APPENDIX A
SAMPLE LOCATION

The studied seamount samples from the Japan Trench oceanward slope were collected during KR97-11 cruise of submersible *KAIKO* by Japan Marine Science Technology Center, from the Mizunagidori Seamount during KH92-3 cruise of R.V. *Hakuho-Maru* by Ocean Research Institute, University of Tokyo, from the Uyeda Ridge during KH87-3 cruise of R.V. *Hakuho-Maru* by Ocean Research Institute, University of Tokyo, and from the Fukunaga Seamount during D181th dive of submersible *Shinkai6500* by Japan Marine Science Technology Center, respectively.

In this appendix, the list, Table A-1, describes dive number, rock number, sample location and bathymetric character. Together with bathymetry, topographic and tectonic settings in the sampling site are also listed.

Table A-1 The list of sample locations.

Dive	Rock Number	Bathymetry	Latitude °N	Longitude °E	Depth m	Sampling Method
Japan Trench oceanward slope						
10K#56	R-001	trench oceanward slope (ocean floor faulted by subduction)	39.39	144.26	7359	submersible
10K#56	R-002	trench oceanward slope (ocean floor faulted by subduction)	39.39	144.26	7359	submersible
Mizunagidori Seamount						
KH92-3	D3-008a	seamount (seamount top)	37.12 to 37.15	145.29 to 145.32	2900 to 2428	dredge
KH92-3	D3-008d	seamount (seamount top)	37.12 to 37.15	145.29 to 145.32	2900 to 2428	dredge
Uyeda Ridge						
KH87-3	D5-003	ridge (ridge line faulted by subduction)	27.14 to 27.16	143.44 to 143.45	6274 to 5940	dredge
KH87-3	D5-006	ridge (ridge line faulted by subduction)	27.14 to 27.16	143.44 to 143.45	6274 to 5940	dredge
Fukunaga Seamount						
D181	R-002	seamount (mountainside faulted by subduction)	15.48	147.83	6361	submersible
D181	R-003	seamount (mountainside faulted by subduction)	15.48	147.83	6316	submersible
D181	R-006	seamount (mountainside faulted by subduction)	15.48	147.83	6035	submersible

APPENDIX B
SAMPLE DESCRIPTION

In this appendix, rock type, some short sample description (Table B-1) and photomoicrographs (Figure B-1 to B-9) for each analyzed samples are described. Some abbreviation of minerals are shown as follows:

- OL olivine
- CPX clinopyroxene (Ti-augite)
- HB hornblende
- PL plagioclase
- K-FD potassium feldspar
- QZ quartz
- SP spinel (chromian spinel)
- OPQ opaque minerals

Table B-1 Sample descriptions.

Dive	Number	Rock Types	Rock	Phenocryst	Groundmass	Lithology
Japan Trench oceanward slope						
10K#56	R-001	shoshonite	pillow lava	OL	CPX, OL, K-FD, OPQ	spinifex, vesicular
10K#56	R-002	shoshonite	pillow lava	OL	CPX, OL, K-FD, OPQ	spinifex, vesicular
Mizunagidori Seamount						
KH92-3	D3-008a	hawaiite	breccia	altered	PL, K-FD, OPQ, altered	pilotaxitic, vesicular
KH92-3	D3-008d	hawaiite	breccia	altered	PL, K-FD, OPQ, altered	pilotaxitic, vesicular
Uyeda Ridge						
KH87-3	D5-003	altered alkali basalt	pillow lava	altered OL with SP	PL, K-FD, altered	porphyritic, intergranular
KH87-3	D5-006	altered alkali basalt	pillow lava	altered OL with SP	PL, K-FD, altered	porohyritic, intersertal
Fukunaga Seamount						
D181	R-002	peralkaline ryholite	pillow lava	K-FD, QZ, HB	K-FD, OPQ	trachytic, vesicular
D181	R-003	tuffaceous claystone	sedimentary rock	-	-	including hawaiite glass frags.
D181	R-006	altered alkali basalt	pillow breccia	altered OL	PL, K-FD, altered	trachytic, pilotaxitic, seriate

Figure B-1 Photomicrograph of KH92-3 D3-008a.

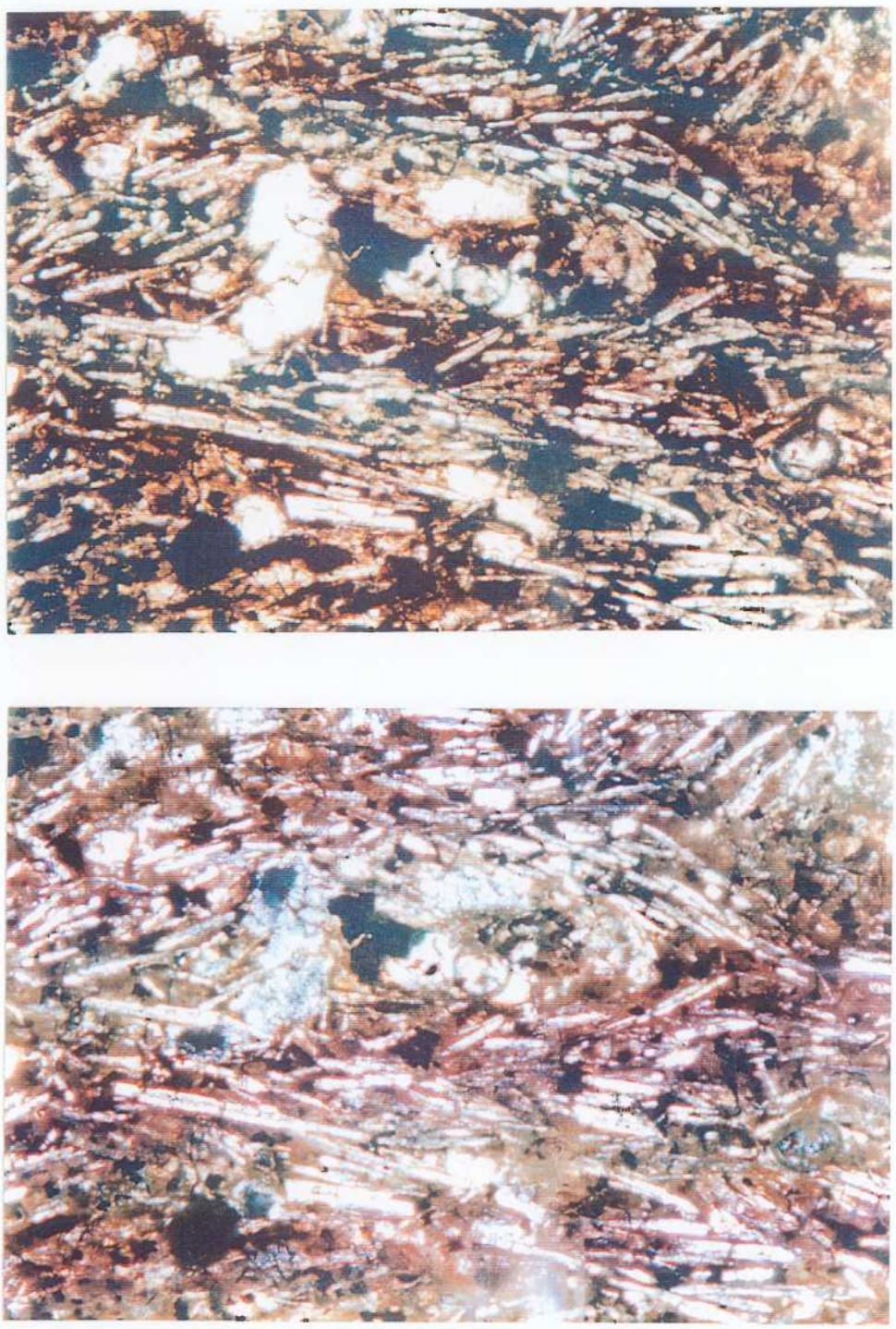


Figure B-2 Photomicrograph of KH92-3 D3-008d.

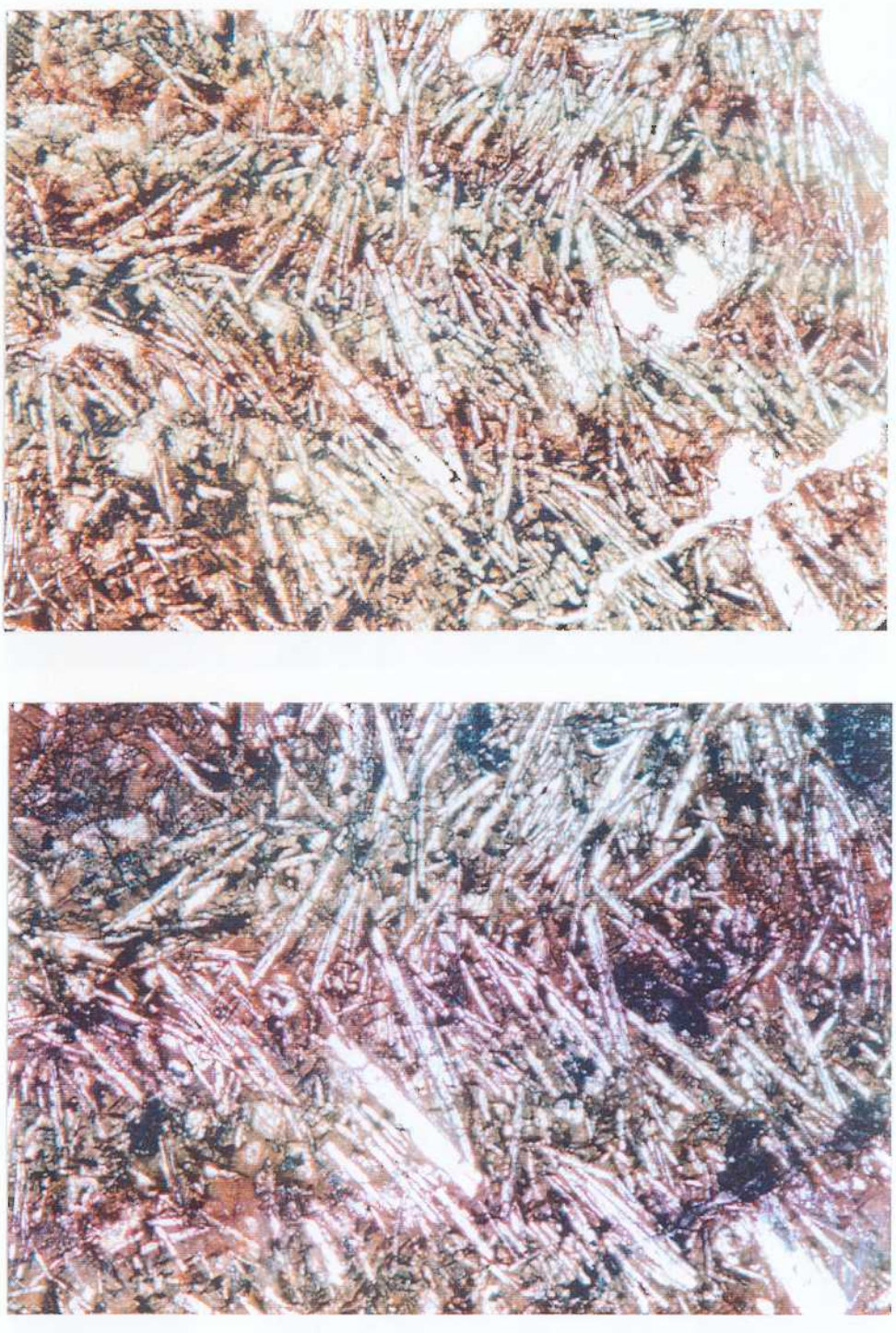


Figure B-3 Photomicrograph of 10K#56 R-001.

