

W-Mo Be-W-Mo

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W-Mo Be-W-Mo

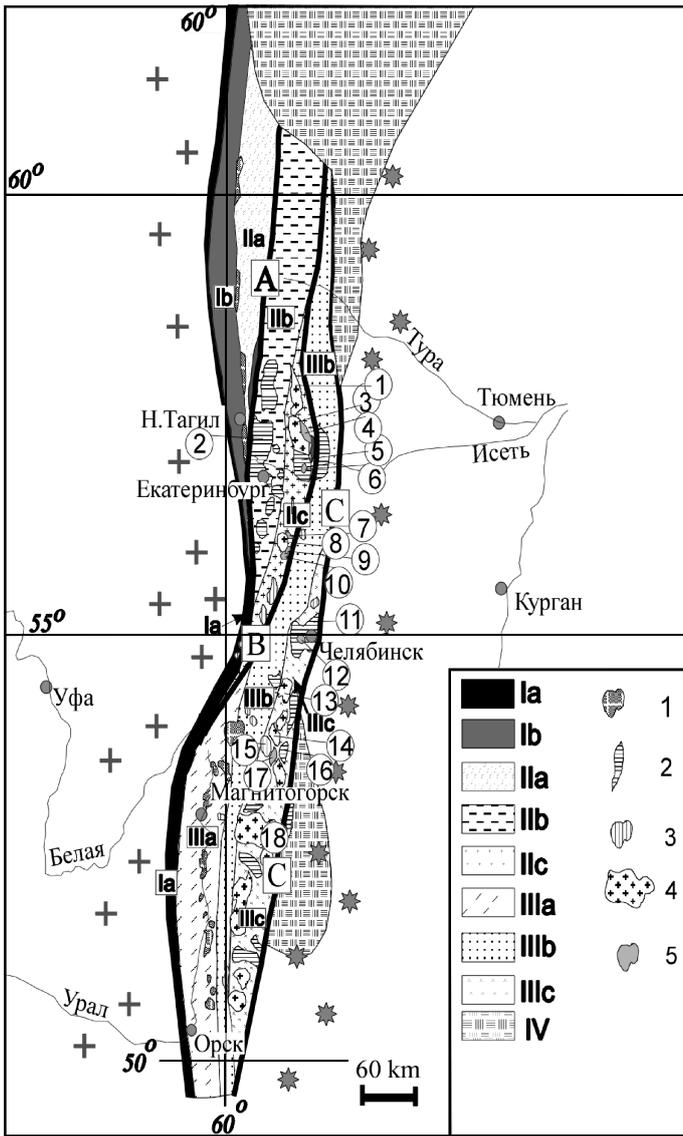
GEOCHEMISTRY OF THE MIDDLE AND SOUTH URALS GRANITES SPECIALIZE ON W-MO AND BE-W-MO MINERALIZATION

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Geochemistry of granite massives of the South and Middle Urals: Malyshevo, Zenkovsk, Ygo-Konevsk, Kremenkul, Mitrofanovsk, Koklanovsk is discussed. They are accompanied by W-Mo and Be-W-Mo deposits. The investigation revealed that their crystallization takes place under high- and middle-level conditions. The position of rear-metal granites in the evolution of acid magmatism of the Middle and South Urals is determined. They formed during late-collision period and conclude the collision magmatism.

Key words: *granite, granite magmatism, late-collision period.*



W-Mo Be-W-Mo

, 2001],

[()]:

(. 1).

[..., 1994].

[1995]

Rb-Sr- (. 1).

[., 2005],

La_N/Lu_N, 18 30.

Rb-Sr- (. 2).

[., 2005]. 267,42

1,26 / (. . 1).

211 280 . . K-Ar

236-211

U-Pb – 240-220

[., 1995]. Rb-Sr-

260 277 [., 2003]. [., 2005],

(0,02-0,04 %), TiO₂

(. 3).

260-290

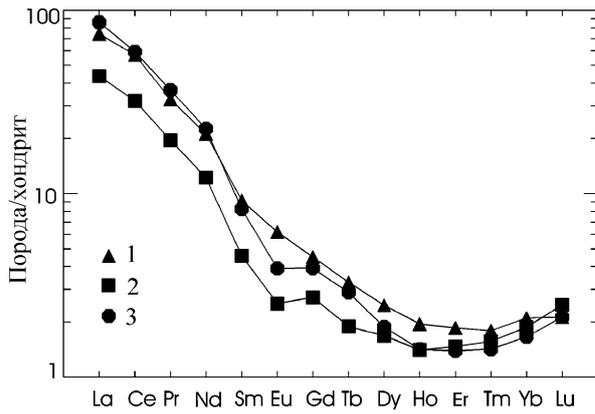
360 [²⁰⁷Pb/²⁰⁶Pb , 2001].

