0.29	0.3
		$En_{96.6}Fs_{3.1}Wo_{0.3}$	liso-en-D6a@4724	-3.71	0.81	0.51	0.05	-	-	-	-	-	-	-

Table S1: Continued

chd	phase	compo	Li spot	δ^7Li	σ_δ	[Li]	σ_{ab}	O spot	δ^{18}O	σ_{18}	δ^{17}O	σ_{17}	Δ^{17}O	σ_Δ
		$En_{98.2}Fs_{1.5}Wo_{0.3}$	liso-en-D6a@4725	-1.01	0.68	3.66	0.27	oxy-opx-D6a@8738	6.10	0.2	3.27	0.5	0.09	0.4
		$En_{98.2}Fs_{0.8}Wo_{1}$	liso-en-D6a@4726	-3.90	0.86	2.48	0.17	oxy-opx-D6a@8741	7.01	0.2	3.49	0.3	-0.16	0.3
		$En_{98}Fs_{1.7}Wo_{0.2}$	liso-en-D6a@4727	-0.60	1.00	1.26	0.07	oxy-opx-D6a@8739	6.08	0.2	3.83	0.3	0.67	0.2
	pyroxene (FeO-rich)	$En_{92.8}Fs_{6.7}Wo_{0.5}$	-	-	-	-	-	oxy-opx-D6a@8743	5.76	0.2	3.51	0.4	0.52	0.3
		$En_{90.6}Fs_{7.3}Wo_{2.1}$	-	-	-	-	-	oxy-opx-D6a@8744	5.51	0.2	3.31	0.3	0.44	0.3
	cristobalite	-	-	-	-	-	-	oxy-SiO2-D6a@9235	10.80	0.1	5.16	0.3	-0.45	0.2
D3g	enstatite	$En_{98.7}Fs_{1.1}Wo_{0.2}$	liso-en-D3g@4761	-1.00	0.67	2.79	0.07	oxy-opx-D3g@8782	5.97	0.2	3.03	0.4	-0.07	0.3
		$En_{98.9}Fs_{0.8}Wo_{0.4}$	liso-en-D3g@4762	-3.77	0.72	1.96	0.18	oxy-opx-D3g@8778	5.86	0.2	3.56	0.3	0.51	0.3
		$En_{98.8}Fs_{0.8}Wo_{0.4}$	liso-en-D3g@4763	-2.08	0.54	2.91	0.39	oxy-opx-D3g@8777	5.30	0.2	3.01	0.4	0.25	0.3
		$En_{98.7}Fs_{0.9}Wo_{0.4}$	liso-en-D3g@4764	-2.25	0.55	2.52	0.20	oxy-opx-D3g@8776	6.35	0.2	2.26	0.4	-0.68	0.2
		$En_{98.9}Fs_{0.7}Wo_{0.4}$	liso-en-D3g@4765	-0.44	0.59	1.76	0.12	oxy-opx-D3g@8775	5.75	0.2	3.06	0.3	0.07	0.3
		$En_{98.7}Fs_{0.7}Wo_{0.5}$	liso-en-D3g@4766	-5.70	0.76	1.71	0.12	oxy-opx-D3g@8779	5.47	0.2	2.76	0.4	-0.09	0.3
		$En_{98.4}Fs_{0.7}Wo_{0.9}$	liso-en-D3g@4767	3.24	0.64	19.00	5.82	oxy-opx-D3g@9341	7.42	0.1	2.30	0.3	-1.56	0.2
		$En_{98.7}Fs_{0.8}Wo_{0.4}$	liso-en-D3g@4768	-2.30	1.10	2.38	0.18	-	-	-	-	-	-	-
		$En_{98.8}Fs_{0.9}Wo_{0.3}$	-	-	-	-	-	oxy-opx-D3g@8780	6.02	0.2	3.33	0.3	0.20	0.3
		$En_{98.9}Fs_{0.7}Wo_{0.4}$	-	-	-	-	-	oxy-opx-D3g@8783	6.01	0.2	3.03	0.3	-0.10	0.2
		$En_{99}Fs_{1}Wo_{0}$	-	-	-	-	-	oxy-opx-D3g@9342	7.23	0.1	3.08	0.3	-0.68	0.3
		$En_{97.5}Fs_{1.7}Wo_{0.8}$	-	-	-	-	-	oxy-opx-D3g@8781	6.1	0.20	3.5	0.40	0.3	0.2
		$En_{97.3}Fs_{1.9}Wo_{0.8}$	-	-	-	-	-	oxy-opx-D3g@8784	5.98	0.2	3.39	0.3	0.28	0.3
	olivine	$Fo_{99.6}Fa_{0.4}$	liso-ol-D3g@4854	-7.90	2.00	0.53	0.08	oxy-ol-D3g@8795	6.97	0.2	3.51	0.4	-0.11	0.2
		$Fo_{99.5}Fa_{0.5}$	liso-ol-D3g@4855	-3.60	1.80	0.33	0.04	oxy-ol-D3g@8623	7.57	0.2	3.80	0.4	-0.14	0.3
		$Fo_{99.3}Fa_{0.3}$	liso-ol-D3g@4856	-3.20	1.30	0.40	0.05	oxy-ol-D3g@8797	7.08	0.2	3.61	0.3	-0.07	0.3
		$Fo_{99.5}Fa_{0.5}$	liso-ol-D3g@4857	-7.10	1.50	0.47	0.05	oxy-ol-D3g@8796	5.61	0.2	2.49	0.4	-0.43	0.3
		$Fo_{99.7}Fa_{0.3}$	-	-	-	-	-	oxy-ol-D3g@8627	5.18	0.2	1.74	0.4	-0.95	0.3
		$Fo_{98.4}Fa_{1.6}$	-	-	-	-	-	oxy-ol-D3g@8798	6.18	0.2	3.29	0.5	0.07	0.3
		$Fo_{99.7}Fa_{0.3}$	-	-	-	-	-	oxy-ol-D3g@9321	6.30	0.1	2.39	0.3	-0.88	0.2
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-D3g@9322	5.28	0.1	1.82	0.3	-0.93	0.2
	glass	$An_{35.9}Ab_{63.5}Or_{0.5}$	liso-gl-D3g@4894	3.10	3.20	0.89	0.03	oxy-gl-D3g@9187	6.40	0.1	4.62	0.3	1.29	0.2
		$An_{46.2}Ab_{53.8}Or_{0.0}$	liso-gl-D3g@4895	2.00	1.20	7.07	0.44	-	-	-	-	-	-	-
		$An_{20.4}Ab_{76.4}Or_{3.3}$	liso-gl-D3g@4896	1.90	3.30	2.21	0.27	oxy-gl-D3g@9186	6.23	0.1	4.11	0.4	0.88	0.2
		$An_{0}Ab_{97.7}Or_{2.3}$	-	-	-	-	-	oxy-gl-D3g@9188	7.57	0.1	4.73	0.4	0.79	0.2
		$An_{2.2}Ab_{93.2}Or_{4.6}$	-	-	-	-	-	oxy-gl-D3g@9189	6.64	0.1	4.42	0.3	0.97	0.2
		$An_{1.1}Ab_{95.1}Or_{3.8}$	-	-	-	-	-	oxy-gl-D3g@9190	7.83	0.1	5.31	0.4	1.24	0.2
		$An_{1}Ab_{94.3}Or_{4.7}$	-	-	-	-	-	oxy-gl-D3g@9191	7.64	0.1	5.18	0.4	1.20	0.2
J5l	enstatite	$En_{98.8}Fs_{0.8}Wo_{0.4}$	liso-en-J5l@4797	-0.15	0.60	5.56	0.20	oxy-opx-J5l@8698	5.89	0.2	4.38	0.4	1.32	0.3
		$En_{98.7}Fs_{0.7}Wo_{0.6}$	liso-en-J5l@4798	2.15	0.39	7.50	0.22	oxy-opx-J5l@8699	5.60	0.2	3.99	0.4	1.08	0.3