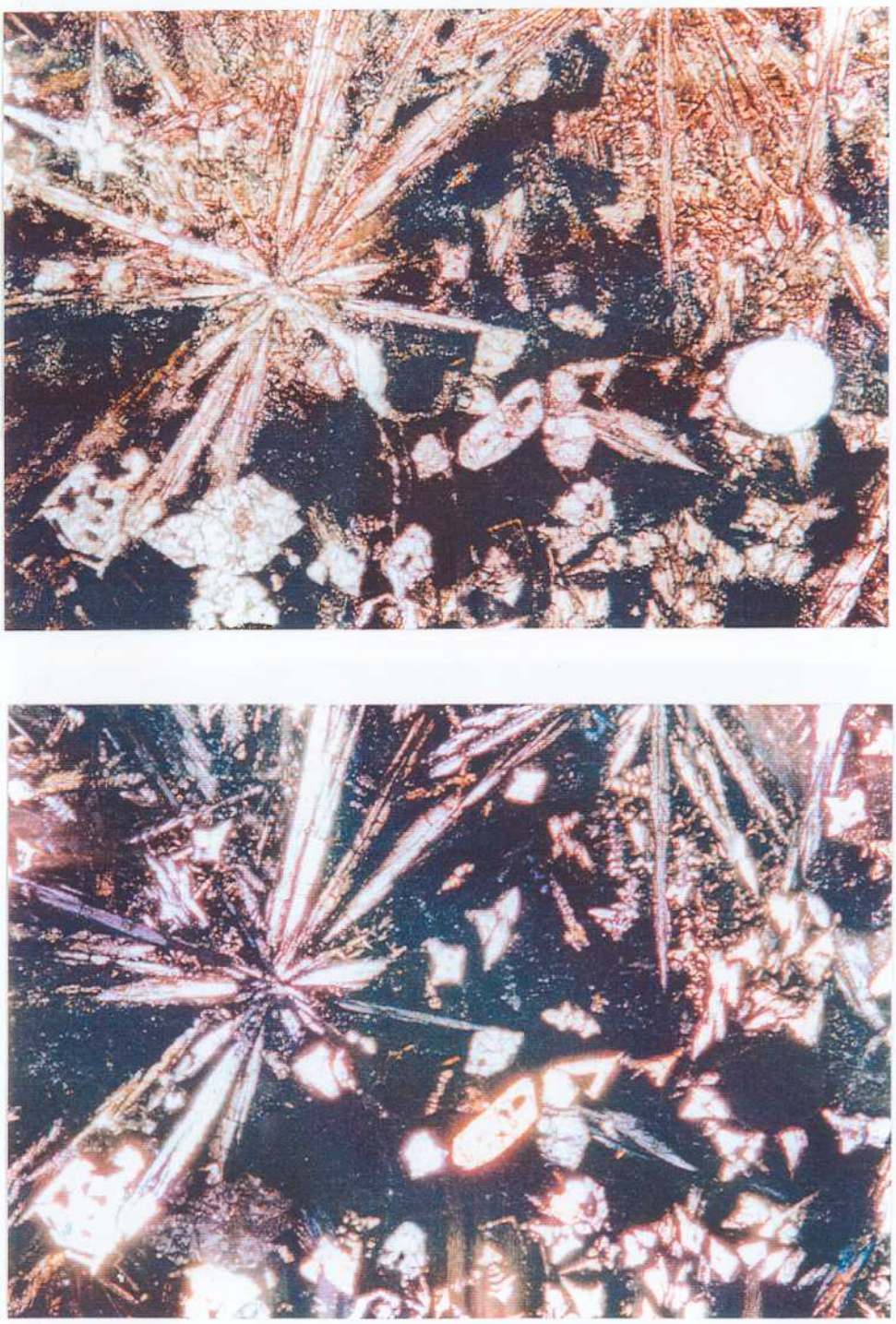


Figure B-4 Photomicrograph of 10K#56 R-002.

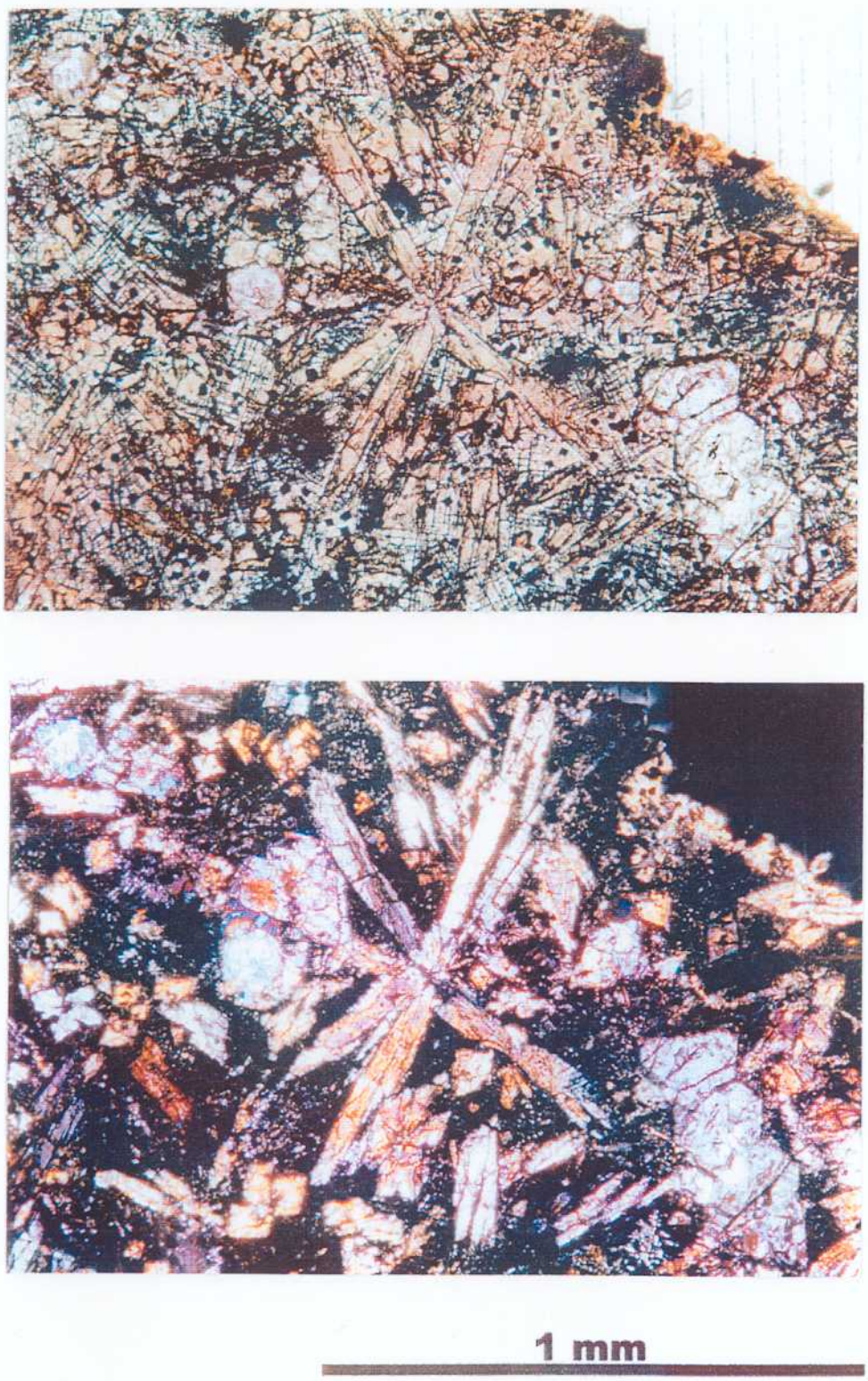


Figure B-5 Photomicrograph of KH87-3 5-003.

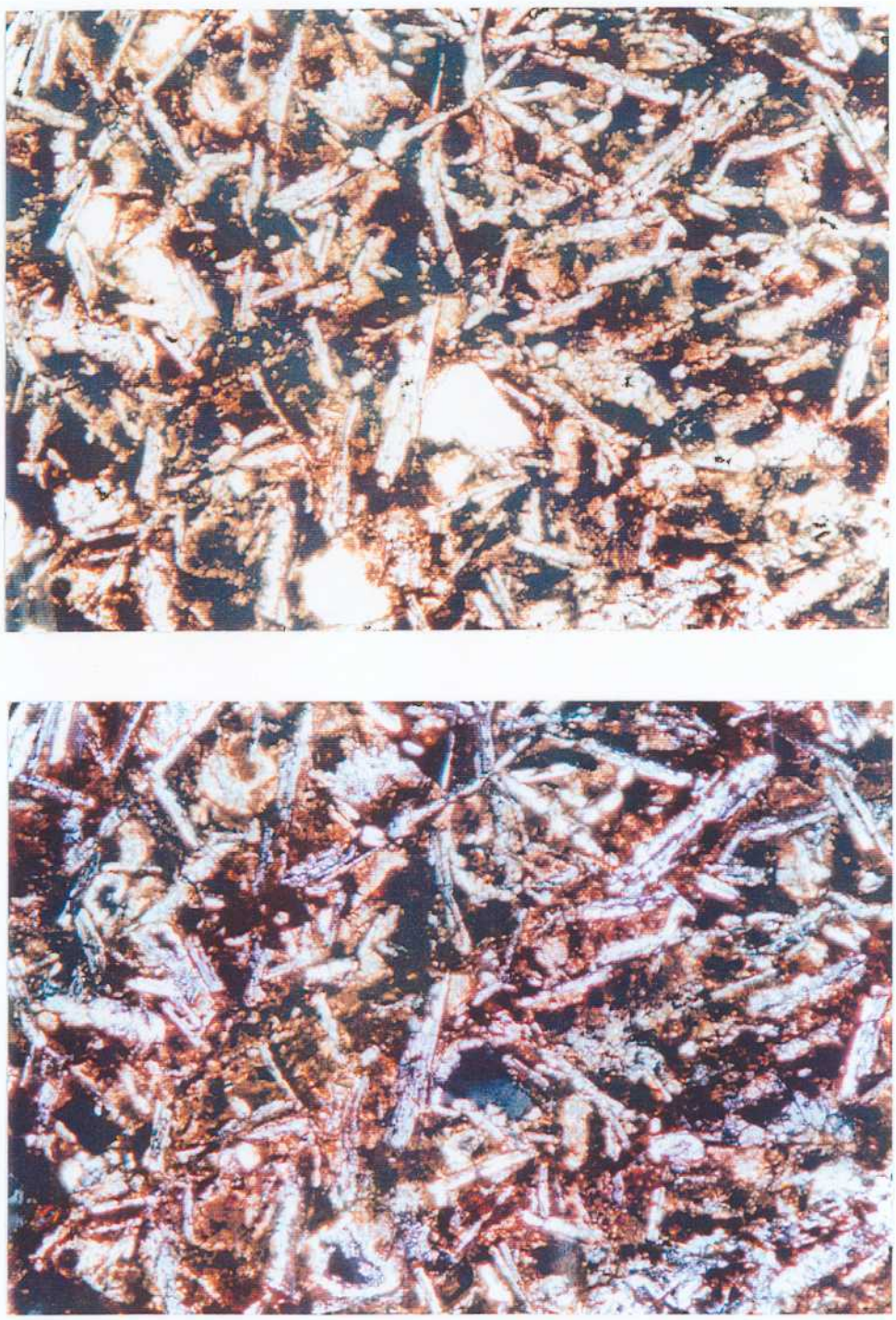


Figure B-6 Photomicrograph of KH87-3 5-006.

