

APPENDIX 1

Representative whole geochemical analyses of rock major elements along (ICP-OES) with C.I.P.W norms of Mingol-Mamakan gabbroic-appinitic rocks

Rock type		Lay-G	Lay-G	Lay-G	Lay-G	Lay-G	Lay-G	Lay-G	Lay-G	Lay-G	Lay-G	Mas-G	Mas-G	Mas-G	Mas-G	Mas-G
SiO ₂	0.01	43.1	43.7	44.9	44.2	44.7	44.8	45.3	46.1	47.9	44.6	47.3	46.3	45.3	47.2	47.6
TiO ₂	0.01	0.17	0.17	1.13	0.1	0.15	0.12	0.13	0.45	0.37	0.07	0.93	1.14	0.98	0.78	0.87
Al ₂ O ₃	0.01	21.8	18.4	7.36	28.5	23.3	26.7	26.1	8.38	3.97	29.5	12.8	13.15	13.2	11.15	13.1
MgO	0.01	8.48	13.1	18.35	4.23	7.53	4.33	5.39	18.05	20.7	2.73	10.35	9.44	10.45	12.6	9.45
Fe ₂ O ₃ *	0.04	4.91	7.59	10.9	2.91	4.58	3.02	3.1	9.81	11.35	2.00	11.45	13.1	11.6	11.95	10.75
MnO	0.01	0.08	0.12	0.16	0.05	0.07	0.05	0.05	0.16	0.2	0.03	0.18	0.21	0.19	0.2	0.19
CaO	0.01	16.85	15.5	15.05	17.5	16.95	17.95	17.9	14.45	14.55	18.25	14.3	12.6	12.75	12.5	14.25
Na ₂ O	0.01	0.58	0.5	0.95	0.69	0.59	0.9	0.64	0.55	0.38	0.77	1.67	1.79	1.48	1.65	1.56
K ₂ O	0.01	0.05	0.14	0.19	0.02	0.05	0.13	0.04	0.09	0.07	0.06	0.57	0.54	0.54	0.39	0.61
P ₂ O ₅	0.002	0.012	0.014	0.013	0.022	0.01	0.01	0.011	0.012	0.02	0.013	0.14	0.21	0.13	0.15	0.14
Total		96.03	99.23	99.00	98.21	97.93	98.01	98.66	98.05	99.51	98.02	99.69	98.48	96.62	98.57	98.52
LOI	0.01	2.46	2.44	1.07	1.01	2.00	1.82	1.05	2.4	0.94	1.45	1.2	1.4	1.83	1.55	1.29
FeO*		4.42	6.83	9.81	2.62	4.12	2.72	2.79	8.83	10.21	1.80	10.30	11.79	10.44	10.75	9.67
FeO*/MgO		0.52	0.52	0.53	0.62	0.55	0.63	0.52	0.49	0.49	0.66	1.00	1.25	1.00	0.85	1.02
X _{Mg}		0.66	0.66	0.65	0.62	0.65	0.61	0.66	0.67	0.67	0.60	0.50	0.44	0.50	0.54	0.49
norm																
q		-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	1.22
or		0.30	0.83	1.12	0.12	0.03	0.77	0.24	0.53	0.41	0.35	3.37	3.19	3.19	2.30	3.60
ab		4.91	4.23	8.04	5.84	4.99	6.95	5.42	4.65	3.22	6.52	14.13	15.15	12.52	13.96	13.20
an		56.73	47.55	15.26	74.61	60.78	68.43	68.23	20.13	8.92	76.86	25.75	26.25	27.78	21.87	26.94
ne		-	-	-	-	-	0.36	-	-	-	-	-	-	-	-	-
di		20.64	22.70	43.62	9.33	17.90	15.83	15.77	39.35	48.75	10.50	32.50	24.71	24.88	28.98	31.57
hy		0.20	1.61	-	2.72	5.71	-	4.42	12.80	19.20	0.88	8.35	12.06	13.06	16.03	8.90
ol		7.95	14.36	17.86	2.44	3.33	2.44	1.19	9.75	6.84	0.74	1.65	-	1.00	1.34	-
il		0.17	0.26	0.34	0.11	0.15	0.11	0.11	0.34	0.43	0.06	0.39	0.45	0.41	0.43	0.41
hem		4.91	7.59	10.90	2.91	4.58	3.02	3.10	9.81	11.35	2.00	11.45	13.10	11.60	11.95	10.75
ap		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.32	0.49	0.30	0.35	0.32
tn		0.20	0.09	0.75	0.11	0.17	-	0.18	0.66	0.36	0.09	1.78	2.22	1.88	1.36	1.61
pf		-	-	1.10	-	-	0.11	-	-	-	-	-	-	-	-	-

Fe₂O₃* = Fe₂O₃ total; FeO* = FeO total; X_{Mg} = Mg/(MgO+FeO*); LOI = loss of ignition; Meso = meso-gabbro; Mela = mela-gabbro; Hornb= Hornblendite; Leuco = Leuco-gabbro; Lay-G = Layered gabbro; Mas-G= Massive gabbro; Cpx-Ano = Cliopyroxene anorthosite