Re-Os 272,7±4,5

[Mao et al. 2003].

	1	2	3	4	5	6
	-6	-1	-2	-224	-336	-266
SiO ₂	70,62	73,59	72,45	74,23	73,63	73,06
TiO ₂	0,169	0,114	0,101	0,181	0,21	0,27
Al ₂ O ₃	15,76	14,03	14,76	13,49	13,47	14,00
Fe ₂ O ₃	0,99	1,62	1,06	0,51	0,84	0,98
FeO	0,56	0,45	0,67	0,77	0,95	0,54
MnO	0,055	0,018	0,024	0,049	0,05	0,03
MgO	0,45	0,48	0,38	0,53	0,36	0,38
CaO	1,14	0,41	0,83	1,29	0,9	1,11
Na ₂ O	4,20	3,10	4,30	3,58	3,88	3,33
K ₂ O	4,74	5,34	4,12	4,65	4,95	4,44
P ₂ O ₅	0,05	0,07	0,07	0,01	0,05	0,07
Σ	99,91	100,1	99,19	99,29	99,70	100,3
Rb	229,91	236,04	331,03	253,00	304,00	205,0
Sr	217,56	48,02	40,00	92,00	137,00	169,0
Li	39,56	9,59	17,76	31,15	26,20	22,13
Cs	3,17	1,31	2,25	2,23	3,34	3,25
Be	5,87	6,66	5,10	5,19	6,61	4,10
Ba	580,41	35,48	64,22	202,67	300,60	505,65
Sc	2,62	3,25	3,43	3,63	5,74	3,17
V	16,53	7,64	6,92	8,97	10,94	13,41
Cr	2,44	2,98	1,66	3,23	1,35	2,27
Co	1,38	1,92	2,23	0,94	0,86	1,38
Ni	2,96	5,18	4,07	2,02	1,17	3,06
Cu	8,40	94,88	124,11	2,34	29,76	5,23
Zn	10,23	1,11	24,94	28,76	77,38	26,00
Ga	19,48	24,83	21,68	19,21	22,05	18,18
Y	5,19	4,48	3,68	8,65	15,40	19,16
Nb	11,64	22,83	24,03	30,00	48,00	19,44
Ta	0,78	1,43	0,81	2,97	5,16	2,13
Zr	111,16	104,76	102,33	84,01	90,84	146,55
Hf	3,39	4,72	4,21	3,33	3,30	4,42
Mo	1,26	267,42	145,78	0,40	3,10	0,21
Sn	2,63	4,56	4,40	4,83	4,75	7,15
Tl	1,38	1,15	1,58	1,24	1,56	1,10
Pb	42,52	37,31	30,39	38,64	40,99	31,56
U	8,08	22,46	15,51	11,45	20,76	5,94
Th	26,39	40,79	53,54	27,83	44,81	34,44
La	24,41	14,36	2834	22,62	42,18	46,60
Ce	49,35	27,71	51,18	44,19	76,89	85,87
Pr	4,25	2,54	4,76	4,04	7,36	9,70
Nd	13,35	7,71	14,21	12,21	22,19	32,53
Sm	1,86	0,93	1,67	1,68	3,31	5,41
Eu	0,48	0,19	0,30	0,29	0,46	0,74
Gd	1,25	0,75	1,08	1,40	2,64	4,32
Tb	0,16	0,09	0,14	0,21	0,38	0,60
Dy	0,84	0,58	0,64	1,23	2,15	3,30
Ho	0,15	0,11	0,11	0,28	0,47	0,68
Er	0,42	0,33	0,31	0,81	1,34	1,91
Tm	0,06	0,05	0,05	0,14	0,27	0,30
Yb	0,46	0,41	0,36	1,09	1,93	1,92
Lu	0,07	0,08	0,07	0,18	0,33	0,29

1 - , 2 - , 3 - ; 4-5 - ; 6 - ICP-MS. [1995], [2001].



.2. -
 1 - ; 2 - ;
 3 -

Rb (76-103 /), (1,7-3 /),
 Nb (7,7-10 /), (0,7-1,1 /), Th (9 /).

($^{207}\text{Pb}/^{206}\text{Pb}$ 360 .).

., 2003].

(315 .).

$^{207}\text{Pb}/^{206}\text{Pb}$

305-300 . .

(
), -Ar
 269-288 . [1998].

