

Appendix VI. Oxygen Isotopes

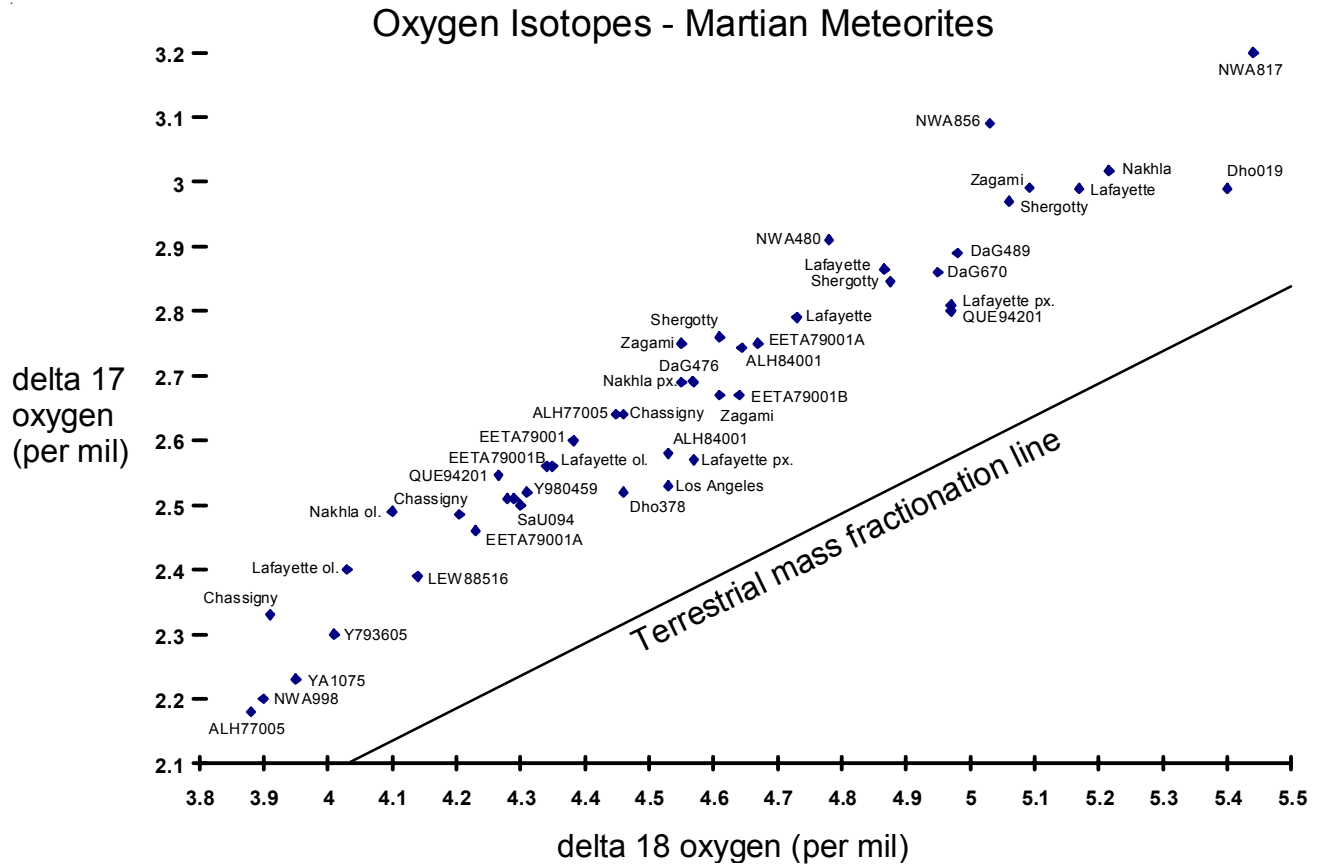


Figure A6-1: Graph of oxygen isotopic composition of Martian Meteorites and mineral separates from data given in attached table (references therein). Data obtained over a number of years, by different techniques, in different laboratories, is not often in agreement, but differs significantly from that of other meteorites and from terrestrial samples. Data define a Mars mass fractionation line, offset from the terrestrial mass fractionation line by about +0.32 per mil (Franchi et al. 1999). Oxygen isotopic data is “per mil”, relative to SMOW.