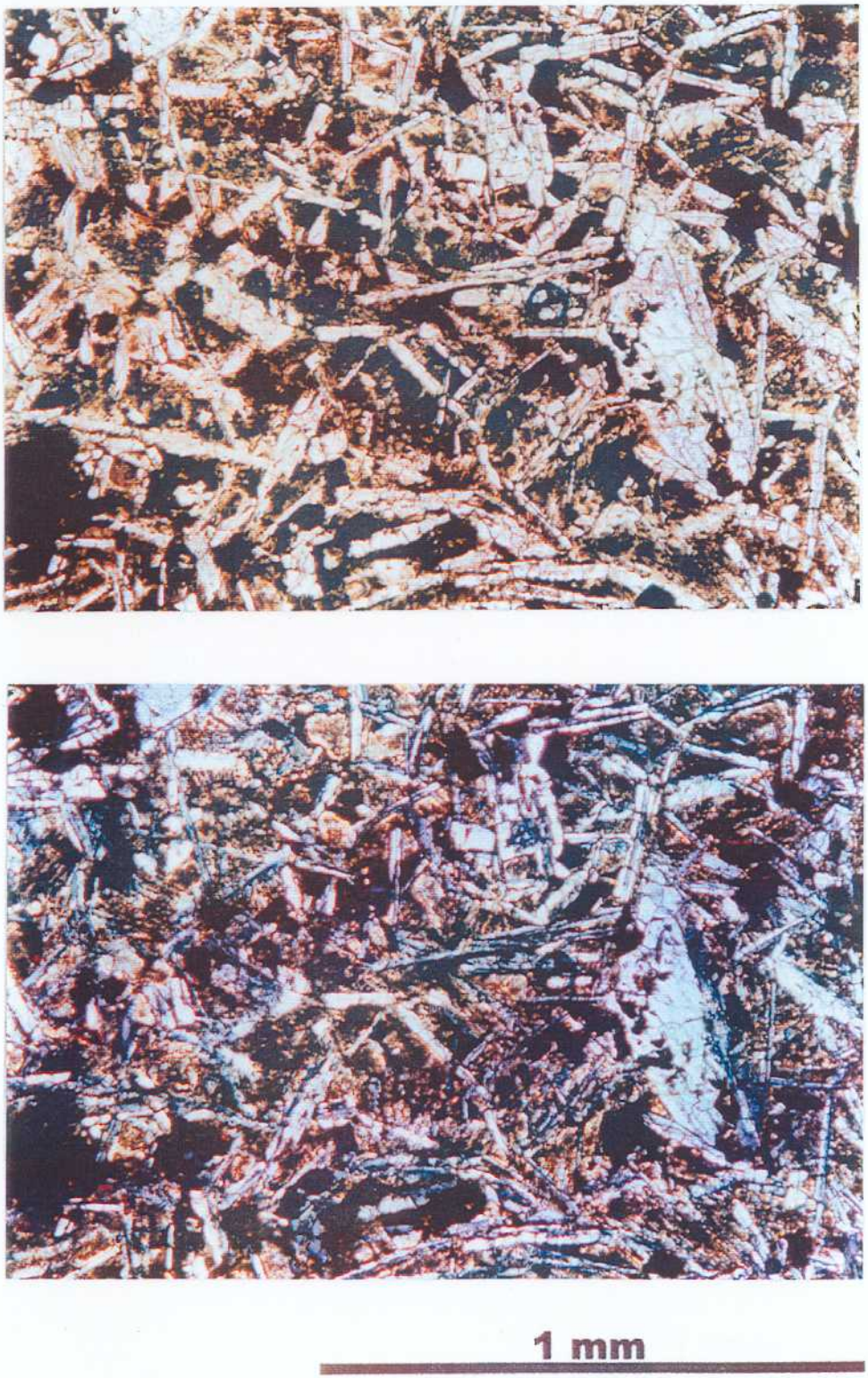


Figure B-7 Photomicrograph of D-181 R-002.

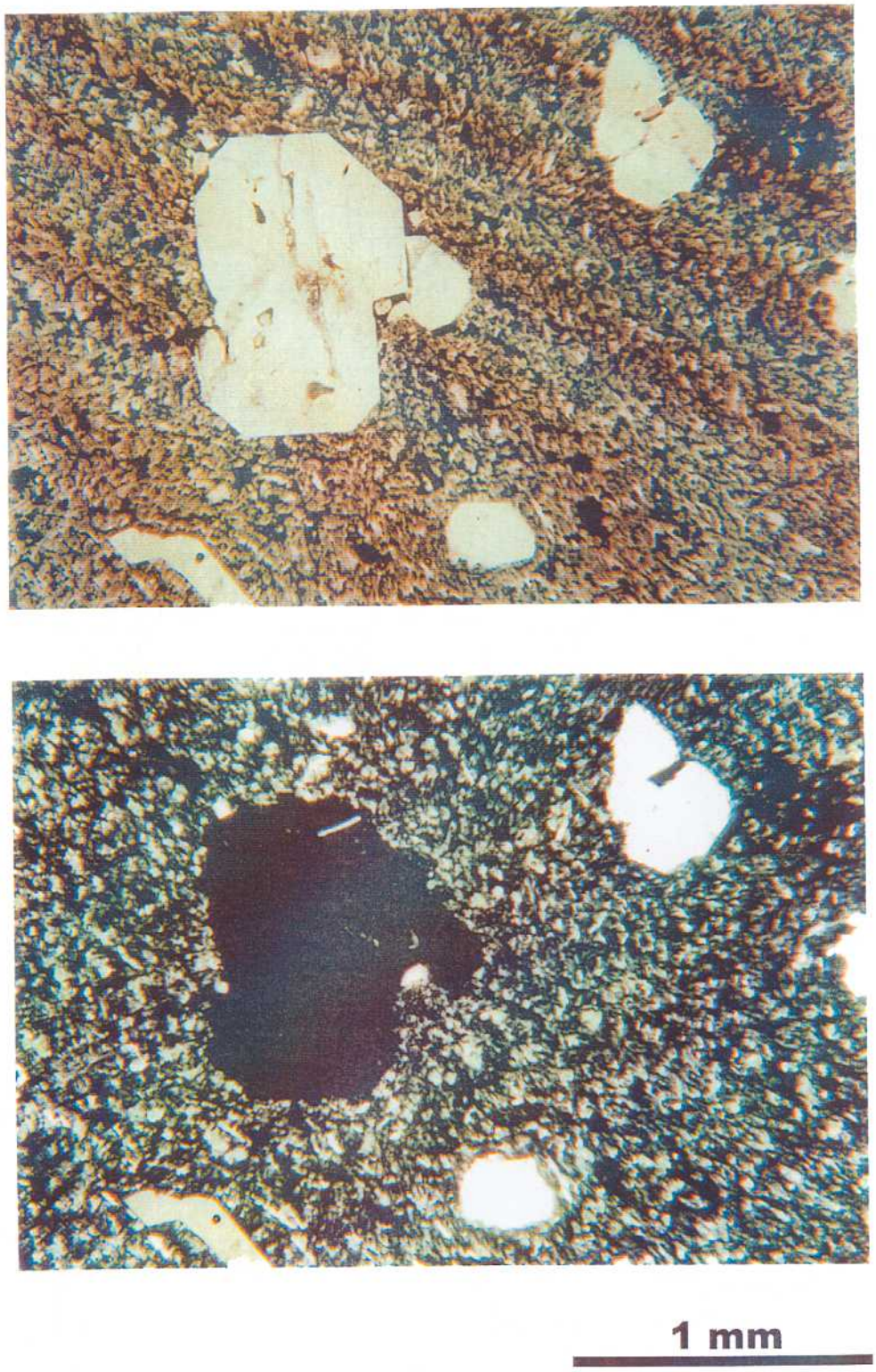


Figure B-8 Photomicrograph of D-181 R-003.

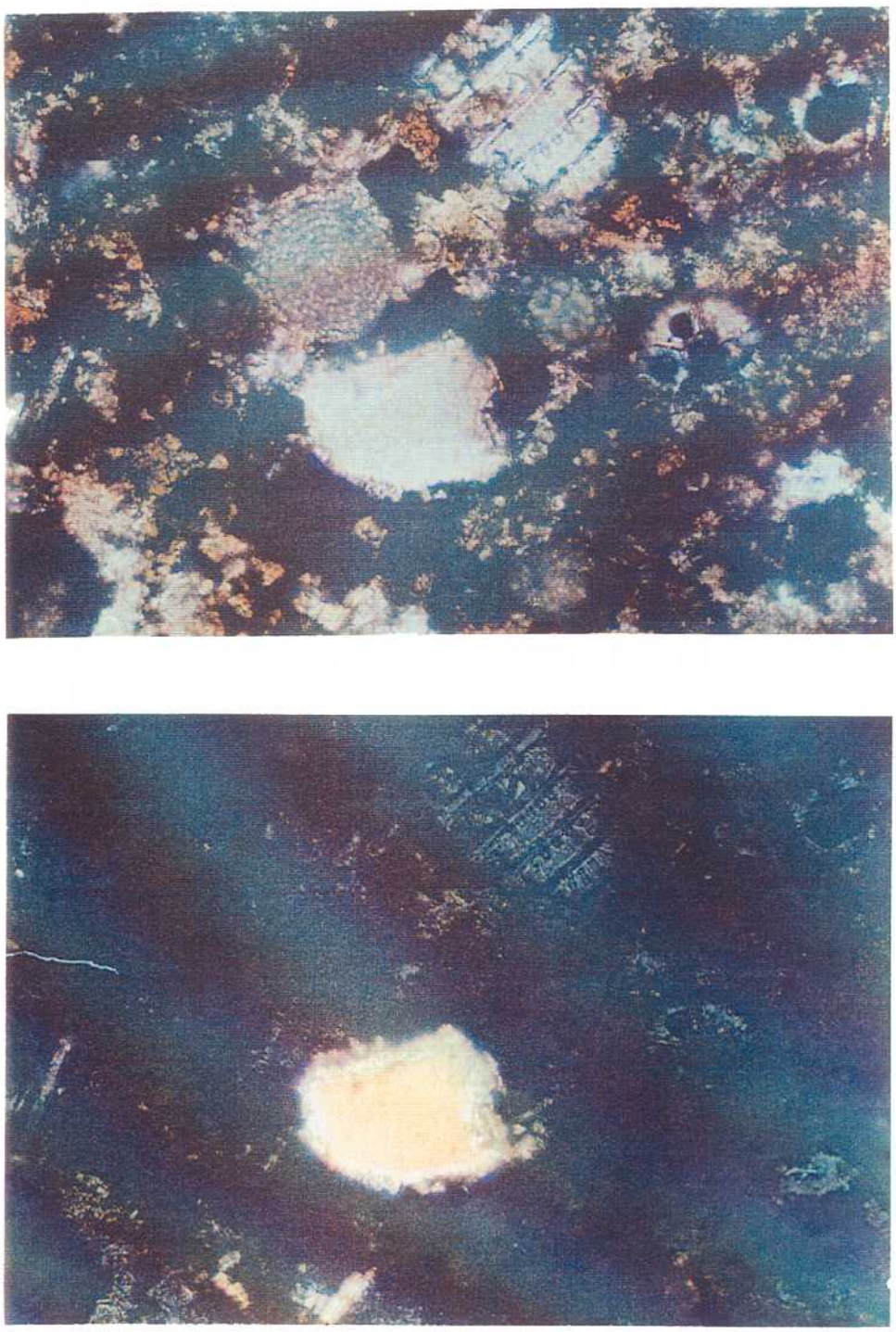
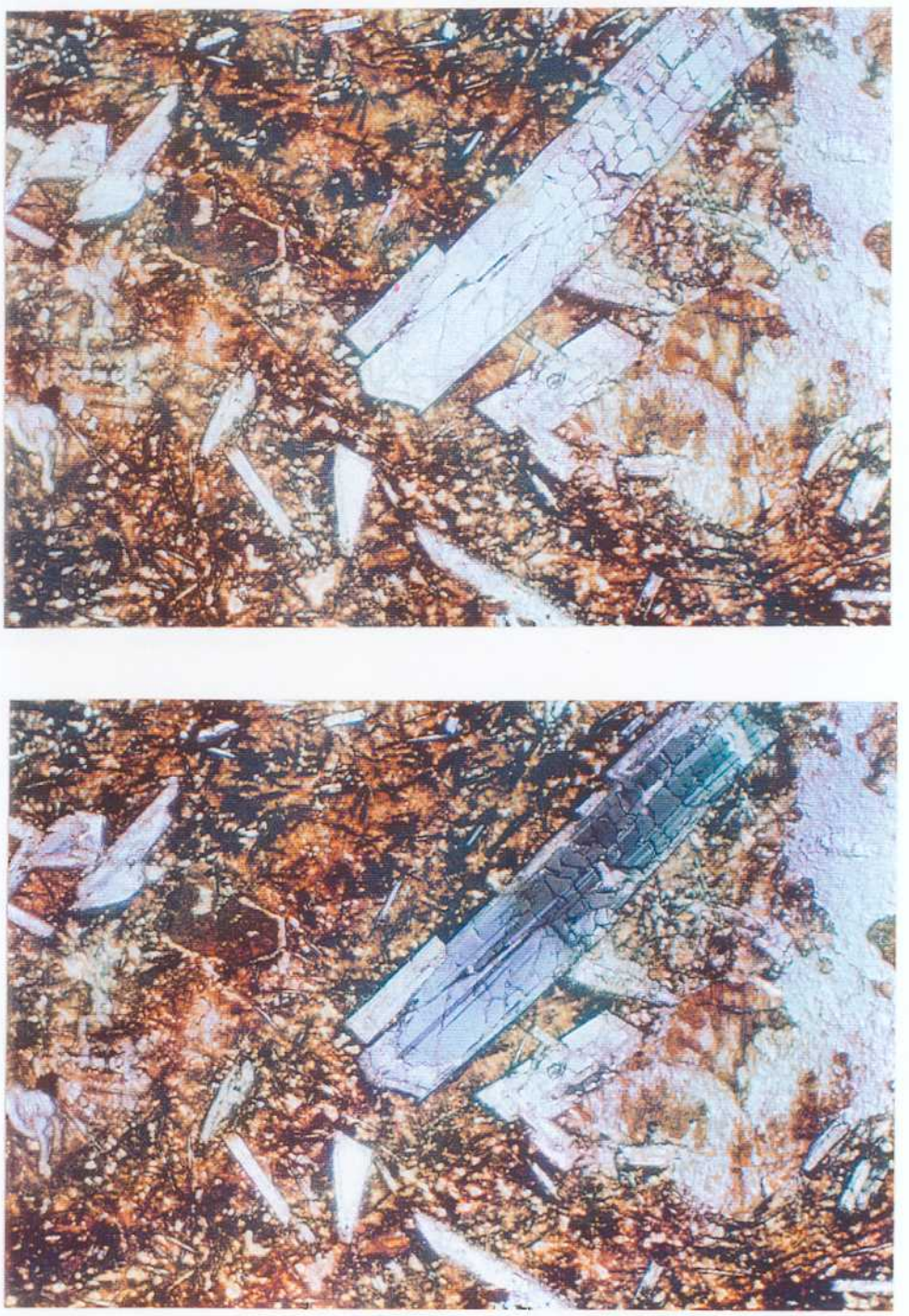


Figure B-9 Photomicrograph of D-181 R-006.