Table S1: Continued

chd	phase	compo	Li spot	δ^7Li	σ_δ	[Li]	σ_{ab}	O spot	δ^{18}O	σ_{18}	δ^{17}O	σ_{17}	Δ^{17}O	σ_Δ
		$En_{98.8}Fs_{0.6}Wo_{0.6}$	liso-en-J51@4799	3.19	0.51	2.73	0.16	-	-	-	-	-	-	-
		$En_{98.9}Fs_{0.6}Wo_{0.5}$	liso-en-J51@4800	2.38	0.42	4.27	0.40	oxy-opx-J51@8696	5.41	0.1	4.35	0.4	1.53	0.2
		$En_{98.9}Fs_{0.8}Wo_{0.4}$	liso-en-J51@4801	3.30	0.54	2.64	0.15	oxy-opx-J51@8695	5.37	0.1	3.94	0.4	1.15	0.2
		$En_{98.3}Fs_{0.8}Wo_{0.9}$	liso-en-J51@4802	2.25	0.57	3.24	0.21	oxy-opx-J51@8702	5.81	0.2	4.50	0.4	1.48	0.2
		$En_{98.9}Fs_{0.6}Wo_{0.5}$	liso-en-J51@4803	0.92	0.55	3.92	0.50	oxy-opx-J51@8693	5.83	0.2	4.14	0.4	1.11	0.3
		$En_{98.9}Fs_{0.7}Wo_{0.5}$	liso-en-J51@4804	0.24	0.55	2.08	0.16	oxy-opx-J51@8692	5.72	0.1	5.10	0.4	2.12	0.2
		$En_{98.9}Fs_{0.7}Wo_{0.4}$	liso-en-J51@4805	-2.08	0.59	2.04	0.19	oxy-opx-J51@8700	4.90	0.1	3.89	0.5	1.34	0.3
		$En_{98.4}Fs_{0.9}Wo_{0.7}$	liso-en-J51@4806	3.06	0.65	6.25	0.69	oxy-opx-J51@8701	5.76	0.1	4.18	0.4	1.18	0.2
		$En_{98.7}Fs_1Wo_{0.3}$	-	-	-	-	-	oxy-opx-J51@9337	7.01	0.2	3.86	0.4	0.22	0.3
		$En_{98.9}Fs_{0.6}Wo_{0.5}$	-	-	-	-	-	oxy-opx-J51@9338	6.53	0.2	4.17	0.4	0.78	0.3
	olivine	$Fo_{99.4}Fa_{0.6}$	liso-ol-J51@4869	-7.70	2.20	0.18	0.02	oxy-ol-J51@8599	6.90	0.2	4.46	0.4	0.87	0.2
		$Fo_{99.3}Fa_{0.7}$	liso-ol-J51@4870	-1.00	1.30	0.53	0.05	oxy-ol-J51@8597	7.04	0.2	4.70	0.3	1.04	0.2
		$Fo_{99.3}Fa_{0.8}$	liso-ol-J51@4871	3.00	1.70	0.41	0.05	oxy-ol-J51@8598	7.12	0.2	4.65	0.4	0.94	0.3
		$Fo_{99.1}Fa_{0.9}$	liso-ol-J51@4872	-8.20	1.60	0.29	0.02	-	-	-	-	-	-	-
		$Fo_{99.4}Fa_{0.6}$	liso-ol-J51@4873	-1.30	2.00	0.42	0.07	oxy-ol-J51@8600	7.18	0.1	4.27	0.4	0.54	0.2
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-J51@8601	8.13	0.2	5.59	0.3	1.36	0.2
		$Fo_{99}Fa_1$	-	-	-	-	-	oxy-ol-J51@9314	1.52	0.1	-0.72	0.3	-1.51	0.2
		$Fo_{99.4}Fa_{0.6}$	-	-	-	-	-	oxy-ol-J51@9315	6.58	0.1	3.60	0.3	0.18	0.2
		$Fo_{99.1}Fa_{0.9}$	-	-	-	-	-	oxy-ol-J51@9316	4.94	0.1	3.17	0.2	0.61	0.2
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-J51@8602	7.20	0.2	4.66	0.3	0.91	0.3
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-J51@8802	6.75	0.2	4.41	0.3	0.90	0.2
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-J51@8596	7.23	0.2	4.89	0.4	1.13	0.3
	glass	$An_{33.7}Ab_{65.4}Or_{0.9}$	liso-gl-J51@4902	6.10	4.00	0.53	0.08	oxy-gl-J51@9147	5.66	0.1	3.88	0.3	0.94	0.2
		$An_{41.3}Ab_{57.5}Or_{1.2}$	liso-gl-J51@4903	4.40	2.40	0.73	0.08	oxy-gl-J51@9146	5.42	0.1	3.50	0.3	0.68	0.2
		$An_{33.5}Ab_{63.3}Or_{3.2}$	liso-gl-J51@4904	-1.50	4.80	0.96	0.03	oxy-gl-J51@9145	4.97	0.1	3.99	0.3	1.40	0.3
		$An_{18.2}Ab_{76.3}Or_{5.5}$	liso-gl-J51@4905	4.30	3.00	1.00	0.18	oxy-gl-J51@9144	5.78	0.2	4.56	0.3	1.56	0.2
		$An_{1.1}Ab_{93.9}Or_{5.0}$	-	-	-	-	-	oxy-gl-J51@9148	7.84	0.1	4.9	0.3	0.79	0.2
C5b	enstatite	$En_{99.8}Fs_{0.2}Wo_0$	liso-en-C5b@4740	3.95	0.47	4.33	0.35	oxy-opx-C5b@8756	7.75	0.1	3.99	0.4	-0.04	0.3
		$En_{98.6}Fs_{1.1}Wo_{0.3}$	liso-en-C5b@4741	2.32	0.48	3.64	0.21	oxy-opx-C5b@8764	6.23	0.2	3.04	0.4	-0.20	0.2
		$En_{98.7}Fs_{0.9}Wo_{0.4}$	liso-en-C5b@4742	4.88	0.39	2.49	0.10	oxy-opx-C5b@8757	7.19	0.2	3.95	0.3	0.21	0.3
		$En_{98.6}Fs_1Wo_{0.4}$	liso-en-C5b@4743	0.37	0.65	7.30	0.32	oxy-opx-C5b@8758	7.46	0.2	4.19	0.4	0.31	0.3
		$En_{99.9}Fs_0Wo_0$	liso-en-C5b@4744	2.16	0.58	4.39	0.31	oxy-opx-C5b@8759	6.74	0.2	3.83	0.4	0.33	0.3
		$En_{98.1}Fs_{1.5}Wo_{0.4}$	liso-en-C5b@4745	0.96	0.60	4.66	0.43	oxy-opx-C5b@8760	6.51	0.2	3.15	0.4	-0.24	0.3
		$En_{98.3}Fs_{1.4}Wo_{0.3}$	liso-en-C5b@4746	1.47	0.65	4.57	0.48	oxy-opx-C5b@8761	5.98	0.2	2.83	0.3	-0.28	0.3
		$En_{98.8}Fs_1Wo_{0.3}$	liso-en-C5b@4747	-0.47	0.45	4.21	0.51	oxy-opx-C5b@8762	5.48	0.2	2.63	0.4	-0.22	0.3
		$En_{98.8}Fs_{0.8}Wo_{0.4}$	liso-en-C5b@4748	2.63	0.53	4.96	0.18	oxy-opx-C5b@8763	6.29	0.1	3.07	0.4	-0.20	0.3

Table S1: Continued

chd	phase	compo	Li spot	δ^7Li	σ_δ	[Li]	σ_{ab}	O spot	δ^{18}O	σ_{18}	δ^{17}O	σ_{17}	Δ^{17}O	σ_Δ
		$En_{98.7}Fs_{0.8}Wo_{0.5}$	liso-en-C5b@4749	-1.25	0.74	2.59	0.26	-	-	-	-	-	-	-
		$En_{98.5}Fs_{1.0}Wo_{0.5}$	-	-	-	-	-	oxy-opx-C5b@9339	6.10	0.1	2.17	0.3	-1.00	0.2
		$En_{98.6}Fs_{1.1}Wo_{0.3}$	-	-	-	-	-	oxy-opx-C5b@9340	7.27	0.2	3.23	0.3	-0.55	0.2
	olivine	$Fo_{98.8}Fa_{1.2}$	liso-ol-C5b@4847	-2.50	1.70	0.43	0.05	oxy-ol-C5b@8615	7.62	0.2	3.40	0.4	-0.56	0.3
		$Fo_{98.8}Fa_{1.3}$	liso-ol-C5b@4847	-2.50	1.70	0.43	0.05	oxy-ol-C5b@8799	7.22	0.2	4.02	0.4	0.26	0.2
		$Fo_{99.1}Fa_{0.9}$	liso-ol-C5b@4848	0.40	1.80	0.50	0.06	oxy-ol-C5b@8616	7.29	0.2	4.21	0.3	0.42	0.3
		$Fo_{99.1}Fa_{0.10}$	liso-ol-C5b@4848	0.40	1.80	0.50	0.06	oxy-ol-C5b@8800	7.54	0.3	4.46	0.4	0.54	0.3
		$Fo_{99}Fa_{1}$	liso-ol-C5b@4849	-1.00	1.70	0.47	0.08	oxy-ol-C5b@8614	7.21	0.2	3.46	0.4	-0.29	0.3
		$Fo_{99}Fa_{1}$	liso-ol-C5b@4850	-5.50	2.10	0.38	0.06	oxy-ol-C5b@8613	7.08	0.2	3.98	0.5	0.30	0.3
		$Fo_{99.2}Fa_{0.8}$	liso-ol-C5b@4851	-1.50	2.50	0.49	0.08	oxy-ol-C5b@8617	7.17	0.1	3.23	0.5	-0.50	0.2
		$Fo_{99}Fa_{1}$	liso-ol-C5b@4852	-0.80	1.20	0.79	0.09	oxy-ol-C5b@8619	10.21	0.2	5.54	0.4	0.23	0.3
		$Fo_{99.3}Fa_{0.7}$	liso-ol-C5b@4853	-4.4	1.7	0.31	0.08	oxy-ol-C5b@8801	6.76	0.2	3.16	0.4	-0.36	0.3
		$Fo_{99.3}Fa_{0.7}$	liso-ol-C5b@4853	-4.4	1.7	0.31	0.08	oxy-ol-C5b@8618	7.38	0.2	3.79	0.4	-0.05	0.2
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-C5b@8620	7.49	0.2	4.25	0.4	0.35	0.3
		$Fo_{99.1}Fa_{0.9}$	-	-	-	-	-	oxy-ol-C5b@8621	7.64	0.2	4.16	0.4	0.19	0.3
		$En_{98.6}Fs_{0.9}Wo_{0.5}$	-	-	-	-	-	oxy-ol-C5b@8622	7.01	0.2	3.71	0.4	0.06	0.3
		$Fo_{99.1}Fa_{0.9}$	-	-	-	-	-	oxy-ol-C5b@9317	6.65	0.1	2.41	0.3	-1.04	0.2
		$Fo_{99.7}Fa_{0.3}$	-	-	-	-	-	oxy-ol-C5b@9318	7.15	0.2	2.07	0.3	-1.65	0.3
		$Fo_{99.1}Fa_{0.9}$	-	-	-	-	-	oxy-ol-C5b@9319	6.95	0.1	1.65	0.3	-1.96	0.2
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-C5b@9320	6.41	0.1	2.46	0.3	-0.87	0.2
	glass	$An_{39}Ab_{59.1}Or_{1.9}$	liso-gl-C5b@4897	12.50	2.00	2.77	0.27	oxy-gl-C5b@9172	5.84	0.2	3.17	0.3	0.13	0.2
		$An_{1.2}Ab_{93.5}Or_{5.2}$	liso-gl-C5b@4898	21.00	4.20	0.57	0.09	oxy-gl-C5b@9171	6.41	0.2	3.56	0.3	0.22	0.2
		$An_{0.3}Ab_{98.6}Or_{1.1}$	liso-gl-C5b@4899	21.20	3.60	1.81	0.11	oxy-gl-C5b@9170	7.87	0.2	4.78	0.3	0.68	0.2
		$An_{0.0}Ab_{97.0}Or_{3.0}$	-	-	-	-	-	oxy-gl-C5b@9173	6.87	0.1	3.49	0.3	-0.09	0.2
		$An_{0}Ab_{96.1}Or_{3.9}$	-	-	-	-	-	oxy-gl-C5b@9174	6.40	0.1	2.84	0.3	-0.49	0.2
		$An_{0}Ab_{98.5}Or_{1.5}$	-	-	-	-	-	oxy-gl-C5b@9175	5.76	0.1	3.24	0.3	0.25	0.2
		$An_{0}Ab_{96.2}Or_{3.8}$	-	-	-	-	-	oxy-gl-C5b@9176	6.87	0.2	3.58	0.3	0.01	0.3
	cristobalite	-	-	-	-	-	-	oxy-SiO2-C5b@9255	7.94	0.2	3.99	0.3	-0.13	0.2
		-	-	-	-	-	-	oxy-SiO2-C5b@9254	8.86	0.2	4.49	0.4	-0.11	0.3
		-	-	-	-	-	-	oxy-SiO2-C5b@9256	7.95	0.2	3.54	0.3	-0.58	0.2
K4-1	enstatite	$En_{98.3}Fs_{1.4}Wo_{0.4}$	liso-en-k4@4819	0.71	0.70	3.14	0.12	oxy-opx-K4@8677	5.82	0.2	3.34	0.4	0.31	0.3
		$En_{98.4}Fs_{1.2}Wo_{0.5}$	liso-en-k4@4820	4.43	0.48	6.29	0.29	oxy-opx-K4@8678	5.52	0.2	3.34	0.4	0.47	0.2
		$En_{98.2}Fs_{1.0}Wo_{0.8}$	liso-en-k4@4821	3.74	0.47	5.89	0.44	oxy-opx-K4@8689	5.89	0.2	3.97	0.4	0.90	0.3
		$En_{98.1}Fs_{1.5}Wo_{0.4}$	liso-en-K4@4822	0.90	0.90	1.52	0.09	oxy-opx-K4@8676	5.75	0.1	3.63	0.4	0.64	0.2
		$En_{98.4}Fs_{0.9}Wo_{0.7}$	liso-en-K4@4824	-2.90	1.00	0.54	0.07	oxy-opx-K4@8691	4.76	0.2	2.57	0.3	0.09	0.3
		$En_{97.7}Fs_{2.3}Wo_{0.5}$	liso-en-K4@4827	7.20	1.10	2.78	0.21	oxy-opx-K4@8673	6.29	0.1	3.50	0.4	0.23	0.3

