Table S2. Contents of major (wt.%) elements in biotites of the magmatic rocks of the Omchikandya, Burgali and Arga-Ynnakh-Khaya ore fields.

Massif	Omchikandya		Polyarnoe deposit			Levo-Dzholokag		Burgali					Verkhne-Burgali ethmolith					
Rocks	granite		microcline-albite granites			diorite	granite	granite		leucogranite			Microcline-albite granite					
Mineral	eastonite -siderophyllite			trilithionite		eastonite -siderophillite										polylithionite		
Sample	z3751	24/1*	z12195	258/2	4/2*	307	2005/1	2147/1	2150/3	z603/2	2146/3	2147/2		z600/2		z230/2	176/2	202*
SiO_2	36.01	34.88	35.04	43.09	42.80	34.58	36.17	34.31	34.12	36.37	33.99	34.68	36.96	36.97	36.72	49.62	48.11	46.46
TiO_2	3.82	3.53	4.24	0	0	5.38	3.87	4.03	3.60	3.74	3.50	3.94	3.98	4.40	3.43	0.18	0.26	0.19
Al_2O_3	15.92	13.34	11.89	23.45	24.12	13.87	13.24	18.68	18.57	19.91	19.48	16.94	12.34	12.87	12.93	24.56	23.10	24.74
Fe_2O_3	1.3	7.60	4.44	2.05	3.88	0.39	3.03	1.89	2.38	0.17	2.33	3.34	2.85	2.40	2.70	2.10	2.44	5.23
FeO	18.64	19.68	24.31	11.52	9.89	18.00	22.01	19.89	20.01	19.92	19.48	17.98	19.16	18.64	20.24	4.71	3.78	3.01
MnO	0.25	0.53	0.45	2.02	2.21	0.41	0.24	0.13	0.15	0.08	0.31	0.15	0.24	0.21	0.25	0.51	0.29	0.59
MgO	9.05	7.14	4.33	0.05	0.05	9.13	6.02	6.67	7.19	6.64	7.76	7.63	7.38	7.60	8.66	0	0.05	0.15
CaO	0	0.59	0	0.16	0.05	0.78	0	0.83	1.00	0	0.10	0.71	0.01	0	0	0.05	0.26	0
Na_2O	0.38	0.10	0.56	0.25	0.16	0.10	0.27	0.22	0.14	0.38	0.21	0.60	0.42	0.40	0.17	0.59	0.75	0.49
K_2O	10.21	8.44	8.35	9.40	9.50	8.59	9.16	8.70	8.08	9.87	7.72	8.00	9.46	9.32	9.87	9.41	9.74	10.05
H_2O	2.53	3.75	3.49	1.56	1.51	8.58	3.23	3.71	4.88	1.60	3.90	4.74	3.43	3.34	2.96	4.71	1.57	1.29
F	1.03	0.61	2.41	3.78	3.51	0.67	0.29	0.71	0.85	0.99	0.46	0.58	2.81	2.69	2.11	2.74	6.62	5.83
Cl	-	0.29	-	0.05	0.05	0.11	1.28	0.05	0.05	0.12	0.05	0.18	0.13	0.15	0.15	0.87	0.51	-
Li_2O	0.38	0.098	1.28	2.30	2.07	0.11	0.23	0.05	0.053	-	0.022	0.04	1.06	1.06	0.99	1.99	3.63	2.61
Rb_2O	-	007	-	0.67	0.59	0.042	1.29	0.037	0.037	-	0.06	0.035	-	-	-	-	0.065	0.88
Total	99.52	100.35	99.51	100.36	100.39	100.71	100.33	99.91	101.11	101.44	99.37	99.55	100.23	100.05	101.18	101.57	101.17	101.52
O=F,Cl	0.43	0.26	1.02	2.74	2.07	0.26	0.41	0.23	0.36	0.76	0.02	0.04	1.21	1.16	0.92	1.35	2.90	2.46
Si	5,50	5.14	5.60	6.55	6.35	5.83	5.63	5.23	5.19	5.48	5.13	5.17	5.83	5.81	5.67	6.93	7.05	6.59
Al^{4+}	2,50	2.86	2.40	1.45	1.65	2.17	2,37	2.77	2.81	2.52	2.87	2.83	2.17	2.19	2.33	1.07	0.95	1.41
Al^{6+}	0,36	0	0	2.76	2.56	0.59	0.05	0.59	0.52	1.01	0.59	0.44	0.13	0.20	0.02	2.97	3.04	2.72
Ti	0,44	0.39	0.51	0	0	0.68	0.45	0.46	0.41	0.42	0.40	0.44	0.47	0.5	0.40	0.02	0.03	0.02
Fe^{3+}	0,15	0.84	0.53	0.24	0.43	0.05	0.36	0.22	0.27	0.02	0.26	0.34	0.34	0.28	0.31	0.22	0.27	0.56
Fe^{2+}	2,38	2.42	3.25	1.46	1.23	1.41	2.86	2.54	2.55	2.51	2.46	2.32	2.53	2.45	2.61	0.55	0.46	0.36
Mn	0,03	0.07	0.06	0.26	0.28	0.06	0.03	0.02	0.02	0.01	0.04	0.02	0.03	0.03	0.03	0.06	0.04	0.07
Mg	2,06	1.57	1.03	0.01	0.01	2.29	1.40	1.52	1.63	1.49	1.74	1.69	1.74	1.78	1.99	0	0.01	0.03
Li	0,23	0.27	0.32	1.41	1.24	0.05	0.14	0.03	0.03	0.54	0.02	0.04	0.67	0.67	0.61	1.12	2.14	1.49
Ca	0,002	0.09	0	0.03	0.01	014	0	0.14	0.16	0	0.02	0.11	0	0	0	0.01	0.04	0
Na	0,11	0.03	0.17	0.07	0.05	0.03	0.08	0.06	0.06	0.11	0.06	0.17	0.13	0.12	0.05	0.16	0.21	0.14
K	1,99	1.58	1.70	1.82	1.80	1.85	1.82	1.69	1.57	1.90	1.49	1.52	1.90	1.87	1.94	1.68	1.82	1.82
Rb	-	0.01	-	0.06	0.06	0.01	0.13	0.01	0.01	N d	0.02	0.04	-	-	-	0.02	0.01	0.08
OH	3,5	3.72	2.78	0.87	1.17	3.64	3,52	3.66	3.59	3.14	3.78	3.73	2.56	2.62	2.93	2.58	0.80	1.38