APPENDIX C

MICROPROBE DATA

Electron microprobe analysis of mineral phases of phenocryst and in the groundmass, and volcanic glasses in the tuffaceous craystone were done. In this appendix, results of microprobe data for all samples are listed. Some brief accounts of the mineral are the same as appendix B. Abbreviations are as follows:

- groundm. groundmass
- pheno. phenocryst
- in pheno. micro crystal in phenocryst
- rim micro crystal around phenocryst
- glass volcanic glass fragment

In this table, FeO show the total Fe-oxide as calculated FeO.

Table C-1 The results of electron microprobe analysis of 10K#56R-001.

10K#56 R-001 Japan Trench oceanward slope							
No.	23 OL pheno.	7 OL pheno.	8 OL pheno.	9 OL pheno.	10 OL pheno.	11 OL pheno.	12 OL pheno.
SiO_2	40.96	38.61	40.99	40.44	40.41	39.82	40.68
TiO_2	0.00	0.02	0.02	0.00	0.00	0.00	0.05
Al_2O_3	0.00	0.12	0.00	0.04	0.06	0.02	0.02
FeO	7.43	8.37	8.07	8.13	7.92	7.96	8.05
MnO	0.12	0.07	0.08	0.14	0.13	0.12	0.12
MgO	50.82	44.58	51.39	51.33	50.25	49.87	51.42
CaO	0.06	0.06	0.04	0.05	0.06	0.05	0.06
Na_2O	0.03	0.02	0.01	0.01	0.02	0.02	0.00
K_2O	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Cr_2O_3	0.06	0.00	0.01	0.00	0.04	0.09	0.00
V_2O_3	0.00	0.00	0.02	0.00	0.02	0.04	0.00
NiO	0.41	0.29	0.40	0.27	0.49	0.59	0.44
P_2O_5	0.00	0.02	0.00	0.01	0.01	0.02	0.03
Total	99.88	92.17	101.03	100.43	99.41	98.61	100.85

10K#56 R-001 Japan Trench oceanward slope							
No.	13 OL pheno.	14 OL pheno.	15 OL pheno.	17 OL pheno.	18 OL pheno.	19 OL pheno.	20 OL pheno.
SiO_2	41.12	40.75	40.68	41.03	40.73	40.85	41.06
TiO_2	0.02	0.00	0.00	0.02	0.01	0.00	0.01
Al_2O_3	0.01	0.03	0.05	0.00	0.03	0.00	0.00
FeO	8.03	8.01	8.08	8.10	8.24	8.02	7.93
MnO	0.11	0.16	0.13	0.09	0.20	0.18	0.16
MgO	51.25	51.08	52.07	51.53	51.55	51.26	51.51
CaO	0.05	0.03	0.09	0.04	0.06	0.05	0.05
Na_2O	0.01	0.02	0.00	0.02	0.00	0.01	0.02
K_2O	0.02	0.00	0.00	0.00	0.03	0.00	0.00
Cr_2O_3	0.06	0.07	0.03	0.07	0.00	0.09	0.02
V_2O_3	0.00	0.01	0.00	0.00	0.00	0.03	0.00
NiO	0.40	0.43	0.43	0.47	0.38	0.27	0.36
P_2O_5	0.01	0.05	0.02	0.00	0.01	0.01	0.01
Total	101.07	100.65	101.57	101.38	101.23	100.78	101.12

Table C-1 (continued)

10K#56 R-001 Japan Trench oceanward slope							
No.	21 OL pheno.	22 OL pheno.	23 OL pheno.	24 OL pheno.	25 OL pheno.	27 OL pheno.	28 OL pheno.
SiO_2	40.80	41.08	40.30	40.86	40.89	41.31	40.56
TiO_2	0.00	0.00	0.00	0.00	0.00	0.03	0.00
Al_2O_3	0.03	0.00	0.02	0.01	0.00	0.02	0.04
FeO	8.06	8.31	7.57	7.82	8.08	8.02	8.14
MnO	0.18	0.17	0.11	0.06	0.15	0.15	0.06
MgO	51.21	51.29	50.35	51.47	51.52	51.98	50.51
CaO	0.07	0.05	0.07	0.07	0.06	0.06	0.06
Na_2O	0.00	0.01	0.02	0.03	0.01	0.01	0.00
K_2O	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Cr_2O_3	0.03	0.02	0.05	0.07	0.09	0.00	0.03
V_2O_3	0.01	0.00	0.00	0.00	0.01	0.01	0.02
NiO	0.42	0.46	1.84	0.27	0.40	0.41	0.41
P_2O_5	0.00	0.01	0.00	0.00	0.00	0.03	0.00
Total	100.80	101.38	100.32	100.65	101.23	102.04	99.84

10K#56 R-001 Japan Trench oceanward slope							
No.	29 OL pheno.	30 OL pheno.	31 OL pheno.	126 OL rim	127 OL rim	24 OL rim	5 OL rim
SiO_2	40.75	40.74	39.82	40.81	40.54	40.12	39.88
TiO_2	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Al_2O_3	0.00	0.04	0.02	0.01	0.02	0.04	0.05
FeO	7.94	7.87	8.84	10.09	11.19	13.18	13.37
MnO	0.09	0.15	0.14	0.11	0.22	0.18	0.22
MgO	51.15	50.58	49.53	49.20	47.86	46.55	46.14
CaO	0.07	0.03	0.07	0.08	0.15	0.24	0.27
Na_2O	0.02	0.00	0.00	0.00	0.00	0.02	0.01
K_2O	0.00	0.03	0.00	0.04	0.01	0.00	0.00
Cr_2O_3	0.03	0.03	0.01	0.06	0.05	0.02	0.00
V_2O_3	0.00	0.00	0.01	0.02	0.02	0.00	0.00
NiO	0.41	0.40	0.31	0.38	0.41	0.34	0.28
P_2O_5	0.00	0.03	0.02	0.03	0.02	0.00	0.00
Total	100.45	99.89	98.78	100.84	100.46	100.69	100.20

Table C-1 (continued)

10K#56 R-001 Japan Trench oceanward slope							
No.	6	33	34	131	133	134	135
	OL	OL	OL	OL	OL	OL	OL
	rim	rim	rim	groundm.	groundm.	groundm.	groundm.
SiO_2	40.59	39.63	38.91	39.97	40.29	39.78	39.29
TiO_2	0.02	0.03	0.04	0.03	0.01	0.02	0.07
Al_2O_3	0.03	0.03	0.00	0.06	0.02	0.04	0.03
FeO	10.42	14.30	17.91	13.58	12.51	16.74	15.55
MnO	0.19	0.18	0.29	0.23	0.16	0.21	0.23
MgO	49.29	46.20	42.72	45.25	47.42	43.80	43.54
CaO	0.07	0.30	0.40	0.25	0.09	0.34	0.32
Na_2O	0.00	0.02	0.02	0.03	0.03	0.02	0.03
K_2O	0.00	0.01	0.00	0.01	0.00	0.01	0.00
Cr_2O_3	0.00	0.05	0.00	0.05	0.00	0.01	0.07
V_2O_3	0.00	0.03	0.01	0.00	0.01	0.00	0.00
NiO	0.49	0.25	0.23	0.27	0.34	0.11	0.27
P_2O_5	0.00	0.06	0.24	0.06	0.03	0.03	0.14
Total	101.09	101.09	100.76	99.78	100.91	101.09	99.53

10K#56 R-001 Japan Trench oceanward slope							
No.	136	137	26	27	35	36	37
	OL	OL	OL	OL	OL	OL	OL
	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.
SiO_2	39.45	39.34	39.42	39.08	39.32	39.02	39.31
TiO_2	0.05	0.03	0.02	0.06	0.03	0.01	0.05
Al_2O_3	0.05	0.02	0.06	0.08	0.06	0.07	0.03
FeO	14.86	16.09	13.96	15.34	13.02	13.17	13.28
MnO	0.22	0.27	0.16	0.19	0.23	0.15	0.25
MgO	44.60	43.11	45.40	44.60	46.45	45.85	45.67
CaO	0.30	0.37	0.33	0.35	0.25	0.24	0.25
Na_2O	0.02	0.01	0.06	0.03	0.04	0.00	0.01
K_2O	0.02	0.01	0.01	0.00	0.00	0.03	0.00
Cr_2O_3	0.04	0.02	0.06	0.05	0.03	0.10	0.05
V_2O_3	0.00	0.00	0.00	0.00	0.00	0.02	0.00
NiO	0.21	0.21	0.37	0.31	0.48	0.37	0.30
P_2O_5	0.09	0.00	0.06	0.18	0.01	0.07	0.10
Total	99.91	99.46	99.91	100.26	99.92	99.10	99.30

Table C-1 (continued)

10K#56 R-001 Japan Trench oceanward slope							
No.	38	39	40	41	42	43	44
	OL	OL	OL	OL	OL	OL	OL
	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.
SiO_2	35.93	39.82	38.73	39.18	39.27	41.92	40.01
TiO_2	0.18	0.01	0.00	0.05	0.04	0.90	0.03
Al_2O_3	0.20	0.05	0.06	0.06	0.02	5.31	0.05
FeO	13.18	11.85	12.07	12.35	12.55	9.72	12.04
MnO	0.16	0.13	0.17	0.20	0.23	0.11	0.17
MgO	41.43	47.62	45.65	46.21	46.29	33.90	47.16
CaO	0.77	0.20	0.25	0.22	0.21	2.19	0.21
Na_2O	0.04	0.00	0.01	0.00	0.01	1.10	0.00
K_2O	0.12	0.00	0.00	0.00	0.00	1.28	0.00
Cr_2O_3	0.00	0.05	0.02	0.01	0.05	0.06	0.01
V_2O_3	0.00	0.01	0.00	0.01	0.03	0.03	0.01
NiO	0.44	0.39	0.34	0.41	0.38	0.34	0.41
P_2O_5	0.08	0.04	0.00	0.05	0.00	0.37	0.10
Total	92.53	100.17	97.29	98.74	99.09	97.22	100.19

10K#56 R-001 Japan Trench oceanward slope						
No.	45	46	47	48	49	50
	OL	OL	OL	OL	OL	OL
	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.
SiO_2	39.81	36.14	39.39	39.32	39.64	39.59
TiO_2	0.02	0.02	0.10	0.07	0.04	0.02
Al_2O_3	0.02	0.09	0.06	0.03	0.02	0.02
FeO	12.68	13.19	14.05	14.18	14.46	13.16
MnO	0.14	0.18	0.20	0.27	0.19	0.19
MgO	46.93	43.91	45.37	45.39	45.34	46.92
CaO	0.21	0.30	0.34	0.32	0.34	0.22
Na_2O	0.03	0.00	0.06	0.01	0.04	0.02
K_2O	0.00	0.00	0.01	0.00	0.00	0.03
Cr_2O_3	0.11	0.12	0.01	0.01	0.04	0.01
V_2O_3	0.00	0.01	0.00	0.00	0.00	0.00
NiO	0.43	0.31	0.20	0.26	0.27	0.36
P_2O_5	0.03	0.03	0.07	0.02	0.14	0.06
Total	100.40	94.28	99.85	99.88	100.52	100.61