Table S1: Continued

chd	phase	compo	Li spot	δ^7Li	σ_δ	[Li]	σ_{ab}	O spot	δ^{18}O	σ_{18}	δ^{17}O	σ_{17}	Δ^{17}O	σ_Δ
		$En_{98.4}Fs_{1.2}Wo_{0.4}$	liso-en-K4@4828	3.70	0.54	2.78	0.21	oxy-opx-K4@8672	6.65	0.2	3.54	0.3	0.08	0.2
		$En_{98.3}Fs_{1.2}Wo_{0.5}$	liso-en-K4@4829	1.27	0.82	1.29	0.05	oxy-opx-K4@8670	5.67	0.2	2.93	0.4	-0.02	0.2
		$En_{98.3}Fs_{1.2}Wo_{0.6}$	liso-en-K4@4830	1.80	0.75	1.41	0.07	-	-	-	-	-	-	-
		$En_{98.3}Fs_{0.9}Wo_{0.8}$	liso-en-K4@4831	5.61	0.38	4.67	0.59	oxy-opx-K4@8669	6.43	0.2	4.46	0.5	1.12	0.3
		$En_{98.2}Fs_{0.8}Wo_{1.0}$	liso-en-K4@4832	0.59	0.71	2.50	0.26	oxy-opx-K4@8668	6.32	0.2	3.01	0.4	-0.28	0.3
	olivine	$Fo_{99.1}Fa_{0.9}$	liso-ol-K4@4875	2.50	1.90	0.64	0.07	oxy-ol-K4@8592	6.45	0.1	3.33	0.4	-0.02	0.2
		$Fo_{98.7}Fa_{1.3}$	-	-	-	-	-	oxy-ol-K4@8591	5.61	0.2	2.46	0.3	-0.46	0.2
		$Fo_{98.6}Fa_{1.4}$	-	-	-	-	-	oxy-ol-K4@8595	6.55	0.2	3.11	0.4	-0.29	0.3
		$Fo_{99.1}Fa_{0.9}$	-	-	-	-	-	oxy-ol-K4@8804	6.35	0.2	3.59	0.4	0.29	0.3
		$Fo_{99.2}Fa_{0.8}$	-	-	-	-	-	oxy-ol-K4@9313	5.94	0.1	2.61	0.3	-0.48	0.2
	olivine (young)	$Fo_{98.7}Fa_{1.3}$	liso-ol-K4@4876	-5.70	1.10	1.05	0.12	oxy-ol-K4@8576	4.87	0.1	2.58	0.3	0.05	0.2
		$Fo_{98.7}Fa_{1.3}$	liso-ol-K4@4876	-5.70	1.10	1.05	0.12	oxy-ol-K4@8594	6.06	0.1	3.36	0.3	0.21	0.2
		$Fo_{98.9}Fa_{1.1}$	liso-ol-K4@4877	-2.40	1.50	0.38	0.06	oxy-ol-K4@8577	7.05	0.2	3.25	0.4	-0.41	0.2
		$Fo_{98.9}Fa_{1.1}$	liso-ol-K4@4877	-2.40	1.50	0.38	0.06	oxy-ol-K4@8803	6.43	0.2	2.99	0.4	-0.36	0.3
		$Fo_{98.6}Fa_{1.4}$	liso-ol-K4@4878	-0.10	1.60	0.25	0.03	oxy-ol-K4@8579	5.84	0.2	2.68	0.3	-0.36	0.2
		$Fo_{98.8}Fa_{1.2}$	liso-ol-K4@4879	-0.10	1.20	0.74	0.03	oxy-ol-K4@8578	6.53	0.2	3.07	0.4	-0.32	0.3
		$Fo_{98.3}Fa_{1.7}$	liso-ol-K4@4880	11.10	1.80	0.39	0.06	oxy-ol-K4@8573	6.60	0.2	3.01	0.5	-0.42	0.3
		$Fo_{99.0}Fa_{1.0}$	liso-ol-K4@4881	4.30	2.00	0.58	0.03	oxy-ol-K4@8574	6.76	0.2	3.46	0.5	-0.05	0.3
		$Fo_{99.0}Fa_{1.1}$	liso-ol-K4@4881	4.30	2.00	0.58	0.03	oxy-ol-K4@8575	6.10	0.2	3.32	0.4	0.15	0.4
		$Fo_{98.7}Fa_{1.3}$	-	-	-	-	-	oxy-ol-K4@9311	5.33	0.1	2.12	0.3	-0.65	0.2
		$Fo_{99.3}Fa_{0.7}$	-	-	-	-	-	oxy-ol-K4@9312	5.94	0.1	2.5	0.3	-0.59	0.2
	glass	$An_{61.1}Ab_{38.2}Or_{0.7}$	liso-gl-K4@4906	11.00	2.80	1.77	0.86	oxy-gl-K4@9135	4.35	0.1	2.72	0.3	0.46	0.2
		$An_{48.6}Ab_{50.4}Or_{0.9}$	liso-gl-K4@4909	17.10	2.50	1.57	0.07	oxy-gl-K4@9132	6.22	0.1	3.56	0.3	0.33	0.3
		$An_{65}Ab_{34.5}Or_{0.5}$	liso-gl-K4@4910	7.86	0.94	25.32	4.57	oxy-gl-K4@9134	4.19	0.2	2.00	0.3	-0.17	0.2
		$An_{60.1}Ab_{38.7}Or_{1.1}$	liso-gl-K4@4911	6.10	0.92	25.32	4.71	oxy-gl-K4@9133	5.27	0.2	3.17	0.3	0.43	0.3
		$An_{52.7}Ab_{46.5}Or_{0.7}$	-	-	-	-	-	oxy-gl-K4@9141	5.46	0.2	3.11	0.3	0.27	0.2
		$An_{50.8}Ab_{46.8}Or_{2.5}$	-	-	-	-	-	oxy-gl-K4@9142	5.58	0.1	2.95	0.4	0.05	0.2
		$An_{55.3}Ab_{43.6}Or_{1.1}$	-	-	-	-	-	oxy-gl-K4@9193	4.89	0.1	3.16	0.4	0.62	0.2
		$An_{8.9}Ab_{86.5}Or_{4.6}$	-	-	-	-	-	oxy-gl-K4@9194	7.00	0.1	4.23	0.4	0.60	0.2
K4-0	enstatite	$En_{99.7}Fs_{0.2}Wo_{0.1}$	liso-en-K4@4823	-0.60	1.70	0.54	0.07	oxy-opx-K4@8690	5.42	0.2	3.19	0.4	0.37	0.3
		$En_{99.9}Fs_{0.0}Wo_{0.1}$	liso-en-K4@4825	5.70	1.20	0.46	0.06	-	-	-	-	-	-	-
		$En_{99.7}Fs_{1.2}Wo_{0.1}$	liso-en-K4@4826	2.40	1.30	0.35	0.02	oxy-opx-K4@8675	5.86	0.2	3.42	0.5	0.37	0.3
		$En_{98.3}Fs_{1.2}Wo_{0.5}$	-	-	-	-	-	oxy-opx-K4@9333	6.66	0.1	2.93	0.3	-0.53	0.2
		$En_{98.6}Fs_{0.8}Wo_{0.6}$	-	-	-	-	-	oxy-opx-K4@9334	6.66	0.1	3.22	0.3	-0.24	0.2
		$En_{98.2}Fs_{1.0}Wo_{0.8}$	-	-	-	-	-	oxy-opx-K4@9335	7.25	0.1	2.75	0.3	-1.02	0.2
		$En_{100}Fs_{0}Wo_{0}$	-	-	-	-	-	oxy-opx-K4@9336	6.38	0.1	2.53	0.3	-0.79	0.2