Oxygen isotopes are reported as $\delta = [(R_{\text{SAM}} - R_{\text{STD}}) / R_{\text{STD}}] \times 1000$, where $R = {}^{17}\text{O}/{}^{16}\text{O}$ and ${}^{18}\text{O}/{}^{16}\text{O}$ delta 17 and delta 18 and SAM and STD denote sample and standard. On a delta 17 and delta 18 plot, mass fractionation produces a nearly linear array with slope of 0.52. (see discussion in Introduction)

Appendix VI. Oxygen Isotopes - Martian Meteorites

	delta 17	delta 18	DELTA 17	reference
Nakhla px	2.69	4.55	0.32	Clayton and Mayeda 1996
Nakhla ol	2.49	4.1	0.36	Clayton and Mayeda 1996
Nakhla	3.017	5.216	0.305	Franchi et al. 1999
Lafayette	2.79	4.73	0.33	Clayton and Mayeda 1996
Lafayette px.	2.57	4.57	0.19	Clayton and Mayeda 1996
Lafayette px.	2.81	4.97	0.23	Romanek et al. 1998
Lafayette ol.	2.4	4.03	0.28	Clayton and Mayeda 1996
Lafayette ol.	2.56	4.35	0.31	Romanek et al. 1998
Lafayette	2.846	4.876	0.31	Franchi et al. 1999
Lafayette	2.99	5.17	0.3	Romanek et al. 1998
Chassigny	2.33	3.91	0.3	Clayton and Mayeda 1996
Chassigny	2.486	4.205	0.3	Franchi et al. 1999
Chassigny	2.64	4.46	0.32	Romanek et al. 1998
Shergotty	2.76	4.61	0.36	Clayton and Mayeda 1996
Shergotty	2.865	4.866	0.335	Franchi et al. 1999
Shergotty	2.97	5.06	0.34	Romanek et al. 1998
Zagami	2.75	4.55	0.38	Clayton and Mayeda 1996
Zagami	2.991	5.092	0.343	Franchi et al. 1999
Zagami	2.67	4.61	0.28	Romanek et al. 1998
ALH77005	2.18	3.88	0.16	Clayton and Mayeda 1996
ALH77005	2.64	4.449	0.326	Franchi et al. 1999
EETA79001A	2.46	4.23	0.28	Clayton and Mayeda 1996
EETA79001A	2.75	4.67	0.32	Romanek et al. 1998
EETA79001B	2.56	4.34	0.3	Clayton and Mayeda 1996
EETA79001B	2.67	4.64	0.25	Romanek et al. 1998
EETA79001	2.6	4.382	0.321	Franchi et al. 1999
LEW88516	2.39	4.14	0.26	Clayton and Mayeda 1996
ALH84001	2.58	4.53	0.22	Clayton and Mayeda 1996
ALH84001	2.743	4.644	0.327	Franchi et al. 1999
QUE94201	2.8	4.97	0.19	misprint C and M
QUE94201	2.546	4.266	0.327	Franchi et al. 1999
Y793605	2.3	4.01	0.21	Clayton and Mayeda 1996
DaG476	2.692	4.567	0.317	Franchi et al. 1999
DaG489	2.89	4.98	0.305	Folco et al. 2000
DaG670	2.86	4.95	0.28	Folco et al. 2000
Los Angeles	2.53	4.53	0.17	Rubin et al. 2000
SaU094	2.51	4.28	0.3	Gnos et al. 2002
Dhofar019	2.99	5.4	0.18	Taylor et al. 2002
NWA480	2.91	4.78	0.42	Barett et al. 2002
NWA817	3.2	5.44	0.37	Sautter et al. 2002
NWA856	3.09	5.03	0.47	Jambon et al. 2001
Dhofar378	2.52	4.46		Ikeda et al. 2002
NWA998	2.2	3.9	0.24	Irving et al. 2002
Y980459	2.52	4.31	0.28	Japanese Newsletter
YA1075	2.23	3.95	0.18	Yanai 2002