

W-Mo Be-W-Mo

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E-mail: root@igg.e-burg.su

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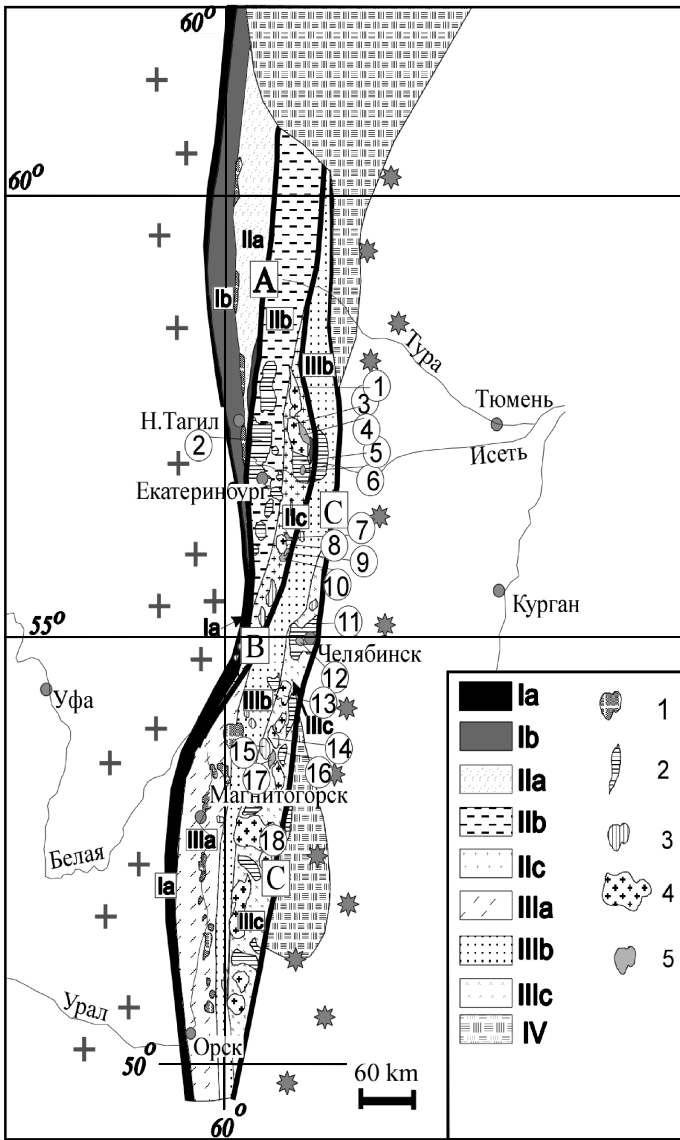
**GEOCHEMISTRY OF THE MIDDLE AND SOUTH URALS GRANITES  
SPECIALIZE ON W-MO AND BE-W-MO MINERALIZATION**

**A.V. Morozova**

*Institute of Geology and Geochemistry, Urals Branch of RAS*

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<sub>N</sub>/Lu<sub>N</sub>, 18 30.

( . 2).

Rb-Sr-

[ ., 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 %),

( . 3).

260-290

<sup>207</sup>Pb/<sup>206</sup>Pb

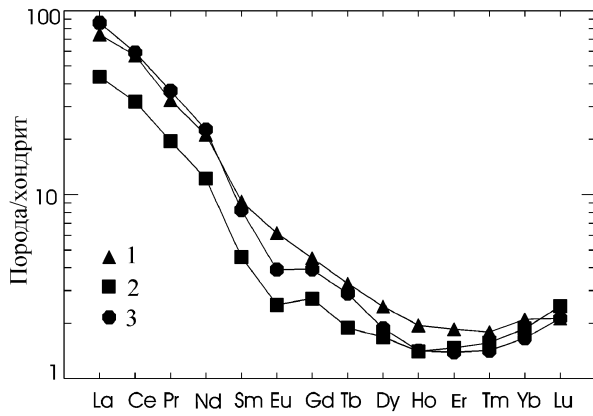
360 [ ., 2001].

Re-Os 272,7±4,5

[Mao et al. 2003].