Table S1: Continued

chd	phase	compo	Li spot	δ^7Li	σ_δ	[Li]	σ_{ab}	O spot	δ^{18}O	σ_{18}	δ^{17}O	σ_{17}	Δ^{17}O	σ_Δ
	olivine	$Fo_{99.5}Fa_{0.5}$	liso-ol-K4@4874	-5.00	1.70	0.28	0.03	-	-	-	-	-	-	-
	glass	$An_{48.6}Ab_{49.0}Or_{2.4}$	-	-	-	-	-	oxy-gl-K4@9143	5.68	0.1	2.91	0.3	-0.04	0.2
		$An_{44.1}Ab_{54.4}Or_{1.5}$		-	-	-	-	oxy-gl-K4@9192	5.95	0.2	3.43	0.4	0.34	0.3
	glass (K-rich)	$An_{0.1}Ab_{67.6}Or_{32.3}$	liso-gl-K4@4907	-1.90	4.00	0.51	0.08	oxy-gl-K4@9136	9.03	0.2	5.82	0.3	1.12	0.2
		$An_0Ab_{66.8}Or_{33.2}$	liso-gl-K4@4908	14.80	4.30	0.69	0.05	oxy-gl-K4@9137	9.77	0.2	5.73	0.3	0.66	0.2
		$An_0Ab_{37.2}Or_{62.8}$	-	-	-	-	-	oxy-gl-K4@9138	6.48	0.1	4.11	0.3	0.74	0.3
		$An_0Ab_{54.3}Or_{45.7}$	-	-	-	-	-	oxy-gl-K4@9139	7.90	0.2	5.43	0.3	1.32	0.3
		$An_0Ab_{68.9}Or_{31.1}$	-	-	-	-	-	oxy-gl-K4@9140	8.25	0.1	5.42	0.3	1.13	0.2

Table S2: Trace-element compositions of chondrule constituents in the Sahara 97103 EH3 chondrite. The concentration is expressed in $\mu g \cdot g^{-1}$. Averages are calculated from n spots. Standard deviations of [Z] in a phase are shown as σ_Z.

chondrule	phase	n	[Li]	σ_{Li}	[Sr]	σ_{Sr}	[Y]	σ_{Y}	[Zr]	σ_{Zr}	[Nb]	σ_{Nb}	[Ba]	σ_{Ba}	[La]	σ_{La}	[Ce]	σ_{Ce}	[Pr]	σ_{Pr}	[Nd]	σ_{Nd}	[Sm]	σ_{Sm}
I6p	glass	5	1.1	0.5	8	6	8	5	19	14	0.3	0.4	5	3	0.3	0.3	0.9	0.9	0.2	0.2	1.1	0.8	0.13	0.07
	enstatite	7	4	2	0.9	0.9	0.3	0.4	1	2	0.02	0.02	2	3	0.05	0.09	0.2	0.3	0.02	0.03	0.1	0.2	0.1	0.1
	CaS	1	5	1	58.0	0.5	76	2	24.1	0.9	0.06	0.02	5.8	0.7	14.9	0.3	40	1	6.6	0.3	35	1	15.7	0.8
D6a-1	cristobalite	5	0.4	0.2	2	2	0.9	0.9	1	1	0.02	0.01	2	2	0.3	0.5	1	1	0.1	0.1	0.5	0.6	0.3	0.4
	glass	2	3	3	31	37	13	7	26	14	2	2	11	10	0.5	0.5	2	1	0.3	0.2	2	1	0.7	0.9
	enstatite	9	1.0	0.4	1	2	0.3	0.5	0.6	0.6	0.04	0.02	1	1	0.02	0.02	0.1	0.2	0.02	0.03	0.1	0.2	0.02	0.01
D6a-0	enstatite	3	2	1	2	3	0.2	0.1	0.9	0.7	0.019	0.003	1.4	0.7	0.011	0.006	0.03	0.02	0.006	0.004	0.02	0.01	0.02	0.03
	MgS	1	0.23	0.06	6.33	0.09	1.38	0.04	9	1	0.066	0.009	0.4	0.1	0.005	0.002	0.007	0.005	0.002	0.001	0.08	0.02	0.04	0.02
D3g	glass	5	2.1	0.7	37	56	13	17	12	10	0.3	0.5	9	10	0.5	0.7	3	4	1	1	5	7	0.5	0.8
	olivine	4	0.4	0.1	0.9	0.2	0.2	0.1	0.3	0.4	0.029	0.009	1.2	0.4	0.025	0.005	0.08	0.02	0.015	0.004	0.11	0.04	0.04	0.01
	enstatite	11	3	2	1.3	0.9	0.6	0.5	1.2	0.8	0.03	0.03	1.3	0.6	0.01	0.01	0.06	0.05	0.02	0.01	0.11	0.07	0.03	0.02
J5l	glass	5	3	5	149	61	11	14	36	34	0.7	0.8	31	20	2	1	4	4	0.6	0.8	4	4	1	2
	olivine	4	0.46	0.05	0.7	0.8	0.14	0.06	0.1	0.2	0.03	0.03	0.5	0.2	0.007	0.005	0.01	0.02	0.004	0.002	0.03	0.02	0.01	0.01
	enstatite	11	4	2	1	1	0.3	0.1	2	2	0.02	0.01	2	1	0.02	0.03	0.04	0.04	0.009	0.009	0.05	0.04	0.01	0.01
C5b	glass	5	1.5	0.3	5	5	8	5	27	15	0.7	0.6	3	1	0.9	0.7	3	3	0.5	0.4	3	2	0.2	0.2
	olivine	8	0.5	0.1	0.4	0.6	0.08	0.05	0.06	0.03	0.02	0.01	1	1	0.01	0.01	0.02	0.02	0.004	0.002	0.03	0.02	0.011	0.009
	enstatite	11	4	2	2	5	0.5	0.4	1	1	0.1	0.2	2	2	0.08	0.08	0.2	0.2	0.03	0.03	0.2	0.1	0.1	0.2
	MgS	2	1.0	0.3	12.0	0.2	1.14	0.02	5	5	0.0314	0.0002	4.7	0.8	0.02	0.01	0.022	0.009	0.005	0.003	0.050	0.002	0.03	0.01
	CaS	1	1.8	0.2	18	1	5.1	0.3	17	1	0.4	0.1	8.4	0.5	1.56	0.07	3.1	0.2	0.45	0.03	2.1	0.1	0.90	0.07
K4-1	glass	5	7	11	171	46	17	4	39	6	2	1	25	5	2	1	6	3	0.8	0.5	5	2	1.4	0.7
	olivine	4	0.53	0.09	1.3	0.9	0.3	0.3	2	3	0.04	0.03	2	2	0.02	0.02	0.1	0.1	0.03	0.03	0.1	0.1	0.02	0.02
	olivine (young)	6	0.7	0.2	1	3	0.10	0.07	0.06	0.02	0.03	0.01	2	4	0.008	0.008	0.02	0.02	0.02	0.03	0.03	0.02	0.01	0.01
	enstatite	8	3	2	3	7	0.2	0.2	0.4	0.3	0.022	0.007	2	4	0.007	0.007	0.02	0.01	0.005	0.006	0.04	0.05	0.03	0.02
K4-0	glass	5	0.5	0.2	4	4	0.2	0.3	3	6	0.05	0.08	2	2	0.01	0.01	0.01	0.01	0.003	0.002	0.02	0.01	0.03	0.02
	enstatite	4	0.8	0.7	0.8	0.6	0.07	0.03	1.8	0.5	0.012	0.007	1.4	0.9	0.004	0.002	0.007	0.004	0.004	0.002	0.02	0.01	0.010	0.008
	MgS	6	0.6	0.3	8	2	1.0	0.7	4.5	0.8	0.036	0.009	1	1	0.010	0.004	0.010	0.005	0.003	0.002	0.03	0.01	0.05	0.05