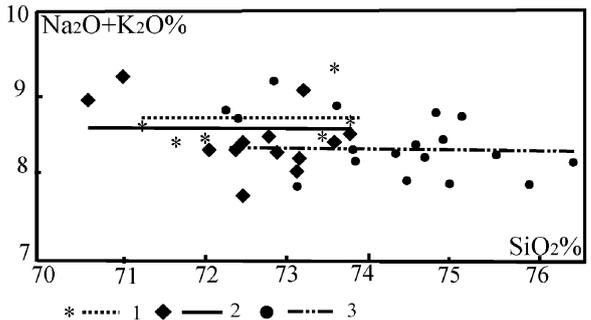
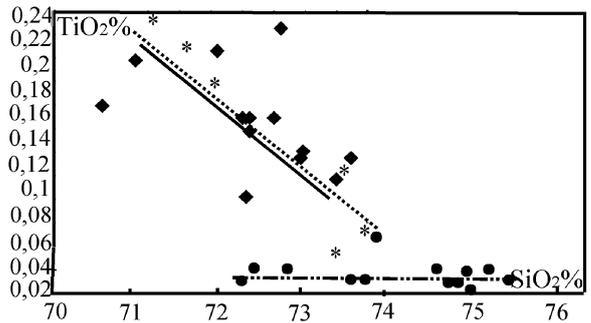
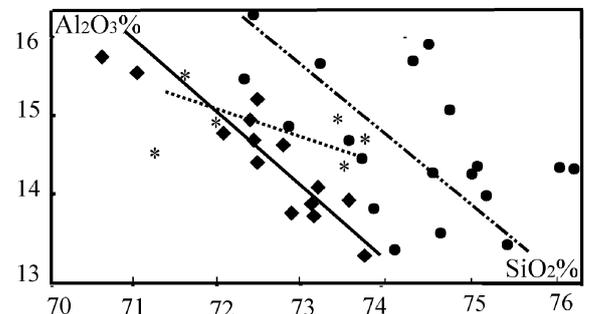
(800-1300 /),
 (Rb, Cs, Li),

(Cg, Tb,

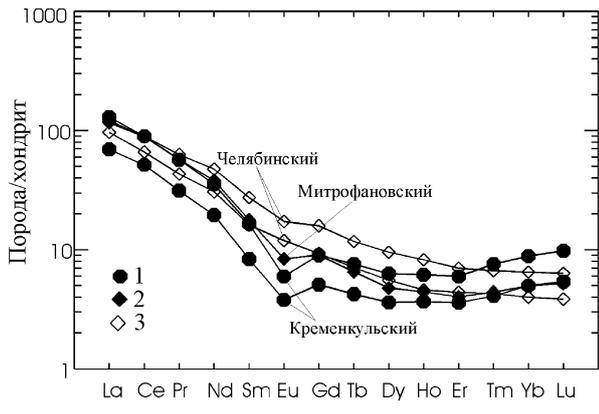
Dy, Ho, Er, Tm, Yb, Lu),
 (La, Ce, Pr, Nb, Sm, Eu) ,

(. 4).

1, . 4) Rb (253-304 /), (5,2-6,6 /), Nb
 (30-48 /), (3-5 /), Th (27,8-44,8 /)



: 1 - ; 2 - ; 3 -



(292 ...).

. 4. - -
 1 - ; 2 -
 ; 3 -

3 %, - 4,3 %.

$F/2$, [.., 1975; .., 2002].

[.., 1977].

125-155 : W, W-Mo-
 2^2 , Nb, Li, Rb, Cs -
 20
 -20^2 . [.., 1995].

(W, 2004; [.., 2003], 2003, .., 2003].

Eu
 La_N/Lu_N , 18 30
 15

, ()// . 1995.
 .37. 6. .530-539.
 , 1977. 222 .
 K-Ar Rb-Sr-
 ()// . 2005. .405. 1. .1-5.
 /
 , 1994. 251 .
 (-4210.2006.5).
 :Rb-
 Sr Sm-Nd // . 2003.
 4. .3-18.
 ()//
 .2003. .17. .27-29.
 //
 3. 2003. .45-72.
 .2. , 2004. .12-16.
 // . 2001.
 1. .62-85.
 : - 20-
 : , 2003. .113-114.
 2002. 391 .
 ()
 1998. 172 .
 //
 1975. .76-94.
 //
 . 1995. 10-12. .31-40.
 Mao Ji., Du A., R. Seltmann, Yu Ji. Re-Os ages
 for the Shameika porphyry Mo deposit and the Lipovy
 Log rare metal pegmatite, Central Urals, Russia // Mi-
 neralium Deposita. 2003.V. 38. P. 251-257.