

University of Southampton Research Repository ePrints Soton

Copyright © and Moral Rights for this thesis are retained by the author and/or other copyright owners. A copy can be downloaded for personal non-commercial research or study, without prior permission or charge. This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the copyright holder/s. The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the copyright holders.

When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given e.g.

AUTHOR (year of submission) "Full thesis title", University of Southampton, name of the University School or Department, PhD Thesis, pagination

Element	D-PSP	E-PSP					Sediment AOC		Sediment AOC			Sediment AOC		Sediment AOC		Sediment AOC		Tanzawa	% change	BA/VF C _i	
		Rear A.	Frontal	Frontal					Fluids			Supercritical Fluids	Melts					Av. Comp.	residual slab	Mantle melt	AQF/SCF C _i
							Initial composition				Residual composition										
¹⁴³ Nd/ ¹⁴⁴ Nd	0.51313	0.51300				0.51235	0.51317											0.51308			
⁸⁷ Sr/ ⁸⁶ Sr	0.70280	0.70270				0.70954	0.70352											0.70361			
²⁰⁶ Pb/ ²⁰⁴ Pb	17.8000	18.2000				18.6146	18.5252											18.2317			
²⁰⁷ Pb/ ²⁰⁴ Pb	15.4605	15.4839				15.6002	15.4355	D7/4	9.1	-6.360								15.5309			
²⁰⁸ Pb/ ²⁰⁴ Pb	37.7472	37.9308				38.6705	37.6423	D8/4	53.8	-38.17								38.2002			
	A	B	C	D	E	F			G		H	I	J	K	L	M	N				
	PSP MORB	C ₀	C _i of C ₀	C _r	C _i of C _r			4GPa/700°C with rutile		4GPa/700°C with rutile		6GPa/800°C with rutile		6GPa/1200°C with rutile							
F %		10%	15%	15%	10%			5%	5%	5%	5%	5%	5%	10%	10%						
Rb	3.77	0.382	2.52	0.0035	0.0346	25.1	15.9	415	263	3.45	2.19	65.0	41.2	7.1	4.5	9.5	14%	1%	16%		
Sr	123	13.3	84.3	0.751	6.95	110	119	200	217	103	112	1297	1404	779	843	295	94%	8%	648%		
Ba	29.5	3.28	20.4	0.254	2.29	244	8.8	1182	42.6	180	6.5	2788	101	831	30.0	217	74%	11%	236%		
Nb	3.71	0.411	2.57	0.031	0.276	11.4	2.30	0.379	0.0765	12.2	2.5	14.8	2.98	91.4	18.4	0.606	107%	11%	3901%		
Zr	74.8	9.04	53.3	1.24	10.2	86	84	1.70	1.66	92.3	90.2	35.8	35.0	603	589	5.33	107%	19%	2111%		
Hf	2.78	0.359	2.02	0.0653	0.506	1.36	2.28	0.0224	0.0376	1.46	2.45	0.692	1.16	10.2	17.1	0.283	107%	25%	3085%		
La	4.36	0.460	2.96	0.0185	0.175	20.8	2.70	5.98	0.778	21.9	2.8	211	27.4	266	34.6	6.85	105%	6%	3518%		
Ce	12.1	1.33	8.35	0.0918	0.835	31.4	8.10	3.98	1.03	33.4	8.6	257	66.3	428	111	17.6	107%	10%	6450%		
Nd	8.67	1.05	6.18	0.146	1.20	28.8	11.4	1.65	0.654	30.8	12.2	86.0	34.1	319	127	10.8	107%	19%	5214%		
Sm	2.75	0.349	1.99	0.0592	0.467	6.35	3.80	0.1715	0.1026	6.81	4.08	6.25	3.74	42.0	25.2	2.76	107%	23%	3645%		
Eu	0.989	0.131	0.725	0.0260	0.196	1.15	1.12	0.0263	0.0256	1.23	1.20	0.753	0.733	5.39	5.25	0.744	107%	27%	2857%		
Gd	3.69	0.487	2.70	0.096	0.730	4.20	3.70	0.0542	0.0477	4.51	3.97	1.65	1.45	12.3	10.9	3.04	107%	27%	3040%		
Dy	4.49	0.613	3.32	0.135	0.988	3.81	4.50	0.0355	0.0420	4.09	4.84	0.414	0.489	4.24	5.01	3.08	107%	30%	1166%		
Er	2.77	0.376	2.04	0.0815	0.600	2.12	2.90	0.0134	0.0183	2.28	3.12	0.0928	0.127	1.27	1.74	1.76	107%	29%	693%		
Yb	2.78	0.387	2.07	0.0902	0.648	1.86	2.87	0.0090	0.0140	2.00	3.08	0.0426	0.0657	0.785	1.21	1.77	107%	31%	471%		
Lu	0.431	0.0613	0.323	0.015	0.107	0.268	0.430	0.0012	0.0019	0.288	0.462	0.0050	0.0081	0.102	0.163	0.276	107%	33%	424%		
Y	26.8	3.69	19.9	0.83	6.03	25.9	27.0	0.575	0.599	27.8	29.0	1.56	1.63	49.1	51.2	17.8	107%	30%	271%		
Pb	0.632	0.0695	0.436	0.0048	0.0436	7.02	0.402	20.4	1.17	6.07	0.348	69.6	3.99	36.4	2.09	2.68	87%	10%	341%		
Th	0.310	0.0355	0.217	0.0035	0.0307	2.40	0.200	0.299	0.025	2.55	0.213	28.8	2.40	33.4	2.79	0.788	107%	14%	9606%		
U	0.123	0.0139	0.0855	0.0012	0.0110	1.20	0.191	0.179	0.0286	1.27	0.203	4.65	0.743	16.2	2.59	0.218	106%	13%	2595%		