F	0,5	0.21	1.22	3.13	2.83	0.36	0,14	0.34	0.41	0.83	0.22	0.24	1.40	1.34	1.03	1.21	3.07	2.62
Cl		0.07		0.01	0.01	0.03	0.30	0	0	0.03	0	0.03	0.04	0.04	0.04	0.21	0.13	
$Fe^2/(Fe+Mg)$	55.1	67.1	78.6	99.4	99.4	38.8	69.8	64.4	63.2	62.9	60.8	60.7	62.3	60.6	59.5	99.7	96.6	95.7
Al/(Al +Fe+Mg +Si)	22.1	19.0	17.7	24.5	34.4	22.3	19.2	26.1	25.7	27.1	26.6	20.5	18.0	18.8	18.2	34.3	33.8	35.3
T°C	760	682	715	-	-	798	705	710	694	698	693	713	715	730	695	-	-	-
P, kb.	2.17	2.14	0.74	-	-	1.80	0.92	3.7	3.6	4.17	4.0	1.26	0.44	0.71	0.59	-	-	-
Log f O_2	-15.2	-16.2	-17.1	-	-	-12.4	-16.4	-16.1	-15.9	-16.1	-15.8	-15.7	-15.8	-15.6	-15.6	-	-	-

Massif	Verkhne-Burgali ethmolith			Western Arga-Ynnakh Khaya				Estern Arga-Ynnakh-Khaya		Kester harpolith						
Rock	microcline-albite granite	pegmatite	alaskite	granites			granite porphyre	granite		microcline-albite granite						ongonite
Mineral	polylithionite		muscovite	eastonite -siderophyllite				musco-vite	phengit	sideroph yllite	Li-mus-covite	polylithi onite	musco-vite	polylith ionite	Li-mus-covite	eastonite - siderophyll ite
Sample	238	327	345	2544	zK13		zK6	155/1	2463	K4	2491/2	2403/2	160*	106*	142*	zK21
SiO_2	49.57	45.32	45.36	33.06	35.83	35.04	35.92	46.10	46.31	45.88	45.88	49.00	45.90	49.68	49.20	35.72
TiO_2	0.03	0.15	0.04	3.39	4.31	3.11	3.71	0.05	0.25	0.29	0.29	0.06	0.30	0	0	3.28
Al_2O_3	22.09	21.27	36.75	18.14	13.78	17.09	12.82	35.00	32.84	30.89	30.89	24.54	32.60	23.50	25.60	15.52
Fe_2O_3	3.29	5.04	0.77	6.53	3.01	2.05	3.82	0.41	4.02	1.19	1.19	2.66	0	0	0.49	1.88
FeO	3.95	6.63	0	14.01	20.81	21.81	22.63	2.15	0	2.37	237	1.39	3.50	2.51	2.51	17.54
MnO	0.50	0.56	0.08	0.29	0.23	0.33	0.46	0.02	0.66	0.09	0.09	0.70	0.05	0.30	0.40	0.26
MgO	0	0.10	0	10.08	7.43	5.12	6.05	1.01	0.42	0.44	0.44	0.10	0.54	0.54	0.34	8.77
CaO	0.06	0	0.47	0.92	0.01	0	0	0.10	0.42	0.45	0.45	0.10	0.10	0.10	0	0.01
Na_2O	0.47	0.56	0.44	0.20	0.57	0.53	0.69	1.42	0.33	0.52	0.52	0.35	1.25	0.54	0.60	0.64
K_2O	10.10	9.74	10.73	8.65	8.94	9.77	9.31	10.20	10.30	10.50	10.50	9.60	10.56	9.46	9.42	10..24
H_2O	0.95	1.03	3.48	2.37	2.62	3.05	2.58	2.97	4.41	3.67	3.67	1.67	2.95	1.68	2.32	3.22
F	4.09	5.45	1.68	1.05	1.24	1.92	2.23	1.04	1.55	2.73	2.73	5.11	2.15	7.00	7.00	2.30
Cl	-	0.80	1.11	-	-	-	-	0.21	0.10	-	-	-	0.25	-	-	-
Li_2O	4.04	3.26	0.32	0.07	0.73	0.50	0.76	0.14	0.25	1.05	1.05	4.07	0.30	3.31	3.31	0.70
Rb_2O	1.10	0.17	0.01	0.06	-	-	-	0.11	0.12	0.37	0.37	1.04	0.12	1.22	1.09	-
∑	100.21	100.08	101.24	99.36	99.51	100.32	100.98	100.92	100.99	100.96	100.96	100.64	100.58	99.84	102.28	100.08
O=F,Cl	1.72	2.48	0.96	0.44	0.90	0.81	0.99	0.49	0.65	1.15	1.15	2.15	0.96	2.95	2.95	0.97
Si	6.89	6.64	6.14	4.89	5.54	5.49	5.58	6.14	6.11	6.40	6.40	6.89	6.36	7.27	7.20	5.58
Al^{4+}	1.11	1.36	1.86	3.11	2.46	2.51	2.42	1.86	1.89	1.60	1.60	1.10	1.64	0.73	0.80	2.42