	1	2	3	4	5	6
	-6	-1	-2	-224	-336	-266
SiO <sub>2</sub>	70,62	73,59	72,45	74,23	73,63	73,06
TiO <sub>2</sub>	0,169	0,114	0,101	0,181	0,21	0,27
Al <sub>2</sub> O <sub>3</sub>	15,76	14,03	14,76	13,49	13,47	14,00
Fe <sub>2</sub> O <sub>3</sub>	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 <sub>2</sub> O	4,20	3,10	4,30	3,58	3,88	3,33
K <sub>2</sub> O	4,74	5,34	4,12	4,65	4,95	4,44
P <sub>2</sub> O <sub>5</sub>	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].

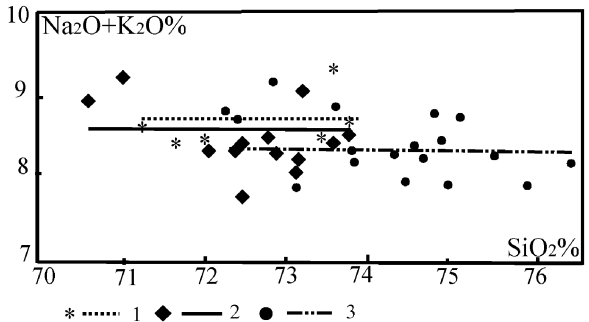
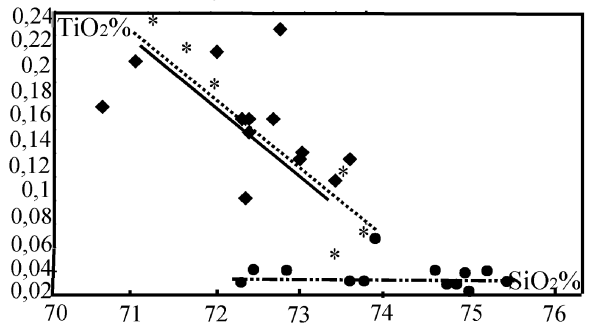
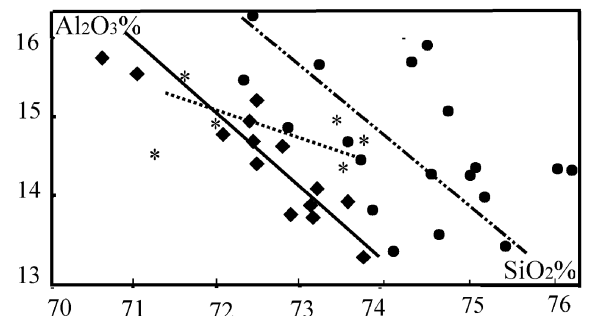
(800-1300 / ),  
 (Rb, Cs, Li),

(Cg, Tb,

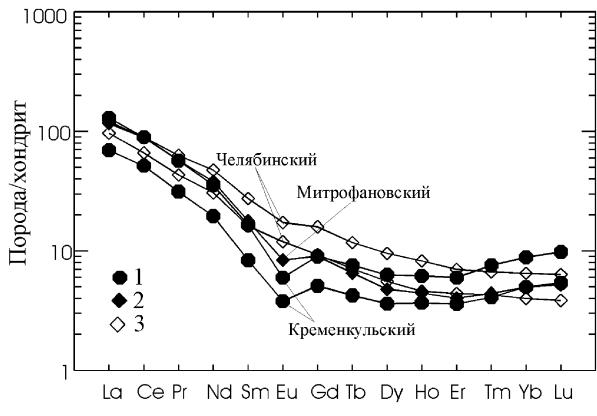
Dy, Ho, Er, Tm, Yb, Lu),  
 (La, Ce, Pr, Nb, Sm, Eu) ,

( . 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  
2<sup>2</sup>, Nb, Li, Rb, Cs -  
20  
- 20<sup>2</sup>.  
[ , 1995].

: W, W-Mo-

W,

2004; [ , 2003], 2003,  
, 2003].

Eu  
La<sub>N</sub>/Lu<sub>N</sub>, 18 30  
15

( )// . 1995.  
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 K-Ar Rb-Sr-  
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