Table C-1 (continued)

10K#56 R-001 Japan Trench oceanward slope				
No.	122	123	124	125
	K-FD groundm.	K-FD groundm.	CPX groundm.	CPX groundm.
SiO_2	58.06	58.53	48.99	45.97
TiO_2	1.85	1.86	2.07	2.81
Al_2O_3	18.10	18.53	3.55	11.60
FeO	3.25	3.46	6.33	8.48
MnO	0.07	0.10	0.09	0.11
MgO	0.39	0.83	14.32	7.25
CaO	2.89	2.86	21.63	17.27
Na_2O	5.22	4.66	0.49	1.49
K_2O	5.65	5.42	0.02	0.95
Cr_2O_3	0.00	0.00	0.71	0.01
V_2O_3	0.02	0.00	0.05	0.09
NiO	0.00	0.02	0.00	0.00
P_2O_5	1.42	0.93	0.00	0.75
Total	96.91	97.17	98.24	96.79

10K#56 R-002 Japan Trench oceanward slope							
No.	47	68	69	70	71	72	73
	OL pheno.	OL pheno.	OL pheno.	OL pheno.	OL pheno.	OL pheno.	OL pheno.
SiO_2	40.86	40.38	40.81	40.91	40.69	40.72	40.29
TiO_2	0.00	0.02	0.00	0.02	0.01	0.00	0.00
Al_2O_3	0.05	0.01	0.02	0.01	0.00	0.02	0.00
FeO	8.44	8.88	8.35	8.32	8.21	8.58	8.00
MnO	0.10	0.11	0.08	0.11	0.06	0.16	0.17
MgO	51.11	49.96	50.31	50.84	50.37	51.22	50.87
CaO	0.05	0.03	0.06	0.08	0.04	0.06	0.07
Na_2O	0.00	0.01	0.02	0.02	0.02	0.04	0.00
K_2O	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Cr_2O_3	0.07	0.04	0.03	0.00	0.01	0.01	0.00
V_2O_3	0.00	0.00	0.01	0.00	0.02	0.00	0.01
NiO	0.46	0.37	0.41	0.37	0.38	0.38	0.38
P_2O_5	0.04	0.00	0.04	0.00	0.02	0.03	0.00
Total	101.16	99.81	100.12	100.68	99.81	101.22	99.80

Table C-2 The results of electron microprobe analysis of 10K#56R-002.

10K#56 R-002 Japan Trench oceanward slope							
No.	74 OL pheno.	75 OL pheno.	76 OL pheno.	85 OL pheno.	86 OL pheno.	87 OL pheno.	88 OL pheno.
SiO_2	40.55	40.64	40.56	40.85	40.84	40.80	40.54
TiO_2	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Al_2O_3	0.01	0.01	0.02	0.04	0.00	0.03	0.02
FeO	8.18	8.14	8.81	8.71	7.81	7.79	8.12
MnO	0.13	0.07	0.10	0.17	0.15	0.14	0.10
MgO	50.98	50.94	50.71	50.50	50.76	50.98	51.10
CaO	0.05	0.04	0.09	0.08	0.04	0.07	0.03
Na_2O	0.02	0.00	0.02	0.00	0.00	0.02	0.01
K_2O	0.00	0.00	0.00	0.00	0.00	0.03	0.00
Cr_2O_3	0.02	0.03	0.01	0.08	0.07	0.07	0.01
V_2O_3	0.06	0.00	0.01	0.00	0.01	0.00	0.00
NiO	0.39	0.41	0.43	0.44	0.41	0.39	0.38
P_2O_5	0.02	0.00	0.00	0.02	0.02	0.00	0.03
Total	100.39	100.27	100.76	100.87	100.12	100.33	100.35

10K#56 R-002 Japan Trench oceanward slope							
No.	89 OL pheno.	48 OL rim	49 OL rim	50 OL rim	51 OL rim	52 OL rim	53 OL rim
SiO_2	41.01	40.61	40.90	39.46	40.40	39.86	39.72
TiO_2	0.00	0.00	0.00	0.04	0.00	0.00	0.00
Al_2O_3	0.04	0.06	0.03	0.05	0.07	0.08	0.06
FeO	8.16	7.85	8.18	13.23	9.59	11.51	13.15
MnO	0.16	0.07	0.06	0.13	0.10	0.09	0.19
MgO	50.67	50.46	50.73	45.69	49.58	47.08	45.94
CaO	0.06	0.06	0.06	0.23	0.05	0.09	0.23
Na_2O	0.00	0.00	0.02	0.02	0.00	0.00	0.06
K_2O	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Cr_2O_3	0.00	0.03	0.02	0.06	0.00	0.00	0.00
V_2O_3	0.03	0.00	0.00	0.03	0.03	0.00	0.00
NiO	0.41	0.43	0.39	0.33	0.39	0.43	0.34
P_2O_5	0.00	0.02	0.06	0.05	0.04	0.03	0.08
Total	100.53	99.60	100.44	99.33	100.24	99.17	99.79

Table C-2 (continued)

10K#56 R-002 Japan Trench oceanward slope							
No.	56 OL rim	78 OL rim	79 OL rim	80 OL rim	81 OL rim	82 OL rim	83 OL rim
SiO_2	39.77	39.75	39.61	39.55	39.62	39.24	38.89
TiO_2	0.00	0.03	0.01	0.10	0.44	0.01	0.06
Al_2O_3	0.04	0.02	0.01	0.01	0.71	0.01	0.06
FeO	10.75	12.19	12.67	13.59	15.58	13.58	13.85
MnO	0.13	0.21	0.15	0.20	0.19	0.22	0.22
MgO	49.12	47.27	46.22	45.91	42.18	45.18	44.06
CaO	0.07	0.18	0.25	0.31	0.97	0.22	0.32
Na_2O	0.03	0.00	0.02	0.00	0.17	0.02	0.02
K_2O	0.00	0.00	0.00	0.00	0.11	0.00	0.02
Cr_2O_3	0.00	0.02	0.03	0.04	0.02	0.09	0.10
V_2O_3	0.00	0.02	0.00	0.01	0.04	0.01	0.00
NiO	0.43	0.46	0.25	0.30	0.27	0.35	0.32
P_2O_5	0.07	0.05	0.03	0.01	0.07	0.02	0.08
Total	100.39	100.19	99.23	100.02	100.36	98.94	97.99

10K#56 R-002 Japan Trench oceanward slope							
No.	84 OL rim	90 OL rim	91 OL rim	54 OL groundm.	55 OL groundm.	57 OL groundm.	58 OL groundm.
SiO_2	40.00	40.46	37.66	39.16	39.71	39.83	42.76
TiO_2	0.01	0.02	0.40	0.02	0.05	0.04	0.00
Al_2O_3	0.00	0.02	0.60	0.08	0.07	0.06	0.16
FeO	12.06	10.15	15.18	14.89	13.59	13.95	14.31
MnO	0.16	0.12	0.17	0.20	0.13	0.18	0.17
MgO	47.05	47.91	43.92	44.76	46.10	46.97	50.27
CaO	0.20	0.12	0.38	0.38	0.26	0.26	0.27
Na_2O	0.00	0.00	0.06	0.04	0.03	0.03	0.07
K_2O	0.03	0.02	0.08	0.00	0.00	0.00	0.00
Cr_2O_3	0.06	0.00	1.54	0.04	0.00	0.02	0.03
V_2O_3	0.04	0.00	0.03	0.00	0.00	0.00	0.00
NiO	0.36	0.43	0.26	0.30	0.34	0.40	0.30
P_2O_5	0.01	0.00	0.02	0.20	0.08	0.08	0.34
Total	99.98	99.24	100.27	100.05	100.35	101.84	108.67

Table C-2 (continued)

10K#56 R-002 Japan Trench oceanward slope							
No.	59	51	52	53	54	55	56
	CPX	OL	OL	OL	OL	OL	OL
	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.
SiO_2	54.48	39.23	39.91	39.67	39.92	39.45	39.45
TiO_2	1.21	0.02	0.05	0.03	0.02	0.00	0.03
Al_2O_3	11.24	0.04	0.06	0.03	0.03	0.08	0.04
FeO	9.73	14.77	14.10	13.56	13.37	13.89	13.73
MnO	0.04	0.18	0.22	0.23	0.21	0.23	0.18
MgO	5.28	44.59	45.42	45.71	45.41	45.56	45.90
CaO	15.13	0.35	0.33	0.29	0.30	0.30	0.29
Na_2O	2.24	0.00	0.04	0.01	0.02	0.03	0.02
K_2O	2.96	0.04	0.04	0.03	0.00	0.00	0.00
Cr_2O_3	0.00	0.05	0.05	0.11	0.08	0.02	0.08
V_2O_3	0.00	0.00	0.01	0.00	0.00	0.00	0.00
NiO	0.08	0.33	0.24	0.22	0.35	0.36	0.26
P_2O_5	0.67	0.06	0.04	0.08	0.13	0.00	0.05
Total	103.06	99.66	100.50	99.96	99.83	99.93	100.03

10K#56 R-002 Japan Trench oceanward slope							
No.	57	58	59	60	61	62	64
	OL	OL	OL	OL	OL	OL	OL
	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.
SiO_2	39.01	39.73	39.35	39.69	39.77	39.68	39.48
TiO_2	0.00	0.25	0.05	0.00	0.00	0.02	0.06
Al_2O_3	0.03	0.58	0.03	0.03	0.02	0.02	0.06
FeO	13.60	14.94	13.94	13.79	13.41	14.07	14.33
MnO	0.25	0.25	0.25	0.19	0.17	0.26	0.29
MgO	45.28	43.19	44.54	45.81	45.44	45.51	45.69
CaO	0.28	0.97	0.34	0.33	0.29	0.30	0.28
Na_2O	0.05	0.09	0.00	0.02	0.02	0.00	0.03
K_2O	0.00	0.06	0.00	0.01	0.00	0.00	0.00
Cr_2O_3	0.01	0.06	0.09	0.08	0.02	0.11	0.02
V_2O_3	0.00	0.00	0.00	0.01	0.01	0.05	0.01
NiO	0.26	0.26	0.30	0.33	0.31	0.32	0.30
P_2O_5	0.10	0.08	0.03	0.01	0.08	0.05	0.14
Total	98.86	100.44	98.91	100.29	99.54	100.40	100.68

Table C-2 (continued)

10K#56 R-002 Japan Trench oceanward slope				
No.	65	66	67	92
	OL	OL	OL	OL
	groundm.	groundm.	groundm.	groundm.
SiO_2	38.99	39.22	39.66	39.10
TiO_2	0.12	0.05	0.02	0.02
Al_2O_3	0.27	0.05	0.05	0.04
FeO	14.41	14.33	13.25	14.23
MnO	0.21	0.24	0.23	0.20
MgO	43.95	45.62	46.60	46.00
CaO	0.34	0.28	0.31	0.31
Na_2O	0.07	0.00	0.02	0.00
K_2O	0.08	0.00	0.00	0.01
Cr_2O_3	0.07	0.07	0.00	0.01
V_2O_3	0.04	0.03	0.02	0.02
NiO	0.30	0.27	0.50	0.22
P_2O_5	0.12	0.09	0.02	0.02
Total	98.98	100.25	100.68	100.15

10K#56 R-002 Japan Trench oceanward slope							
No.	138	139	140	141	145	146	147
	CPX	CPX	CPX	CPX	CPX	CPX	CPX
	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.
SiO_2	45.14	45.83	45.44	45.26	45.62	47.22	46.69
TiO_2	3.72	3.82	3.50	2.63	3.89	2.93	3.50
Al_2O_3	6.21	6.08	6.12	8.29	6.17	5.72	6.07
FeO	9.88	8.80	8.38	9.82	9.33	7.94	8.78
MnO	0.20	0.07	0.12	0.24	0.09	0.07	0.09
MgO	10.67	12.02	11.94	10.46	11.40	12.51	12.29
CaO	21.83	21.92	22.03	21.32	21.92	22.79	22.68
Na_2O	0.56	0.50	0.50	0.63	0.45	0.43	0.45
K_2O	0.03	0.01	0.02	0.30	0.00	0.00	0.00
Cr_2O_3	0.00	0.10	0.04	0.00	0.05	0.14	0.08
V_2O_3	0.14	0.16	0.18	0.07	0.13	0.13	0.12
NiO	0.05	0.00	0.07	0.00	0.00	0.02	0.00
P_2O_5	0.04	0.19	0.15	0.07	0.12	0.01	0.09
Total	98.46	99.48	98.48	99.10	99.16	99.90	100.82