Al^{6+}	2.50	2.32	4,01	0	0.05	0.64	0	3.64	3.17	3.48	3.48	2.96	3.68	3.67	3.62	0.43
Ti	0	0.02	0	0.37	0.50	0.37	0.43	0.01	0.03	0.03	0.03	0.01	0.03	0	0	0.38
Fe^{3+}	0.34	0.56	0.08	0.71	0.35	0.24	0.45	0.04	0.40	0.12	0.12	0.28	0	0	0.05	0.22
Fe^{2+}	0.46	0.81	0	1.70	2.69	2.86	2.94	0.24	0	0.28	0.28	0.16	0.41	0.31	0.31	2.29
Mn	0.06	0.07	0.01	0.04	0.03	0.04	0.06	0	0.07	0.01	0.01	0.08	0.01	0.04	0.05	0.03
Mg	0	0.02	0	2.19	1.71	1.20	1.40	0.20	0.8	0.09	0.09	0.02	0.11	0.12	0.07	2.04
Li	2.26	1.92	0.17	0.04	0.46	0.32	0.47	0.08	0.13	0.59	0.59	2.30	0.17	1.95	1.95	0.44
Ca	0.01	0.02	0.07	0.06	0	0	0	0.01	0.07	0.07	0.07	0.02	0.02	0.02	0	0
Na	0.13	0.16	0.12	0.18	0.17	0.16	0.21	0.37	0.21	0.14	0.14	0.10	0.34	0.15	0.17	0.09
K	1.79	1.82	1.84	1.60	1.76	1.95	1.84	1.73	1.74	1.87	1.87	1.72	1.87	1.77	1.76	1.84
Rb	0.10	0.02	0	0.01	-	-	-	0.01	0.01	0.03	0.03	0.09	0.01	0.11	0.1	
OH	2.2	1.27	3.02	3.52	2.95	3.05	2.90	3.51	3.51	2.80	2.80	1.73	3.00	0.76	0.76	2.88
F	1.8	2.53	0.72	0.48	1.05	0.95	1.1	0.44	0.47	1.20	1.20	2.27	0.94	3.24	3.24	1.14
Cl	-	0.20	0,26	-	-	-	-	0,05	0,02	-	-	-	0,06	-	-	-
$Fe^2/(Fe+Mg)$	100	98.4	98.8	73.8	63.7	72.0	70.4	83.5	85.0	82.4	82.4	95.9	80.6	72.1	85.7	54.9
Al/(Al + Fe+Mg +Si)	31.8	31.4	48.2	24.7	19.7	24.4	18.5	42.2	43.9	42.3	42.3	35.4	43.3	32.1	32.6	13.7
T^oC	-	-	-	693	722	670	695	-	-	-	-	-	-	-	-	692
P, kb.	-	-	-	3.0	1.1	3.0	0.8	-	-	-		-	-	-	-	2.1
Log f O_2	-	-	-	-15	-15.6	-16.7	-16.3	-	-	-	-	-	-	-	-	-15.1

Notes: the analyses were performed at DPMGI SB RAS using the chemical analyses by V.S Gamyanina and N.A. Gomzyakova and Camebax-micro microanalyzer (z) by L.A. Pavlova and S.P. Roev. Determination of temperatures: T [1]; pressure P, kb - [2]; Li_2O and H_2O were calculated from microanalyzer data by [3]. * – analyses from [4].

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