chondrule	phase	n	[Eu]	σ_{Eu}	[Tb]	σ_{Tb}	[Gd]	σ_{Gd}	[Dy]	σ_{Dy}	[Ho]	σ_{Ho}	[Er]	σ_{Er}	[Tm]	σ_{Tm}	[Yb]	σ_{Yb}	[Lu]	σ_{Lu}	[Hf]	σ_{Hf}	[Pb]	σ_{Pb}
I6p	glass	5	0.03	0.02	0.2	0.1	0.8	0.5	1.4	1.0	0.5	0.3	0.8	0.4	0.11	0.05	0.10	0.05	0.19	0.09	1.0	0.4	4	6
	enstatite	7	0.006	0.003	0.01	0.02	0.1	0.1	0.07	0.09	0.009	0.007	0.04	0.05	0.006	0.007	0.03	0.03	0.02	0.01	0.1	0.1	0.6	0.5
	CaS	1	2.8	0.2	4.0	0.1	21.5	0.5	22	1	3.8	0.2	7.2	0.5	1.03	0.04	14.3	0.4	1.1	0.1	3.7	0.3	91	7
D6a-1	cristobalite	5	0.02	0.02	0.05	0.06	0.2	0.2	0.2	0.3	0.02	0.01	0.1	0.1	0.01	0.01	0.1	0.2	0.011	0.009	0.10	0.08	0.9	0.7
	glass	2	0.15	0.09	0.4	0.2	1	1	2	2	0.7	0.3	1.4	1.0	0.2	0.1	0.6	0.5	0.28	0.08	1.0	0.3	4	5
	enstatite	9	0.006	0.003	0.02	0.03	0.05	0.09	0.1	0.1	0.03	0.05	0.05	0.07	0.01	0.01	0.02	0.01	0.02	0.02	0.09	0.08	0.4	0.2
D6a-0	enstatite	3	0.004	0.002	0.003	0.002	0.01	0.01	0.03	0.01	0.009	0.003	0.03	0.03	0.008	0.004	0.04	0.03	0.01	0.01	0.10	0.09	0.6	0.1
	MgS	1	0.017	0.004	0.017	0.006	0.04	0.02	0.13	0.04	0.051	0.009	0.16	0.02	0.033	0.005	0.29	0.04	0.054	0.008	0.08	0.03	1.6	0.4
D3g	glass	5	0.14	0.16	0.4	0.5	2	2	2	3	0.5	0.5	1	2	0.2	0.3	0.2	0.3	0.3	0.4	0.5	0.2	2	2
	olivine	4	0.006	0.007	0.009	0.003	0.04	0.01	0.06	0.03	0.013	0.004	0.04	0.02	0.005	0.002	0.029	0.009	0.009	0.003	0.007	0.004	1.0	0.3
	enstatite	11	0.006	0.002	0.02	0.02	0.08	0.07	0.1	0.1	0.03	0.02	0.09	0.08	0.01	0.01	0.05	0.04	0.02	0.01	0.08	0.05	0.7	0.3
J5l	glass	5	0.6	0.5	0.3	0.4	1	2	2	2	0.4	0.4	1	1	0.2	0.2	1	1	0.3	0.2	1.0	0.6	1.3	0.5
	olivine	4	0.007	0.003	0.002	0.001	0.011	0.003	0.02	0.01	0.011	0.006	0.03	0.02	0.004	0.001	0.04	0.02	0.018	0.007	0.020	0.002	0.7	0.2
	enstatite	11	0.008	0.004	0.006	0.004	0.02	0.02	0.04	0.04	0.02	0.01	0.04	0.03	0.008	0.004	0.04	0.01	0.015	0.004	0.11	0.16	0.4	0.2
C5b	glass	5	0.08	0.09	0.3	0.1	1.4	0.8	2	1	0.4	0.2	1.1	0.5	0.13	0.06	0.3	0.5	0.2	0.2	1.05	0.57	3	3
	olivine	8	0.003	0.002	0.002	0.002	0.006	0.004	0.01	0.01	0.003	0.002	0.011	0.008	0.003	0.002	0.02	0.01	0.006	0.004	0.01	0.01	2.0	0.5
	enstatite	11	0.011	0.008	0.010	0.005	0.06	0.04	0.07	0.05	0.02	0.01	0.07	0.04	0.009	0.007	0.08	0.06	0.02	0.02	0.09	0.09	1.3	0.7
	MgS	2	0.074	0.006	0.01	0.01	0.039	0.005	0.16	0.01	0.034	0.007	0.099	0.002	0.032	0.003	0.31	0.08	0.038	0.004	0.048	0.005	2.15	0.09
	CaS	1	0.82	0.06	0.22	0.03	1.11	0.09	1.11	0.07	0.31	0.03	0.64	0.06	0.11	0.01	1.7	0.1	0.070	0.008	0.50	0.09	57	3
K4-1	glass	5	0.5	0.1	0.45	0.09	2.1	0.5	3.0	0.7	0.7	0.2	1.66	0.38	0.23	0.05	1.0	0.5	0.30	0.07	1.1	0.3	1.1	0.5
	olivine	4	0.007	0.009	0.01	0.02	0.07	0.05	0.05	0.06	0.03	0.03	0.05	0.06	0.009	0.009	0.032	0.009	0.01	0.01	0.06	0.06	0.9	0.1
	olivine (young)	6	0.006	0.004	0.003	0.003	0.006	0.004	0.02	0.01	0.007	0.006	0.02	0.01	0.005	0.003	0.03	0.03	0.01	0.01	0.02	0.02	1.1	0.4
	enstatite	8	0.01	0.02	0.01	0.01	0.03	0.04	0.06	0.09	0.03	0.04	0.04	0.05	0.008	0.009	0.04	0.02	0.02	0.02	0.04	0.02	0.4	0.2
K4-0	glass	5	0.02	0.01	0.005	0.004	0.012	0.007	0.017	0.009	0.003	0.004	0.02	0.02	0.006	0.006	0.03	0.06	0.01	0.01	0.04	0.07	1.2	0.6
	enstatite	4	0.008	0.004	0.002	0.001	0.006	0.004	0.015	0.007	0.007	0.001	0.016	0.009	0.003	0.001	0.02	0.02	0.01	0.01	0.11	0.07	0.6	0.3
	MgS	6	0.03	0.01	0.01	0.01	0.04	0.06	0.1	0.1	0.04	0.04	0.1	0.1	0.03	0.02	0.3	0.1	0.03	0.03	0.04	0.03	2.0	0.6

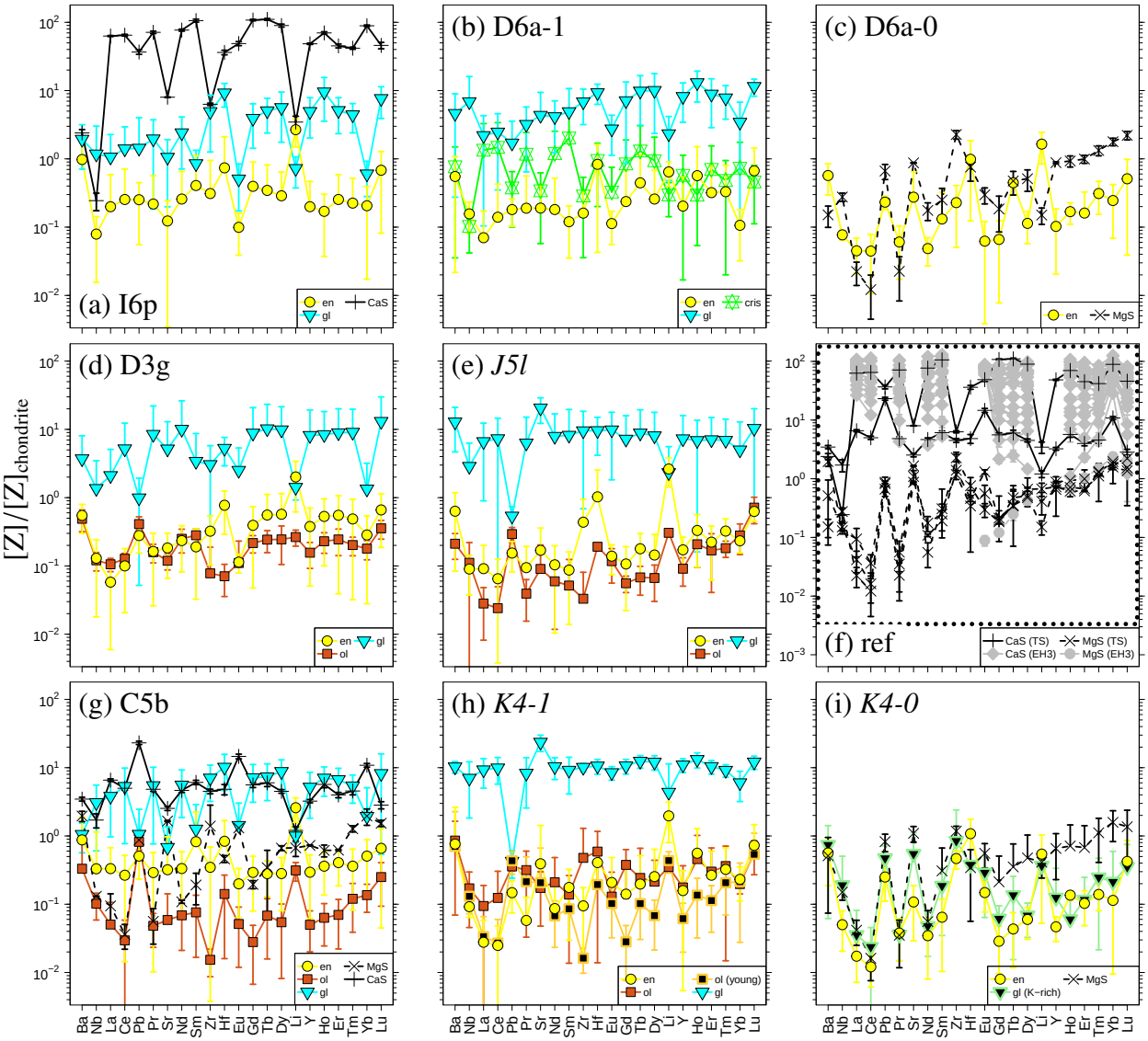

Figure S1: Chondrite-normalized trace-element patterns of individual chondrule constituents in the Sahara 97103 EH3 chondrite: (a) I6p, (b) D6a-1, (c) D6a-0, (d) D3g, (e) J5l, (f) reference, (g) C5b, (h) K4-1, and (i) K4-0. In (f), sulfides by this study (TS) and those from EH3 by Crozaz and Lundberg (1995) and Hammouda et al. (2022) are shown. In reference panel, range for individual panel is shown by dot rectangle.