Table C-2 (continued)

10K#56 R-002 Japan Trench oceanward slope							
No.	148	152	153	154	155	156	157
	CPX	CPX	CPX	CPX	CPX	CPX	CPX
	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.	groundm.
SiO_2	44.49	46.18	47.60	46.71	49.36	46.35	45.36
TiO_2	3.95	3.36	3.32	3.62	2.29	3.55	3.96
Al_2O_3	6.81	5.79	6.16	5.42	4.46	6.05	6.13
FeO	9.86	8.74	8.07	7.94	7.11	8.49	8.93
MnO	0.18	0.10	0.19	0.12	0.06	0.11	0.16
MgO	11.26	12.25	12.30	12.34	14.17	12.52	11.82
CaO	21.83	22.23	23.06	21.87	22.27	22.06	21.92
Na_2O	0.58	0.28	0.34	0.37	0.26	0.35	0.31
K_2O	0.00	0.03	0.02	0.01	0.02	0.02	0.00
Cr_2O_3	0.01	0.21	0.00	0.10	0.11	0.07	0.11
V_2O_3	0.13	0.11	0.12	0.09	0.09	0.09	0.17
NiO	0.00	0.00	0.00	0.00	0.02	0.01	0.00
P_2O_5	0.14	0.30	0.11	0.25	0.26	0.41	0.39
Total	99.22	99.58	101.28	98.85	100.48	100.06	99.25

10K#56 R-002 Japan Trench oceanward slope			
No.	158	142	151
	CPX	K-FD	K-FD
	groundm.	groundm.	groundm.
SiO_2	45.22	64.31	53.92
TiO_2	4.65	0.28	6.09
Al_2O_3	6.02	19.82	16.41
FeO	10.82	0.61	7.29
MnO	0.24	0.00	0.14
MgO	11.09	0.03	0.28
CaO	21.79	1.04	2.87
Na_2O	0.40	3.57	3.04
K_2O	0.02	6.15	5.40
Cr_2O_3	0.00	0.03	0.00
V_2O_3	0.15	0.01	0.15
NiO	0.00	0.00	0.06
P_2O_5	0.36	0.13	1.42
Total	100.76	95.98	97.07

Table C-3 The results of electron microprobe analysis of KH92-3 D3-008a.

KH92-3 D3-008a Mizunagidori Seamount							
No.	145 OPQ ilmenite	146 OPQ ilmenite	148 OPQ ilmenite	149 OPQ ilmenite	150 OPQ ilmenite	151 PL	152 PL
SiO_2	0.13	0.18	0.16	0.16	0.11	54.13	55.80
TiO_2	20.78	19.09	18.17	17.66	18.67	0.10	0.28
Al_2O_3	4.94	5.37	5.89	6.13	5.78	28.44	27.42
FeO	63.62	64.23	65.34	65.14	65.07	0.65	0.63
MnO	0.53	0.51	0.50	0.49	0.53	0.00	0.00
MgO	5.07	5.27	5.27	5.41	5.11	0.07	0.08
CaO	0.09	0.05	0.05	0.04	0.03	12.24	10.51
Na_2O	0.00	0.03	0.00	0.01	0.00	4.85	5.72
K_2O	0.02	0.00	0.01	0.00	0.00	0.21	0.37
Cr_2O_3	0.00	0.01	0.06	0.00	0.00	0.04	0.08
V_2O_3	1.75	1.78	1.79	1.79	1.90	0.04	0.00
NiO	0.00	0.09	0.01	0.00	0.05	0.04	0.01
P_2O_5	0.01	0.02	0.00	0.00	0.00	0.00	0.00
Total	96.92	96.62	97.23	96.83	97.26	100.80	100.88

KH92-3 D3-008a Mizunagidori Seamount							
No.	153 PL	154 PL	155 PL	156 PL	157 PL	160 PL	161 PL
SiO_2	58.50	55.24	55.06	54.84	55.16	54.50	53.79
TiO_2	0.21	0.13	0.23	0.19	0.28	0.18	0.11
Al_2O_3	25.56	28.07	28.13	28.21	28.02	28.62	28.97
FeO	0.72	0.63	0.56	0.63	0.60	0.71	0.75
MnO	0.00	0.03	0.00	0.00	0.04	0.00	0.03
MgO	0.08	0.09	0.06	0.10	0.08	0.11	0.12
CaO	8.43	11.39	11.66	11.36	11.74	12.36	12.46
Na_2O	6.57	5.23	5.04	5.07	5.18	4.85	4.54
K_2O	0.59	0.33	0.30	0.30	0.34	0.22	0.23
Cr_2O_3	0.03	0.02	0.07	0.00	0.00	0.02	0.00
V_2O_3	0.07	0.04	0.00	0.00	0.01	0.03	0.04
NiO	0.03	0.00	0.05	0.00	0.00	0.00	0.05
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.78	101.19	101.15	100.71	101.44	101.60	101.08

Table C-3 (continued)

KH92-3 D3-008a Mizunagidori Seamount							
No.	163 PL	164 PL	165 PL	166 PL	169 PL	170 PL	171 PL
SiO_2	55.13	55.75	55.49	54.53	54.34	58.61	57.21
TiO_2	0.12	0.23	0.19	0.14	0.15	0.18	0.21
Al_2O_3	29.36	27.55	27.55	28.29	28.64	25.27	26.57
FeO	0.60	0.61	0.72	0.68	0.57	0.69	0.73
MnO	0.00	0.01	0.01	0.00	0.00	0.05	0.00
MgO	0.10	0.07	0.08	0.08	0.08	0.05	0.08
CaO	11.79	10.64	11.08	12.04	11.67	8.00	10.03
Na_2O	4.49	5.40	5.12	4.87	4.84	6.11	5.94
K_2O	0.41	0.37	0.55	0.28	0.38	2.01	0.61
Cr_2O_3	0.02	0.02	0.00	0.01	0.00	0.00	0.00
V_2O_3	0.03	0.06	0.03	0.02	0.00	0.04	0.01
NiO	0.00	0.00	0.00	0.00	0.00	0.01	0.02
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Total	102.03	100.73	100.81	100.96	100.68	101.01	101.41

KH92-3 D3-008a Mizunagidori Seamount							
No.	172 PL	176 PL	178 PL	179 PL	180 PL	142 K-FD	177 K-FD
SiO_2	56.53	54.82	57.65	54.07	54.03	62.95	65.68
TiO_2	0.24	0.16	0.27	0.21	0.11	0.62	0.03
Al_2O_3	27.03	27.73	25.32	26.22	28.87	18.75	18.73
FeO	0.73	0.65	0.78	0.65	0.70	1.10	0.15
MnO	0.00	0.02	0.06	0.00	0.01	0.02	0.00
MgO	0.09	0.08	0.10	0.14	0.13	0.01	0.02
CaO	10.31	11.41	9.52	11.09	12.22	3.06	0.45
Na_2O	5.54	5.17	6.35	5.19	4.47	6.33	0.38
K_2O	0.40	0.27	0.59	0.58	0.20	5.81	14.28
Cr_2O_3	0.00	0.02	0.00	0.13	0.02	0.00	0.03
V_2O_3	0.07	0.02	0.01	0.02	0.04	0.02	0.02
NiO	0.00	0.00	0.00	0.00	0.06	0.10	0.00
P_2O_5	0.00	0.00	0.01	0.86	0.00	0.80	0.00
Total	100.95	100.35	100.66	99.16	100.86	99.57	99.74

Table C-4 The results of electron microprobe analysis of KH87-3 5-003.

KH87-3 5-003 Uyeda Ridge							
No.	71 PL groundm.	72 PL groundm.	73 PL groundm.	74 PL groundm.	75 PL groundm	76 PL pheno.	77 PL pheno.
SiO_2	65.96	66.01	65.56	66.24	66.51	66.08	66.41
TiO_2	0.02	0.01	0.07	0.02	0.01	0.00	0.05
Al_2O_3	17.72	18.49	18.14	18.45	18.32	18.05	17.43
FeO	0.31	0.27	0.46	0.37	0.24	0.11	0.01
MnO	0.03	0.01	0.06	0.00	0.00	0.00	0.05
MgO	0.00	0.01	0.02	0.01	0.00	0.02	0.02
CaO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na_2O	0.06	0.15	0.10	0.11	0.08	0.10	0.08
K_2O	15.60	14.59	14.82	14.85	14.14	14.81	15.03
Cr_2O_3	0.04	0.03	0.00	0.00	0.00	0.04	0.00
V_2O_3	0.03	0.00	0.00	0.00	0.03	0.00	0.00
NiO	0.01	0.04	0.07	0.00	0.00	0.02	0.02
P_2O_5	0.00	0.00	0.00	0.01	0.00	0.02	0.00
Total	99.77	99.60	99.29	100.07	99.33	99.25	99.10

KH87-3 5-003 Uyeda Ridge							
No.	83 PL in pheno.	84 PL in pheno.	85 PL in pheno.	86 PL in pheno.	87 PL in pheno.	88 CrSP in pheno.	89 CrSP in pheno.
SiO_2	52.96	52.98	52.30	53.28	53.43	0.13	0.13
TiO_2	0.09	0.16	0.17	0.16	0.04	0.63	0.62
Al_2O_3	28.62	28.40	27.90	28.81	28.27	37.20	37.78
FeO	1.09	1.23	1.33	1.28	1.08	22.49	21.75
MnO	0.01	0.05	0.05	0.03	0.01	0.18	0.15
MgO	0.32	0.27	0.18	0.24	0.18	14.26	14.43
CaO	13.27	12.58	12.16	12.80	12.88	0.07	0.03
Na_2O	4.03	3.87	4.47	3.69	3.91	0.00	0.00
K_2O	0.04	0.46	0.08	0.92	0.44	0.01	0.01
Cr_2O_3	0.23	0.01	0.05	0.00	0.00	23.11	22.82
V_2O_3	0.00	0.02	0.03	0.00	0.05	0.21	0.24
NiO	0.01	0.00	0.00	0.07	0.01	0.18	0.25
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.68	100.03	98.71	101.28	100.28	98.45	98.19

Table C-4 (continued)

KH87-3 5-003 Uyeda Ridge							
No.	90 CrSP in pheno.	91 CrSP in pheno.	92 CrSP in pheno.	94 CrSP in pheno.	95 CrSP in pheno.	101 CrSP	105 CrSP
SiO_2	0.08	0.24	0.17	0.09	0.09	0.12	0.22
TiO_2	1.02	1.02	0.55	0.85	1.13	0.92	0.94
Al_2O_3	31.79	30.75	38.24	36.11	32.20	34.88	33.28
FeO	23.79	25.24	20.73	22.97	23.69	22.13	22.35
MnO	0.22	0.13	0.17	0.16	0.18	0.18	0.15
MgO	13.60	11.98	14.54	14.59	13.55	14.07	12.15
CaO	0.00	0.16	0.03	0.02	0.05	0.08	0.10
Na_2O	0.01	0.01	0.00	0.00	0.00	0.03	0.00
K_2O	0.00	0.02	0.00	0.00	0.01	0.01	0.02
Cr_2O_3	27.90	26.95	23.06	22.54	26.65	26.84	26.80
V_2O_3	0.29	0.25	0.22	0.26	0.22	0.26	0.25
NiO	0.15	0.15	0.19	0.13	0.20	0.12	0.20
P_2O_5	0.01	0.00	0.00	0.02	0.00	0.00	0.01
Total	98.84	96.91	97.90	97.74	97.97	99.62	96.48

KH87-3 5-003 Uyeda Ridge							
No.	108 CrSP	110 CrSP	130 CrSP	131 CrSP	132 CrSP	137 CrSP	138 CrSP
SiO_2	0.13	7.11	0.16	0.10	0.12	0.16	0.16
TiO_2	0.86	1.94	0.75	0.71	0.73	0.93	0.70
Al_2O_3	35.94	30.51	36.21	36.55	36.14	36.75	37.76
FeO	21.92	28.28	21.29	21.64	21.70	22.23	21.01
MnO	0.16	0.27	0.20	0.12	0.13	0.16	0.13
MgO	14.79	11.60	14.60	14.66	14.30	14.64	13.60
CaO	0.04	0.35	0.04	0.03	0.49	0.07	0.13
Na_2O	0.01	0.22	0.04	0.01	0.00	0.00	0.05
K_2O	0.00	0.92	0.00	0.04	0.03	0.02	0.03
Cr_2O_3	25.00	25.11	25.38	23.85	24.91	25.27	24.21
V_2O_3	0.22	0.29	0.24	0.18	0.22	0.20	0.26
NiO	0.17	0.16	0.10	0.23	0.16	0.17	0.26
P_2O_5	0.00	0.13	0.00	0.00	0.29	0.02	0.00
Total	99.24	106.87	99.01	98.10	99.22	100.62	98.30

Table C-5 The results of electron microprobe analysis of KH87-3 5-006.

