

Ge(IV)-
(n=1÷3)

2. GeO₂·aq (ω₂), H₂O ()

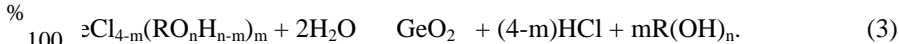
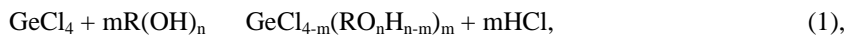
R(OH)_n: 1 - CH₃OH; 2 - (CH₂OH)₂;
3 - (CH₂OH)₂HCOH.
T () = 293.

- æ ω₂).

Ge(IV)-

[7]

(1):



(1)-(3)

80 Nb-

2(); Nb₂O₅; Nb₂O₃ (NbCl₅, NbCl₃),
GeCl_{4-m}(RO_nH_{n-m})_m (: (Ge(IV))
(R(OH)_n)⁺

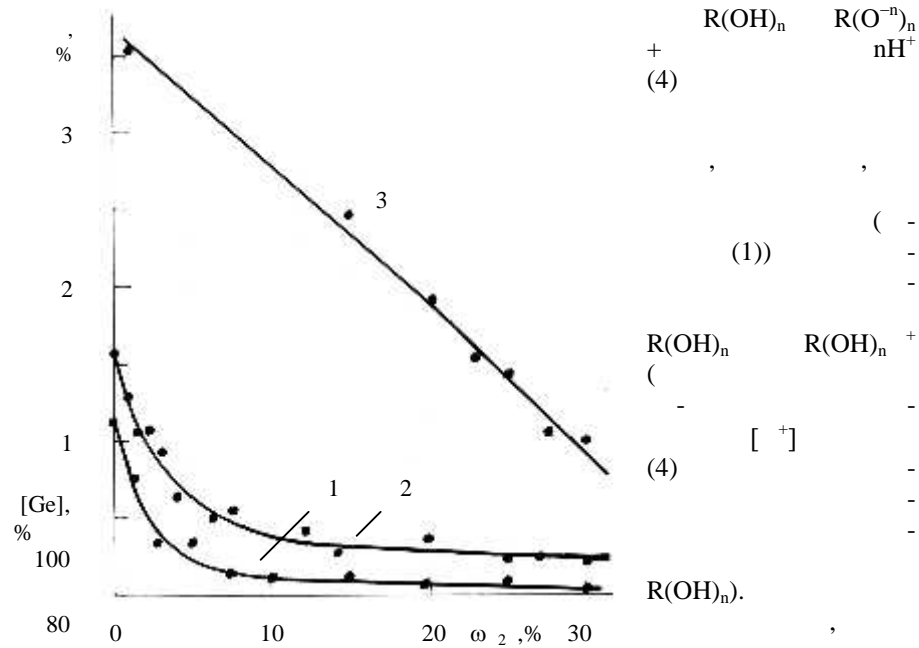
60 ICl, H₂O,
Ge(0)),

40 1, 3⁺),

20 ,

0

5 10 15 20 ω₂, % 25



[Ge],
%

100

80

60

40

20

0

2

4

6

8

10

15

20

25

30

ω₂, %

1

2

3

ω₂ = 7-8%

100%,

ω₂ = 25%.

2 15-18% -

(Met),

Met-, - [7].

ω₂ > 10% -

R(OH)_n R(O⁻)_n
+ nH⁺
(4)

(1)

R(OH)_n R(OH)_n⁺
(4) []

ω₂

HCl

Ge(IV)-

(.2)

GeO₂

ω₂ = 7-8%

ω₂ > 10% -

2 15-18% -

(Met),

Met-, - [7].

ω₂ = 25%.

2 15-18% -

(Met),

Met-, - [7].

2 5-7% ρ, η . 2 -

Ge(IV)- : Ge(IV)-

(ρ, η, α ≅ onst),

2 > 7% ρ, η (α

(. . 2) GeO₂·aq, (2) (3), 30% [7]. 1970-1990 Ge

(5-7%) 2 ,

5% Ge-Cu-Nb- (II) Ge, (2) [8].

Nb-

(2⁺ / 2) << (Ge(IV)/Ge⁰) (+ (1, H₂O), (1, H₂O)) (2R(OH)_n·H⁺ / 2R(OH)_n+H₂) << (Ge(IV)/Ge⁰) (R(OH)_n +),

l, R(OH)_n.

96-97% , l, (2)