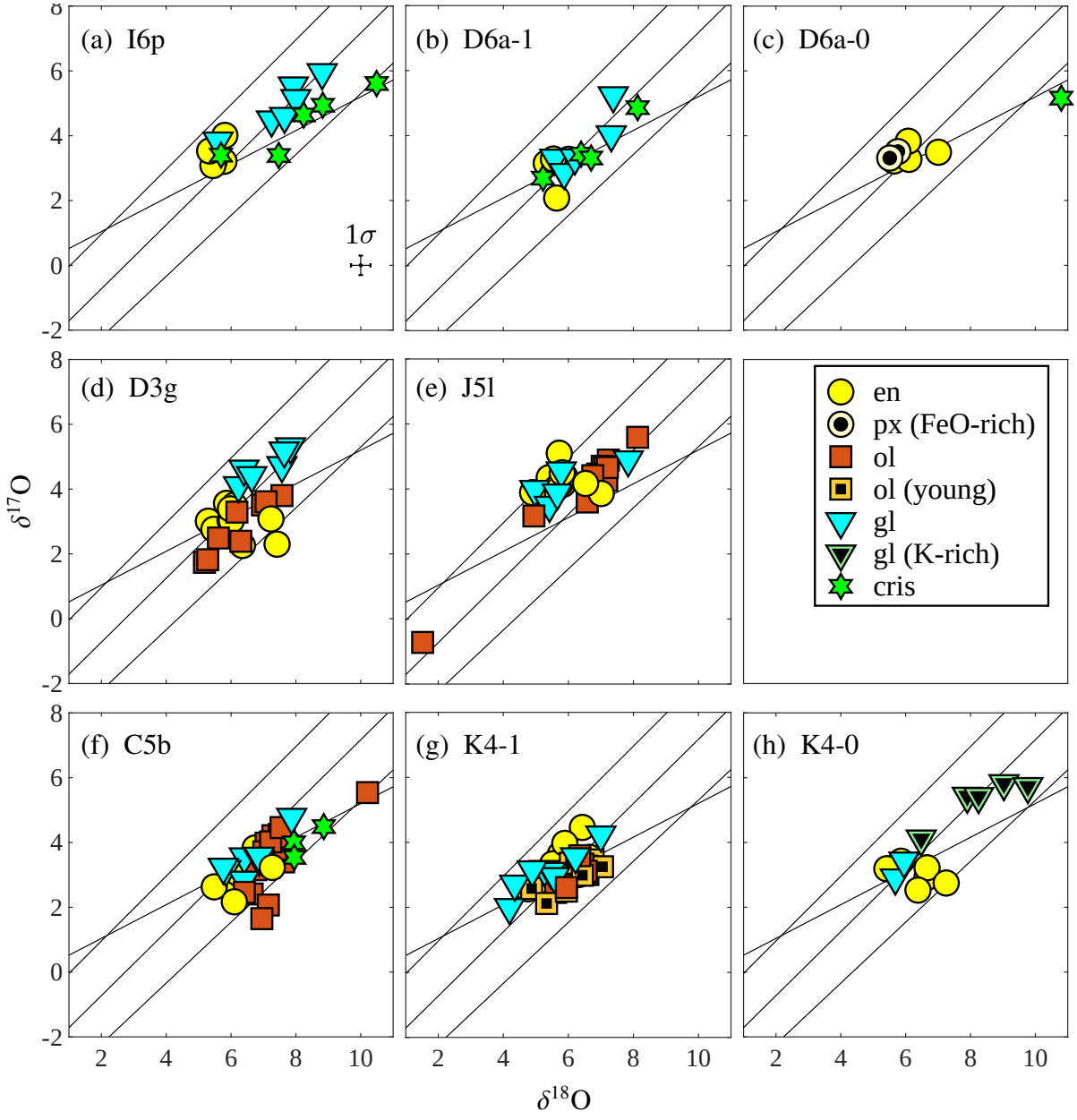

Figure S2: The O-isotope compositions of individual chondrule constituents in the Sahara 97103 EH3 chondrite: (a) I6p, (b) D6a-1, (c) D6a-0, (d) D3g, (e) J5l, (f) C5b, (g) K4-1, and (h) K4-0.

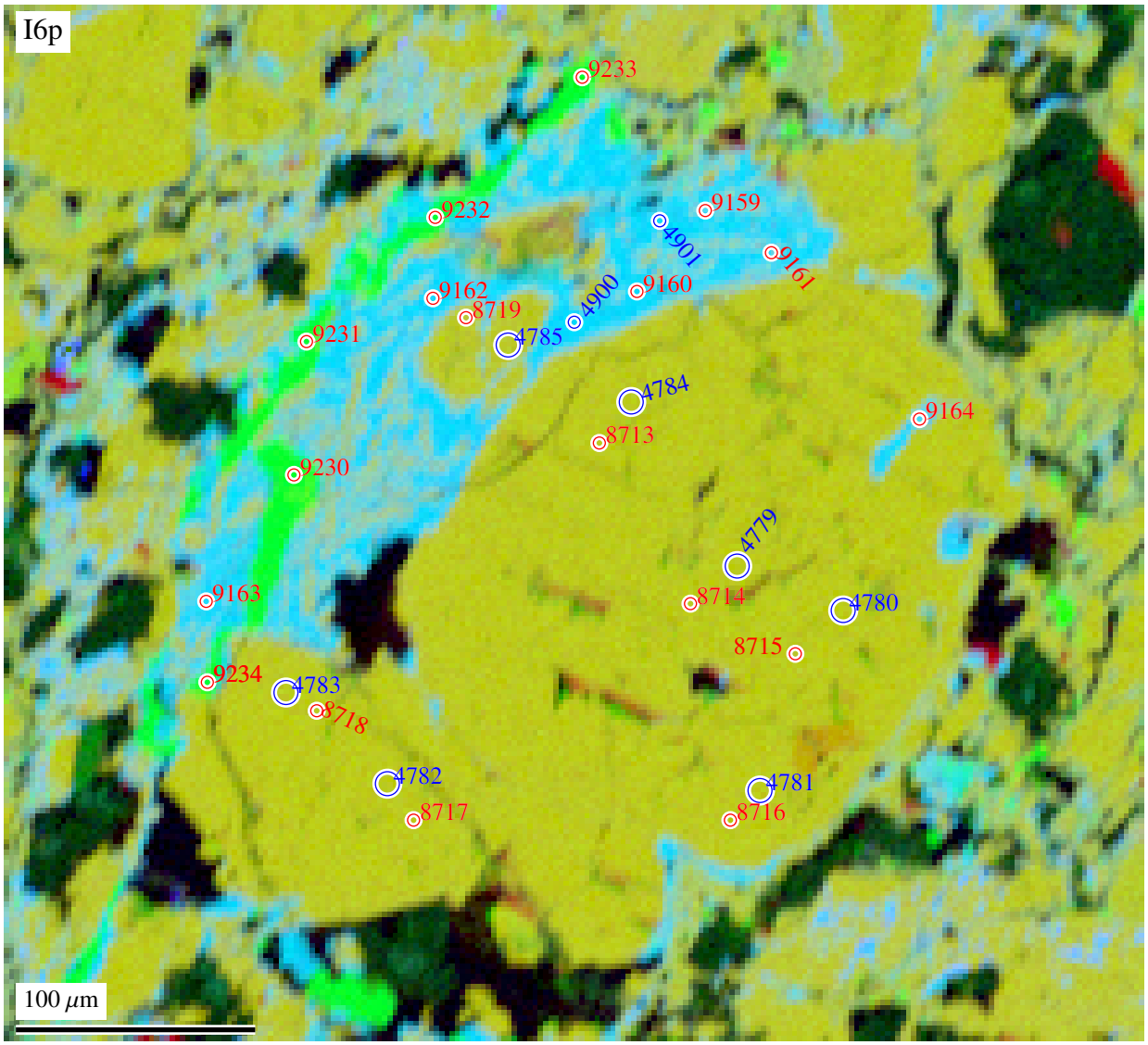

Figure S3: Spot location for O- and Li-isotope analyses on I6p: Spots for O and Li-isotope analyses are shown by red and blue circles, respectively. Size of the circles corresponds to size of crators by ion probe.