KH87-3 5-006 Uyeda Ridge							
No.	107 PL	111 PL	112 PL	113 PL	114 PL	115 PL	116 PL
SiO_2	55.61	65.76	54.23	55.27	60.78	52.76	53.60
TiO_2	0.19	0.00	0.18	0.04	0.04	0.11	0.13
Al_2O_3	18.99	17.67	26.45	22.63	21.34	28.84	28.02
FeO	1.99	0.17	1.83	0.42	0.32	0.81	0.93
MnO	0.00	0.00	0.04	0.00	0.07	0.00	0.00
MgO	0.24	0.02	0.34	0.12	0.07	0.24	0.18
CaO	6.72	0.00	11.05	5.46	4.32	13.57	12.46
Na_2O	6.30	0.13	3.77	3.09	1.44	4.23	4.67
K_2O	2.08	15.90	2.23	3.15	9.77	0.13	0.16
Cr_2O_3	0.00	0.00	0.01	0.06	0.03	0.09	0.00
V_2O_3	0.00	0.05	0.01	0.00	0.00	0.00	0.03
NiO	0.00	0.06	0.00	0.00	0.04	0.03	0.00
P_2O_5	1.08	0.00	0.02	0.00	0.00	0.00	0.00
Total	93.20	99.76	100.16	90.26	98.22	100.80	100.18

KH87-3 5-006 Uyeda Ridge							
No.	117 PL	118 PL	119 PL	133 PL	134 PL	135 PL	136 PL
SiO_2	66.05	65.80	53.59	52.19	54.05	53.85	66.02
TiO_2	0.01	0.00	0.07	0.08	0.11	0.04	0.00
Al_2O_3	17.72	17.89	28.78	30.09	28.66	29.26	17.94
FeO	0.12	0.08	0.82	0.67	0.73	0.74	0.20
MnO	0.00	0.00	0.00	0.00	0.04	0.02	0.02
MgO	0.02	0.01	0.22	0.26	0.20	0.22	0.00
CaO	0.00	0.00	13.08	14.24	12.58	12.89	0.00
Na_2O	0.14	0.11	4.48	3.74	4.62	4.29	0.07
K_2O	15.77	16.13	0.14	0.04	0.19	0.08	15.23
Cr_2O_3	0.01	0.01	0.00	0.07	0.00	0.02	0.00
V_2O_3	0.04	0.05	0.01	0.03	0.00	0.00	0.00
NiO	0.00	0.00	0.02	0.02	0.01	0.11	0.00
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	99.88	100.08	101.20	101.43	101.17	101.51	99.48

Table C-5 (continued)

KH87-3 5-006 Uyeda Ridge							
No.	122 PL	123 PL	126 PL	127 PL	120 OPQ stilpnomelane	121 OPQ	124 OPQ
SiO_2	53.10	55.24	52.53	51.78	47.18	48.56	46.09
TiO_2	0.10	0.06	0.12	0.13	0.10	0.12	0.06
Al_2O_3	28.60	26.59	30.16	30.27	5.54	5.64	6.14
FeO	1.05	1.45	0.57	0.76	28.81	27.91	24.11
MnO	0.02	0.00	0.00	0.00	0.00	0.05	0.03
MgO	0.20	0.25	0.21	0.22	3.06	3.02	3.47
CaO	13.08	11.17	14.25	14.66	0.71	0.72	0.65
Na_2O	4.19	5.32	3.67	3.55	0.17	0.19	0.14
K_2O	0.12	0.20	0.20	0.10	4.49	4.39	4.36
Cr_2O_3	0.00	0.03	0.06	0.00	0.00	0.07	0.05
V_2O_3	0.00	0.01	0.03	0.00	0.00	0.00	0.04
NiO	0.00	0.02	0.00	0.00	0.00	0.02	0.00
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.04	0.02
Total	100.45	100.33	101.79	101.46	90.06	90.72	85.16

KH87-3 5-006 Uyeda Ridge	
No.	125 OPQ
SiO_2	48.81
TiO_2	0.06
Al_2O_3	5.85
FeO	26.98
MnO	0.04
MgO	3.52
CaO	0.62
Na_2O	0.18
K_2O	4.70
Cr_2O_3	0.00
V_2O_3	0.00
NiO	0.00
P_2O_5	0.03
Total	90.80

Table C-6 The results of electron microprobe analysis of D181 R-002, 003 and 006.

D181 R-002 Fukunaga Seamount								
No.	6 HB pheno.	7 HB pheno.	11 HB pheno.	12 HB pheno.	13 HB pheno.	14 HB pheno.	51 HB pheno.	52 HB pheno.
SiO_2	49.35	48.28	48.38	48.98	49.09	49.29	48.36	48.54
TiO_2	0.94	0.29	0.24	0.70	0.85	0.87	0.88	0.51
Al_2O_3	0.41	0.23	0.17	0.34	0.40	0.35	0.34	0.29
FeO	24.88	28.90	30.10	25.71	25.08	24.45	24.09	26.50
MnO	0.58	0.77	1.02	0.60	0.62	0.49	0.53	0.70
MgO	1.17	0.44	0.23	0.99	1.16	1.15	1.09	0.68
CaO	9.96	16.01	17.73	11.06	9.65	9.81	9.62	13.55
Na_2O	4.85	2.35	1.62	4.81	5.29	5.26	4.96	3.27
K_2O	0.15	0.03	0.00	0.20	0.26	0.23	0.15	0.12
Cr_2O_3	0.03	0.00	0.00	0.03	0.06	0.01	0.00	0.00
V_2O_3	0.08	0.04	0.02	0.05	0.08	0.05	0.09	0.00
NiO	0.02	0.08	0.10	0.10	0.08	0.14	0.01	0.00
P_2O_5	0.10	0.00	0.00	0.04	0.06	0.09	0.00	0.00
Total	92.54	97.41	99.60	93.61	92.67	92.18	90.12	94.15

D181 R-002 Fukunaga Seamount								
No.	53 HB pheno.	54 HB pheno.	55 HB pheno.	56 HB pheno.	57 HB pheno.	58 HB pheno.	59 HB pheno.	60 HB pheno.
SiO_2	48.04	47.83	48.43	48.41	55.04	48.85	48.51	48.85
TiO_2	0.59	0.29	0.70	0.92	0.46	0.78	0.81	0.88
Al_2O_3	0.29	0.22	0.38	0.34	3.15	0.30	0.31	0.45
FeO	24.96	26.11	24.97	23.17	19.62	24.55	23.42	23.60
MnO	0.61	0.83	0.60	0.62	0.60	0.47	0.56	0.64
MgO	0.86	0.49	0.95	1.10	0.55	1.04	1.04	1.11
CaO	11.68	14.71	11.06	9.39	9.06	10.17	9.75	8.79
Na_2O	3.88	2.59	4.13	4.81	4.35	4.35	4.74	5.02
K_2O	0.21	0.12	0.21	0.23	1.41	0.20	0.19	0.30
Cr_2O_3	0.00	0.00	0.00	0.05	0.00	0.07	0.00	0.00
V_2O_3	0.02	0.05	0.02	0.08	0.01	0.00	0.06	0.04
NiO	0.00	0.05	0.00	0.00	0.00	0.00	0.02	0.00
P_2O_5	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00
Total	91.14	93.29	91.43	89.13	94.71	90.77	89.42	89.68

Table C-6 (continued)

D181 R-002 Fukunaga Seamount							
No.	4 K-FD pheno.	5 K-FD pheno.	9 K-FD pheno.	10 K-FD pheno.	61 K-FD pheno.	15 K-FD groundm.	62 K-FD groundm.
SiO_2	66.25	67.21	66.92	65.07	66.43	67.84	69.77
TiO_2	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Al_2O_3	17.91	18.11	18.14	17.64	17.79	17.64	16.04
FeO	0.37	0.43	0.47	0.40	0.53	1.00	1.42
MnO	0.00	0.00	0.00	0.00	0.05	0.00	0.03
MgO	0.02	0.00	0.00	0.00	0.00	0.00	0.00
CaO	0.03	0.01	0.00	0.03	0.00	0.02	0.00
Na_2O	6.20	6.39	6.21	6.26	6.44	7.76	6.65
K_2O	7.49	7.35	7.69	7.34	7.52	5.07	5.76
Cr_2O_3	0.06	0.00	0.00	0.00	0.02	0.04	0.02
V_2O_3	0.00	0.00	0.00	0.00	0.01	0.00	0.00
NiO	0.07	0.04	0.03	0.02	0.00	0.04	0.00
P_2O_5	0.00	0.00	0.05	0.08	0.00	0.03	0.04
Total	98.39	99.53	99.51	96.83	98.81	99.46	99.74

D181 R-003 Fukunaga Seamount								
No.	42 glass	43 glass	45 glass	50 glass	51 glass	53 glass	55 glass	46 PL
SiO_2	46.97	45.89	50.59	45.93	47.32	45.69	47.02	50.07
TiO_2	4.55	4.57	3.18	3.46	4.46	4.66	3.32	0.13
Al_2O_3	13.67	13.07	17.48	14.41	13.61	12.59	14.34	31.34
FeO	12.48	13.44	9.36	11.10	12.75	13.91	10.99	0.65
MnO	0.24	0.19	0.17	0.22	0.12	0.25	0.17	0.00
MgO	4.33	4.90	3.02	6.34	4.44	4.98	6.09	0.05
CaO	8.72	10.32	9.21	11.90	9.86	10.72	10.79	15.03
Na_2O	4.19	3.47	4.12	3.37	3.44	3.54	3.75	3.16
K_2O	1.37	0.95	1.00	0.87	1.25	1.10	0.76	0.10
Cr_2O_3	0.00	0.02	0.00	0.02	0.03	0.07	0.00	0.00
V_2O_3	0.32	0.38	0.25	0.23	0.26	0.19	0.20	0.00
NiO	0.00	0.01	0.00	0.00	0.00	0.07	0.00	0.00
P_2O_5	0.88	0.60	0.65	0.46	0.69	0.63	0.41	0.00
Total	97.71	97.80	99.03	98.29	98.21	98.38	97.84	100.52

Table C-6 (continued)

D181 R-003 Fukunaga Seamount								
No.	47 PL	94 PL pheno.	95 PL pheno.	96 PL pheno.	97 PL pheno.	98 PL pheno.	99 PL pheno.	100 PL pheno.
SiO_2	49.15	51.04	49.87	52.09	52.30	52.07	52.15	48.34
TiO_2	0.11	0.15	0.09	0.10	0.09	0.14	0.13	0.10
Al_2O_3	32.09	31.24	29.55	30.47	30.41	30.00	30.37	28.26
FeO	0.73	0.59	0.58	0.56	0.55	0.65	0.46	0.57
MnO	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
MgO	0.06	0.16	0.12	0.14	0.12	0.19	0.12	0.14
CaO	15.88	15.02	13.52	13.89	13.92	13.75	14.00	12.98
Na_2O	2.57	3.24	3.15	3.76	3.68	3.70	3.76	3.21
K_2O	0.11	0.13	0.45	0.24	0.26	0.22	0.17	0.22
Cr_2O_3	0.00	0.00	0.03	0.05	0.00	0.00	0.04	0.05
V_2O_3	0.00	0.02	0.00	0.00	0.00	0.00	0.05	0.00
NiO	0.00	0.05	0.06	0.01	0.00	0.00	0.00	0.02
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.70	101.64	97.43	101.32	101.35	100.72	101.26	93.89