1-1- (KCl), Nb

+ Cl⁻ (1), Nb

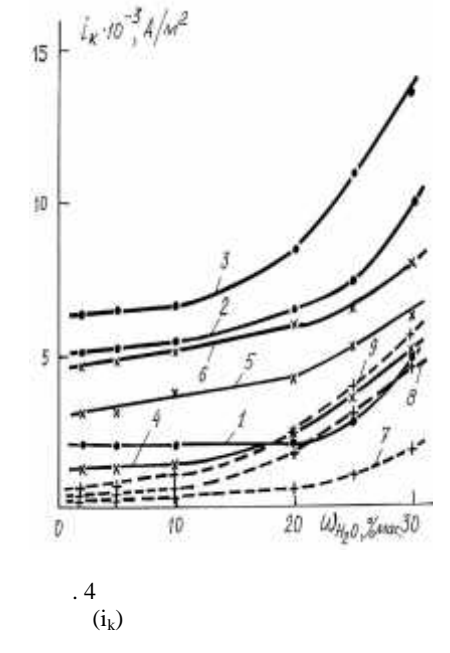
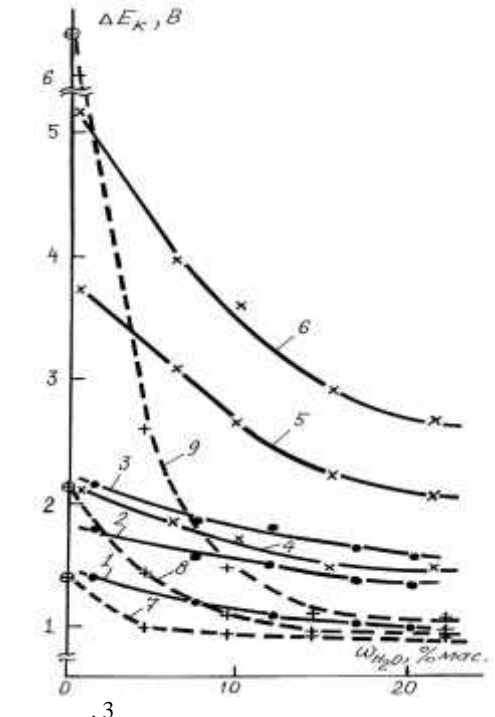
(,) [9]. Ge

Ge (Ge

) [10] (i_k=const) - i_k (=const)

=100% [n⁺]- (i_k= onst) , ω 2 i_k(

=const) - 3, 4,



() = onst. - Nb. : 3; (2)₂-4, 5, 6; (2)₂-7, 8, 9. i_k (/ 2): 1,4-8·10⁻²; 2,5-16·10⁻²; 3,6-24·10⁻²; 7-0,16·10⁻²; 8-0,32·10⁻²; 9-0,8·10⁻². ()=293.

$i_k = \text{const}$, $\omega_2 [\text{Ge(IV)-}]$ (3);

$i_k = \text{const}$, $\omega_2 [\text{Ge(IV)-}]$ (4)

4. ω_2 (Ge(IV)-) (3)

[10].

(GeCl₄, KCl) (5).

R(OH)_n-H₂O-KCl
Nb-
3

R(OH)_n-H₂O-GeCl₄

Ge(IV)- (I-), (>3-6) (1). >3

(n=1÷3) 3-4% 0,1-
0,2%, GeCl₄ Ge HCl,

Ge(IV)- Ge(IV)-
GeCl₄ Ge(IV)-
 $\omega_2 \geq 5-7\%$ n.

Ge=100%) $i_k = \omega_2$ (=const) $-\omega_2$ ($i_k = \text{const}$)

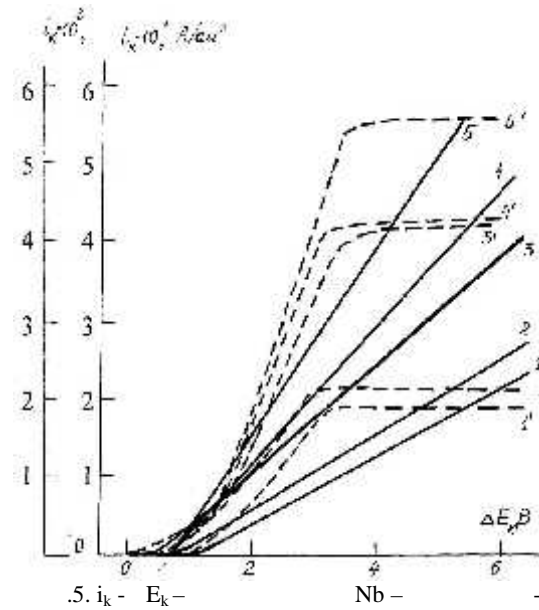
Ge i_k -
R(OH)_n-H₂O-GeCl₄ R(OH)_n-H₂O-KCl

3

()

1. 1979. -5. 15.01.80.
89 - 80. 2. Brinda-Konopik N., Schada C. On the kinetics of Ge(IV) at solid electrodes in aqueous solutions (without complexing agents) //Electrochem. acta. - 1980. -Vol.25, 5. - P.697-701.
3. 1985. - 240. 4. //Ind. Soc. Electrochem. 37-th Meet., Vilnius, 24-31 Aug., 1986. Extended Abstr., Vol. 2. - Vilnius, 1986. - P.136-138. 5.

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- .61. - .108 -114. 7. -1995. -1967. -451
8. Ge(IV)-



GeCl₄. (1÷5) - (CH₂OH)₂ - H₂O - GeCl₄; (1' ÷ 5') - (CH₂OH)₂ - H₂O - 0,05 / KCl. H₂O (%)
): 1, 1' - 0; 2, 2' - 5,5; 3, 3' - 12,0; 4, 4' - 15,6; 5, 5' - 21,0. () = 293. i_k (/ ²): (1 ÷ 5) - 6 10⁻¹; (1' ÷ 5') - 6 10⁻³. - Nb.

622 601 1 052 012

25.04.06