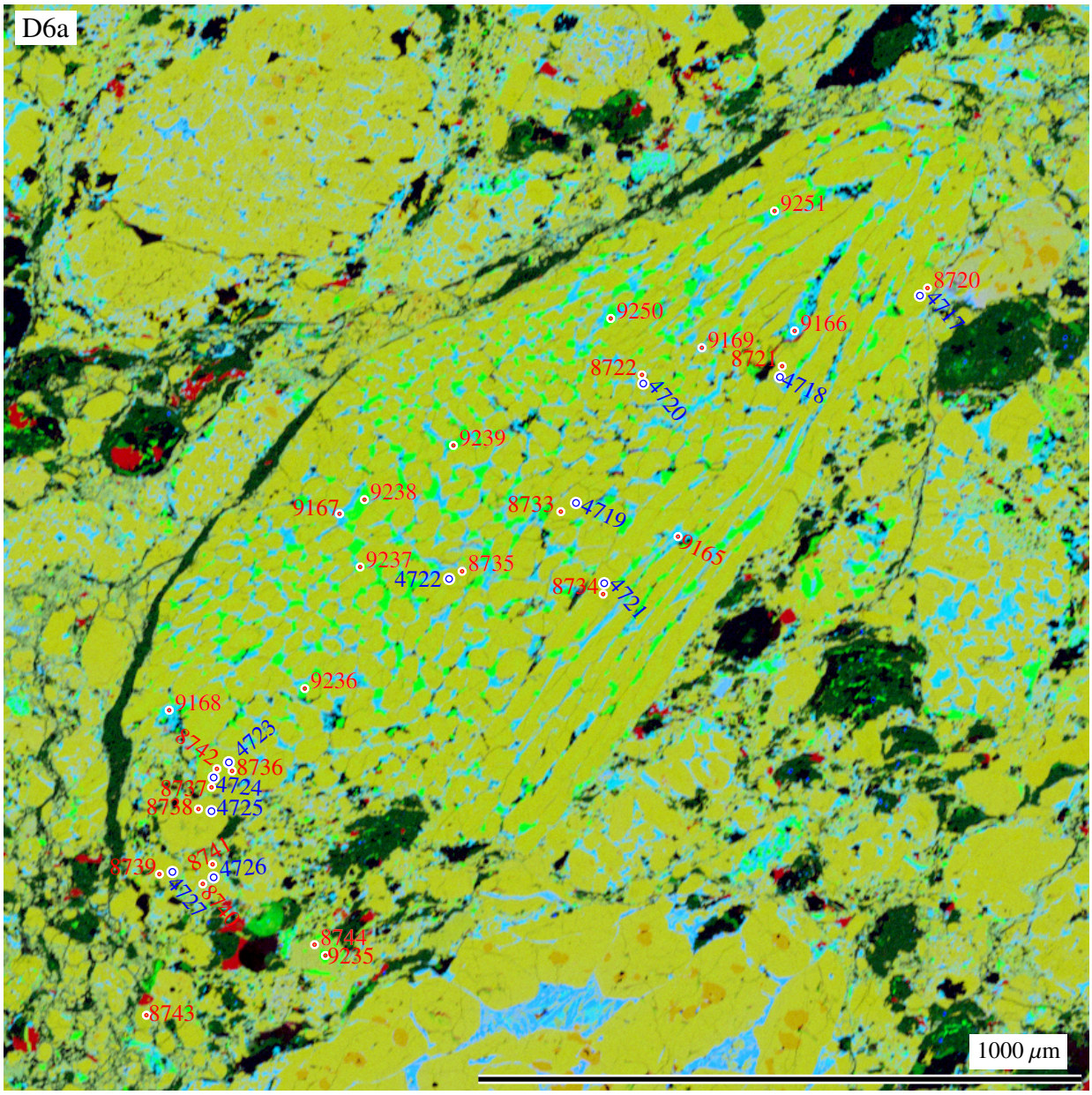

Figure S4: Spot location for O- and Li-isotope analyses on D6a: Spots for O and Li-isotope analyses are shown by red and blue circles, respectively. Size of the circles corresponds to size of crators by ion probe.

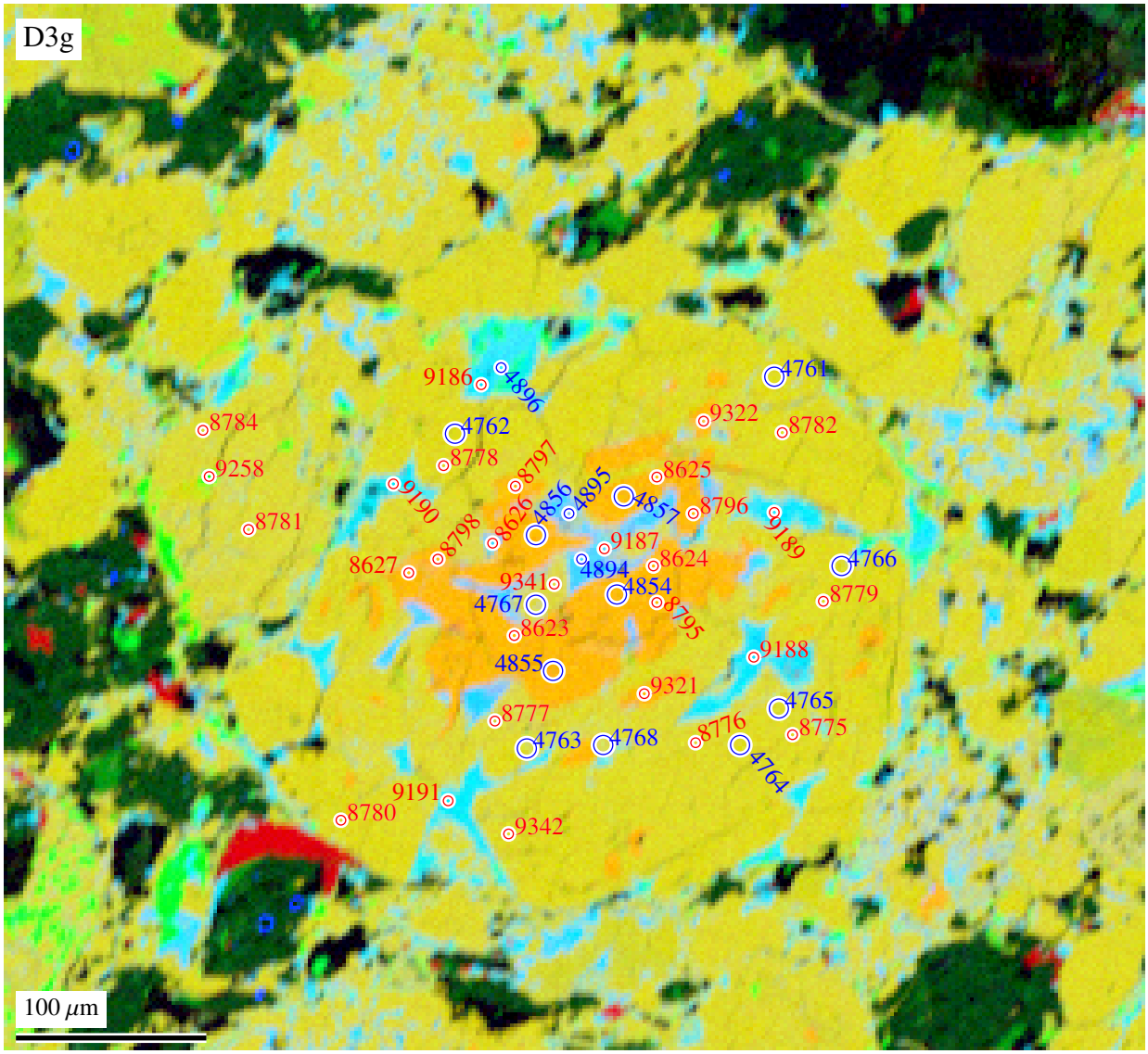

Figure S5: Spot location for O- and Li-isotope analyses on D3g: Spots for O and Li-isotope analyses are shown by red and blue circles, respectively. Size of the circles corresponds to size of crators by ion probe.