D181 R-006 Fukunaga Seamount								
No.	101 PL pheno.	102 PL pheno.	103 PL pheno.	104 PL pheno.	105 PL pheno.	106 PL pheno.	107 PL pheno.	108 PL pheno.
SiO_2	52.11	51.73	50.79	50.35	50.45	50.91	48.63	50.21
TiO_2	0.08	0.11	0.08	0.08	0.10	0.09	0.12	0.11
Al_2O_3	30.73	30.75	31.23	31.57	30.98	30.13	30.08	30.90
FeO	0.54	0.58	0.51	0.51	0.58	0.49	0.54	0.53
MnO	0.06	0.06	0.01	0.00	0.00	0.00	0.00	0.00
MgO	0.14	0.17	0.15	0.14	0.15	0.16	0.17	0.17
CaO	14.23	14.33	14.71	15.30	14.71	14.09	14.56	14.96
Na_2O	3.55	3.47	3.21	2.83	3.08	3.33	2.99	3.06
K_2O	0.19	0.24	0.12	0.10	0.12	0.66	0.08	0.09
Cr_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
V_2O_3	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
NiO	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.01
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	101.63	101.45	100.81	100.93	100.16	99.87	97.18	100.06

Table C-6 (continued)

D181 R-006 Fukunaga Seamount								
No.	111 PL pheno.	112 PL pheno.	113 PL pheno.	121 K-FD pheno.	109 PL groundm.	110 PL groundm.	115 PL groundm.	123 PL groundm.
SiO_2	52.87	51.92	51.24	64.88	50.77	50.29	51.29	49.21
TiO_2	0.13	0.08	0.16	0.03	0.99	1.40	0.66	1.24
Al_2O_3	30.27	30.38	30.05	18.17	24.73	25.09	24.62	21.61
FeO	0.66	0.49	0.60	0.21	4.27	3.75	4.04	4.95
MnO	0.00	0.00	0.02	0.00	0.07	0.00	0.04	0.00
MgO	0.17	0.14	0.15	0.04	1.20	0.99	0.62	1.41
CaO	13.52	14.08	14.10	0.05	10.87	11.34	9.28	11.43
Na_2O	3.62	3.65	3.62	0.24	3.71	3.69	3.23	4.12
K_2O	0.74	0.14	0.15	15.72	0.85	0.60	2.02	1.02
Cr_2O_3	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.30
V_2O_3	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
NiO	0.04	0.00	0.02	0.04	0.00	0.01	0.02	0.03
P_2O_5	0.00	0.00	0.00	0.00	0.16	0.00	0.07	1.70
Total	102.01	100.88	100.13	99.39	97.64	97.17	95.88	96.99

D181 R-006 Fukunaga Seamount		
No.	124 PL groundm.	125 PL groundm.
SiO_2	57.09	50.71
TiO_2	0.10	0.46
Al_2O_3	24.40	25.51
FeO	0.59	1.19
MnO	0.00	0.03
MgO	0.18	0.32
CaO	7.65	12.83
Na_2O	2.63	4.86
K_2O	6.36	0.43
Cr_2O_3	0.00	0.00
V_2O_3	0.01	0.00
NiO	0.00	0.00
P_2O_5	0.00	1.27
Total	98.99	97.62

APPENDIX D

^{40}Ar-^{39}Ar AGE DATA

Experimental

Prepared dating samples (see chapter 3-1) were irradiated for 24 hours in an irradiation hole of the Japan Material Testing Reactor (JMTR) with flux monitors biotite (Bern4B and HD-B1), K_2SO_4 and CaF_2. During the irradiation, the samples were shielded by Cd foil in order to reduce thermal neutron-induced ^{40}Ar from ^{40}K. Cd shielding is thus very effective in reducing this interference coefficient, as Tetly et al. (1980) reported.

The Ar extraction and Ar isotopic analyses were done at Yamagata University. The samples were incrementally heated to 1500°C in a Mo crucible by induction heating. Basically we extracted gases in 8 steps that is, at 600 °C, 800 °C, 900 °C, 1000°C, 1100 °C, 1200 °C, 1300 °C and 1500 °C. Temperatures were estimated from the output power indicated on meters of the induction heater controller, which was previously calibrated by an optical pyrometer. Uncertainty in the temperature may be ±50°C. The extracted gases were purified twice on hot Ti sponge, and collected on a charcoal finger at liquid nitrogen temperature. Then, a glass ampule with a breakable seal was sealed off from the extraction line. After setting glass ampules on the sample line of the Ar analyzing system, the sample gas was again purified with hot Ti sponge

and by a Ti-Zi getter pump (Sorb AC). The Ar isotopic compositions of the purified gas were then analyzed by a 15 cm radius, 60°sector, all metal mass spectrometer.

Flux monitors and Correction factors of the interfering isotopes

Standard samples, used for obtaining J-value, an index of the neutron flux intensity, are as follows; Bern4B (t = 17.1±0.5 Ma) (Flish, 1982) and HD-B1 biotite (t = 24.0±0.4 Ma) (Odin, 1993). Figure of below shows the variation of J values with 2 sigma. Calibrated J-values on each samples were applied for medium values of two neighbor standard samples on irradiation. J-values were calculated by using the currently accepted parameter as $\lambda = (5.543 \pm 0.010) \times 10^{-10}$ (Steiger and Jager, 1977).

In this work the correction factors for the interfering isotopes were determined experimentally as follows;

Table D1 Correction factors.

samples	$(^{36}Ar/^{37}Ar)_{Ca}$	$(^{39}Ar/^{37}Ar)_{Ca}$	$(^{40}Ar/^{39}Ar)_{K}$
D181 R-002	$(3.70 \pm 0.22) \times 10^{-4}$	$(12.06 \pm 0.35) \times 10^{-4}$	$(3.24 \pm 0.89) \times 10^{-2}$
D181 R-006	$(3.70 \pm 0.22) \times 10^{-4}$	$(12.06 \pm 0.35) \times 10^{-4}$	$(3.24 \pm 0.89) \times 10^{-2}$
KH87-3 5-006	$(3.76 \pm 0.10) \times 10^{-4}$	$(11.18 \pm 0.41) \times 10^{-4}$	-
KH87-3 5-003	$(0.77 \pm 0.17) \times 10^{-4}$	$(1.57 \pm 0.11) \times 10^{-2}$	-
KH92-3 D3-008d	$(0.77 \pm 0.17) \times 10^{-4}$	$(1.57 \pm 0.11) \times 10^{-2}$	-
10K#56 R-002	$(3.744 \pm 0.082) \times 10^{-4}$	$(9.30 \pm 0.44) \times 10^{-4}$	-

Age Results

The results of Ar-Ar analysis of dating samples and each calibrated J-value are shown Table D2. All errors are shown in 2 sigma. ^{39}Ar (%) means the rate of released ^{39}Ar against the total ^{39}Ar.

Table D-2 Ar-Ar age results. The term of "n.d." shows not determined.

Temperature (℃)	$^{36}Ar/^{40}Ar$ ($\times 10^{-4}$)	$^{39}Ar/^{40}Ar$ ($\times 10^{-2}$)	^{39}Ar (%)	Age (Ma)
10K#56-R002 (Japan Trench oceanward slope)				
J=0.003412±0.000063				
600	26.07±0.63	24.38±0.16	13.4	5.79± 0.55
800	16.05±0.33	55.60±0.31	37.7	5.81± 0.18
900	13.18±1.0	61.17±0.32	32.9	6.13± 0.26
1000	19.58±0.90	42.46±0.22	10.5	6.10± 0.39
1100	25.75±1.6	18.27±0.17	2.1	8.0 ± 1.5
1200	20.6 ±2.7	25.72±0.28	1.7	9.3 ± 1.9
1300	26.2 ±3.4	19.04±0.25	1.2	7.3 ± 3.1
1500	27.3 ±4.0	6.44±0.14	0.1	18 ±11
Plateau age (600-1000℃, n=4)			94.5	5.95± 0.31
KH92-3 5-008d (Mizunagidori Seamount)				
J=0.003232±0.000066				
600				n.d.
800	3.47±0.15	4.60±0.20	25.9	110.4± 5.4
900	3.58±0.20	5.87±0.21	26.2	86.8± 3.8
1000				n.d.
1100	5.61±0.30	5.30±0.51	11.6	89.5± 9.3
1200	16.30±0.34	3.01±0.44	6.6	98 ±15
1300	12.55±0.38	6.10±0.47	9.9	59.2± 5.2
1500	16.54±0.47	3.79±0.23	19.7	77.0± 5.6
Plateau age (900-1200℃, n=3)			44.4	89.1± 8.1

Table D-2 (continued)

Temperature (°C)	$^{36}Ar/^{40}Ar$ ($\times 10^{-4}$)	$^{39}Ar/^{40}Ar$ ($\times 10^{-2}$)	^{39}Ar (%)	Age (Ma)
KH87-3 5-003 (Uyeda Ridge)				
J=0.003046±0.000058				
600	27.5 ±1.4	0.54 ±0.47	14.2	181 ±155
800	17.18±0.51	1.47 ±0.22	8.3	175 ± 26
900	15.83±0.51	4.068±0.085	3.4	70.5± 2.1
1000	8.21±0.36	6.464±0.082	2.9	63.3± 1.5
1100	6.88±0.41	7.04 ±0.12	3.6	61.1± 1.6
1200	5.17±0.35	8.163±0.070	4.5	56.2± 1.2
1300	5.06±0.30	8.569±0.057	8.9	53.7± 1.1
1500	5.41±0.36	7.557±0.084	54.2	60.1± 1.4
Plateau age				n.d.
KH87-3 5-006 (Uyeda Ridge)				
J=0.00348±0.00011				
600	22.25±0.54	1.40 ±0.13	2.6	147 ±14
800	15.4 ±1.4	2.968±0.077	15.9	111.6± 4.7
900	6.8 ±1.2	7.703±0.079	17.8	64.0± 2.1
1000	10.2 ±2.4	6.94 ±0.14	11.5	62.3± 2.4
1100	4.8 ±1.1	8.902±0.066	7.0	59.6± 2.1
1200	5.5 ±3.4	9.56 ±0.21	8.9	54.1± 2.1
1300	5.06±0.26	9.607±0.056	24.6	54.8± 1.7
1500	4.5 ±1.1	9.24 ±0.27	11.7	58.0± 2.5
Plateau age (1200-1500°C, n=3)			45.2	55.5± 2.7

Table D-2 (continued)

Temperature (°C)	$^{36}Ar/^{40}Ar$ ($\times 10^{-4}$)	$^{39}Ar/^{40}Ar$ ($\times 10^{-2}$)	^{39}Ar (%)	Age (Ma)
D181-R002 (Fukunaga Seamount)				
J=0.003046±0.000058				
600	6.94±0.32	3.389±0.064	4.1	142.0±6.2
800	3.00±0.29	4.026±0.056	3.6	137.3±5.7
900	3.44±0.30	4.005±0.060	4.0	135.1±3.5
1000	1.21±0.21	4.610±0.061	58.1	126.3±3.0
1100	2.57±0.29	4.451±0.159	22.3	125.4±3.1
1200	3.92±0.41	4.094±0.029	4.7	130.2±3.2
1300	3.47±0.38	3.983±0.051	3.2	135.7±3.5
1500				n.d.
Plateau age (1000-1100°C, n=2)			80.4	127.0±5.2
D181-R006 (Fukunaga Seamount)				
J=0.003630±0.000082				
600	22.99±0.49	1.996±0.022	10.3	102.7± 5.0
800	0.56±0.16	6.062±0.054	3.7	103.6± 2.5
900	2.60±0.37	7.248±0.053	19.4	81.6± 2.1
1000	3.49±0.23	9.286±0.085	40.4	62.2± 1.5
1100	3.02±0.33	9.627±0.035	9.7	60.9± 1.5
1200	4.43±0.40	9.171±0.090	15.1	61.0± 1.7
1300	14.8 ±2.1	3.38 ±0.14	0.9	106 ±12
1500	20.7 ±2.4	1.51 ±0.10	0.5	161 ±30
Plateau age (1000-1300°C, n=3)			65.2	62.0± 2.6