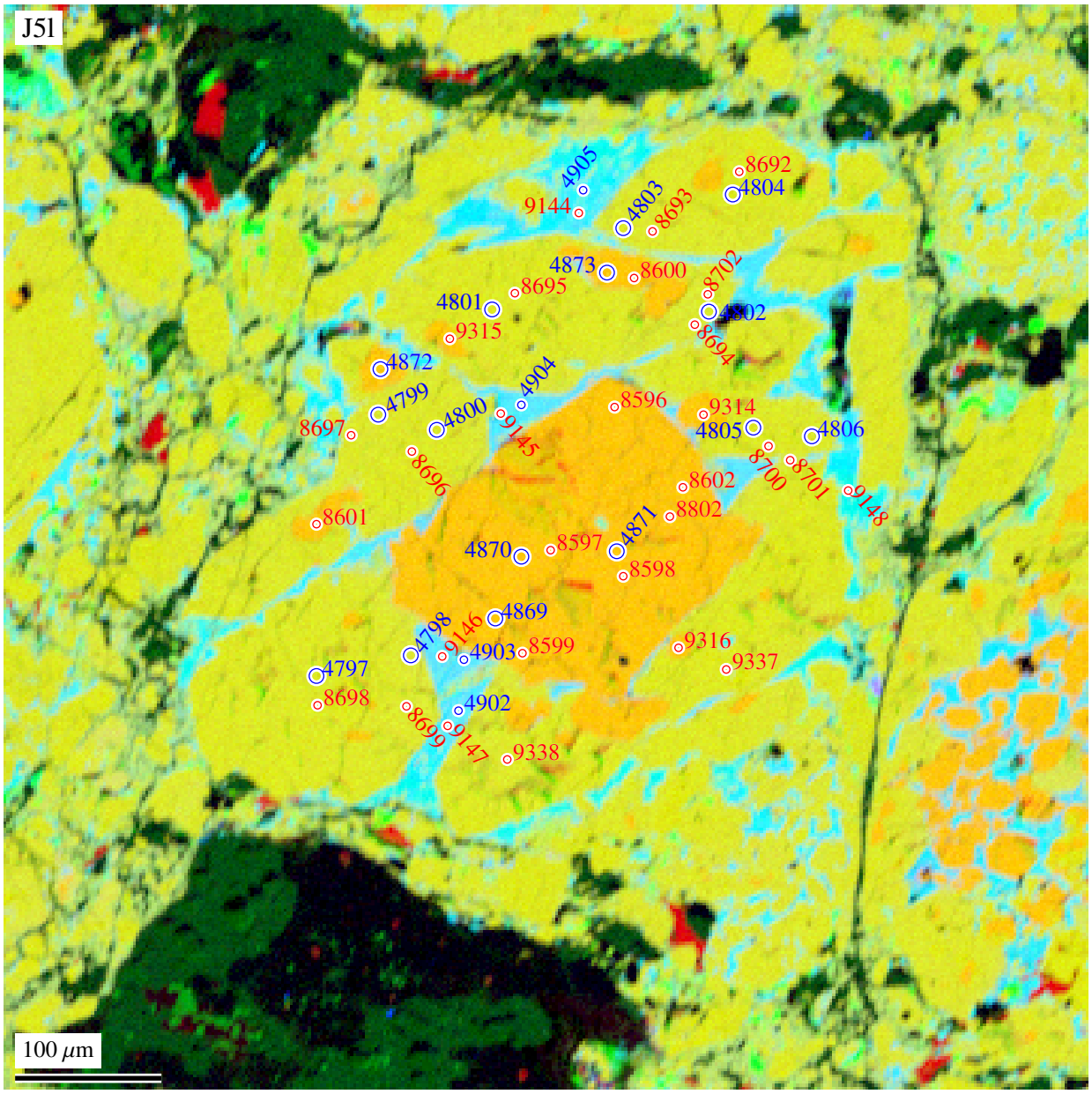

Figure S6: Spot location for O- and Li-isotope analyses on J5l: Spots for O and Li-isotope analyses are shown by red and blue circles, respectively. Size of the circles corresponds to size of crators by ion probe.

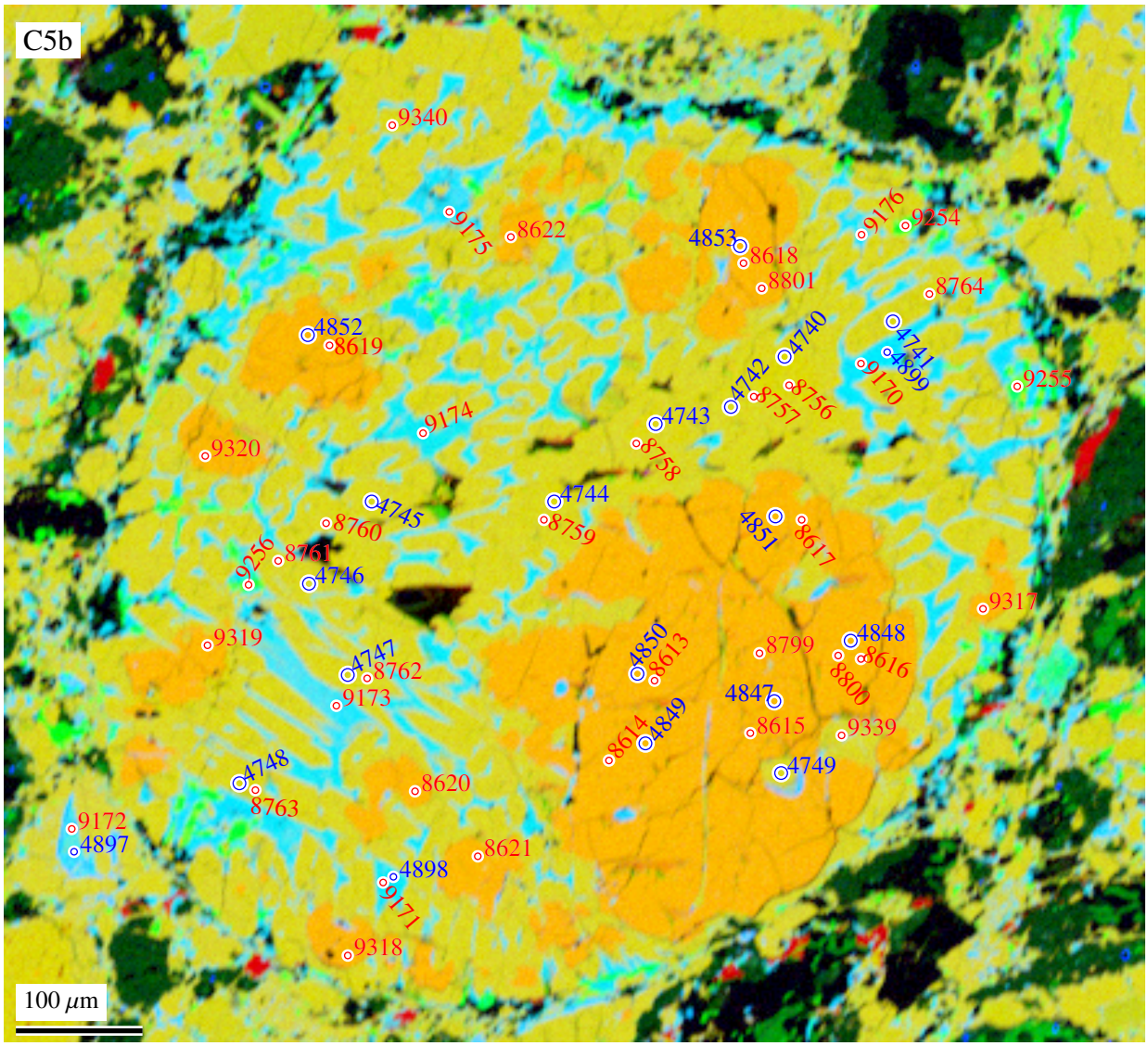

Figure S7: Spot location for O- and Li-isotope analyses on C5b: Spots for O and Li-isotope analyses are shown by red and blue circles, respectively. Size of the circles corresponds to size of crators by ion probe.

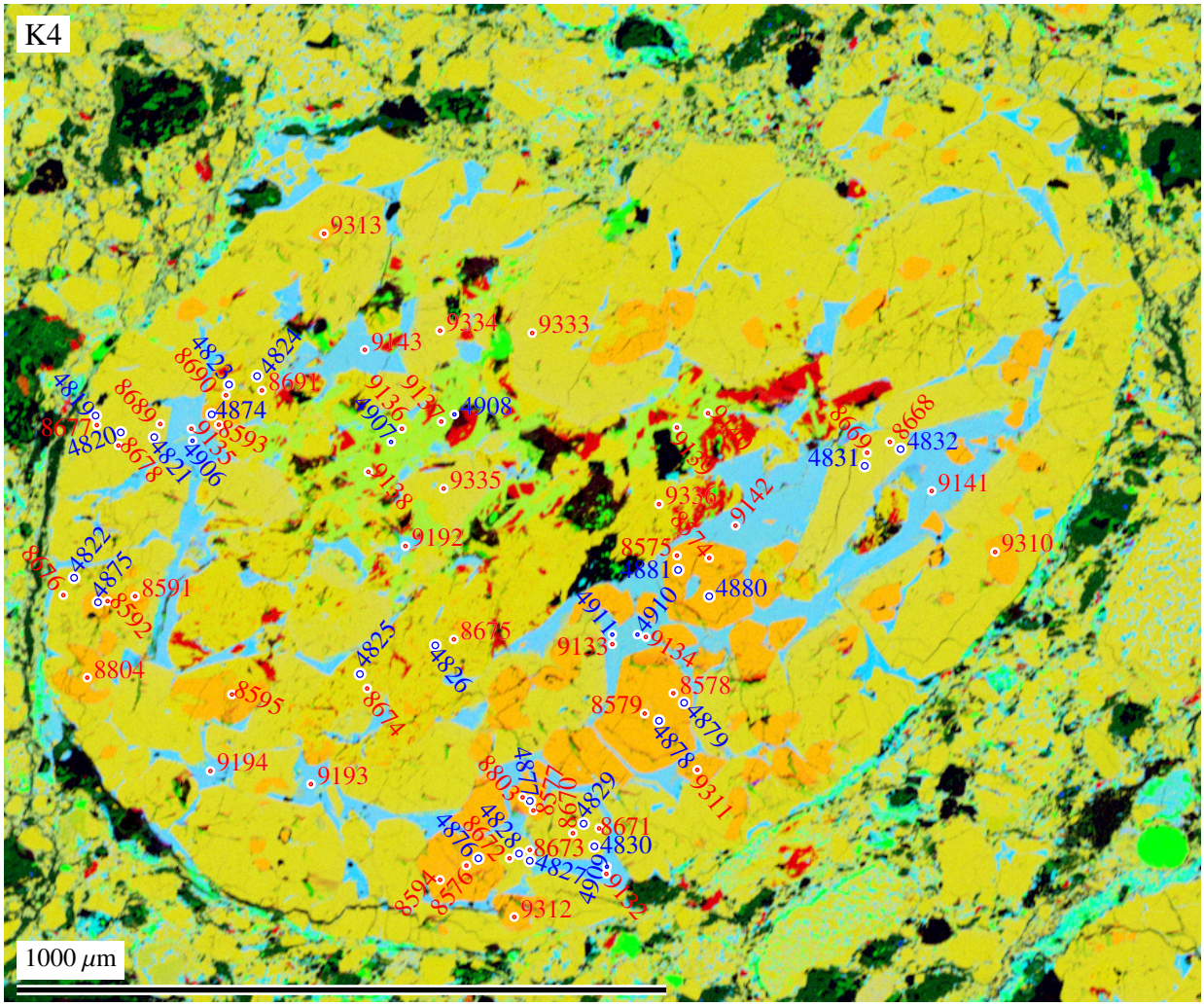

Figure S8: Spot location for O- and Li-isotope analyses on K4: Spots for O and Li-isotope analyses are shown by red and blue circles, respectively. Size of the circles corresponds to size of crators by ion probe.