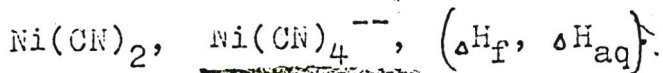


цианидные комплексы

1896
VI-643



Varet

4.Compt.rend.122,1123(1836)

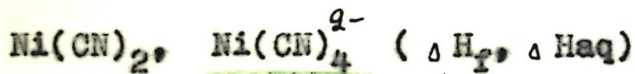
Circ.500

Ja, W,

F

1896

VI-642



Varet

Compt. rend., 1896, 123, 118.

Circ. 500

Ja, W

F

1957

VI-641

Ni(CN)_2 (Пр), Ni(CN)_4^{--} (K)

Hume D.N., Kolthoff I.M.

J. Am. Chem. Soc., 1950, 72, 4423-6.

The polarography of the nickel cyanide complexes and the solubility and constitution of nickel cyanide.

И. Е. Г. Б. Ф. М.

Ja,

CA., 1951, 3749b

1960

VI-646

Ni(CN)₆⁴⁻ (ΔF_f , Kp)

Blackie M.S., Gold V.

J.Chem.Soc., 1959, Dec., 4037-4040.

The stability of the Ni(CN)₆⁴⁻ ion

RX., 1960, 56497

Ja

Est/F.

ЕСТЬ Ф. К.

1960

VI-644

$\text{Ni}(\text{CN})_4^{2-}$ (Kp)

Freund H., Schneider C.R.

J.Amer.Chem.Soc., 1959, 81, N18, 4780-83.

Determination of the cumulative dissociation
constant of tetracyanonickelate (II) ion.

RX., 1960, 21791 Ja

Est/F.
ЕСТЬ Ф. К.

1962

VI-645

$[\text{Ni}(\text{CN})_4]^{2-}$ (Kp)

Margerum D.W., Bydalek T.J.,
Bishop J.J.

J. Amer. Chem. Soc., 1961, 83, N8, 1791-1795.

Kinetics of nickel (II) ligand exchange
reactions: cyanide ion and
(ethylenedinitrilo) . tetraacetate ion.

RX., 1962, 15B51

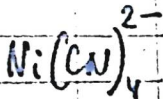
Ja

Est(orig.)

Ni-C-каменск

Bφ-1977-VI

1063



ΔH_f

Thermodynamics of metal cyanide coordination. II. ΔG° , ΔH° , and ΔS° values for tetracyanonickelate(II) ion formation in aqueous solution at 25°. James J. Christensen, Reed M. Izatt, John D. Hale, Russell T. Pack, and Gerald D. Watt (Brigham Young Univ., Provo, Utah). *Inorg. Chem.* 2, 337-9(1963); cf. CA 58, 71g. The thermodynamic formation const. of $\text{Ni}(\text{CN})_4^{2-}$ in aq. soln. was detd. potentiometrically at 25°. The resulting $\log K$ value is 30.1 ± 0.2 ($\Delta G^\circ = -41.1 \pm 0.3$ kcal./mole). A ΔH° value of -43.2 ± 0.2 kcal./mole for the formation of $\text{Ni}(\text{CN})_4^{2-}$ in aq. soln. was detd. calorimetrically at 25° with a simple calorimeter and a thermometric titration procedure at high and low ionic strengths, resp. Combination of the ΔG° and ΔH° values gives a value of -7 e.u. for ΔS° . CA

C.A. 1963.58.10

96798

1977-VI

1963

$\text{Ni}(\text{CN})_4^{--}$ (K_p , ΔG° , ΔH° , ΔS°)

Christensen J.J., Izatt R.M., Hale J.D.,
Pack R.T., Watt G.D.

Inorg. Chem., 1963, 2, 337-9

Thermodynamics of metal cyanide coordination.
II G , H° , S° values for tetracyanocobaltate
(II) ion formation in aqueous solution at
 25° .

CA, 1963, 58, N 10, 9679b

Ja.

Есть оригинал.

$Ni(CN)_4^{2-}$

ВФ-4521-VI

1965

Егоров И. М. Вдущий З. К.

(Кр)

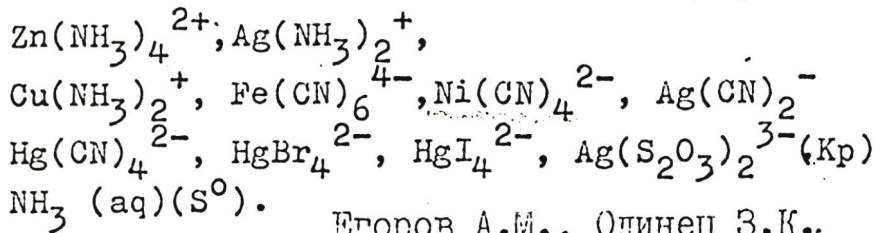
Сб. науч. трудов Гос. научно
исслед. ин-та Цв. мет.

1965,

№ 23, 247-5

1966

VI-4521



Егоров А.М., Одинец З.К..

Сб. научн. трудов Гос. научн. иссл. Ин-та
Цветн. метал., 1965, №23, 247-5.

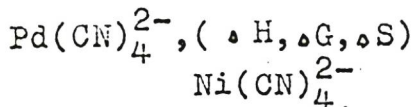
Температ. зависимость констант нестойкости
ряда комплексных ионов.

Ja,

F

CA, 1966, 64, N6, 7425f

1967
VI-3980



Watt G.D., Eatough D., Izatt R.M.,
Christensen J.J.

Proc. Utah Acad. Sci. Arts, and Letters, 1965,
42, N2, 298-302.

A thermodynamic study of Pd^{2+} -
CN-interaction.

RX., 1967, 19B550

Est/orig.

Ja, W.

$PtBr_2^+$, $PtBr_2$, $[Ni(CN)_4]^{2-}$, 16 1970

$Pd(CN)_2$, $[Co(CN)_4]^{2-}$, $Cu(CN)(Kp)$ V17277

Inman D, Jones B, White S.H.

J. Inorg. and Nucl. Chem., 1970, 32, N3,
927-936 (aur.)

Complex ions in molten salts. Bromo- and
cyano-complexes of nickel(II), cobalt(II),
palladium(II), platinum(II) and copper(I) in
molten $KCl + KCl$ (59:41 mole %).

PH Xuan, 1970

18B155



W B (CP)

Ni⁺² - CN⁻

1971

14 В145. Термодинамика координации металлов с цианидом. Часть IX. Величины $\lg K$, ΔH° и ΔS° для систем $\text{Ni}(2+)$ —, $\text{Zn}(2+)$ —, $\text{Cd}(2+)$ — и $\text{Hg}(2+)$ — CN^- при 10, 25 и 40°. Izatt R. M., Johnston H. D., Eatough D. J., Hansen J. W., Christensen J. J. Thermodynamics of metal cyanide coordination. Part IX. Log K , ΔH° , and ΔS° values for the Ni^{2+} -, Zn^{2+} -, Cd^{2+} -, and Hg^{2+} - CN^- systems at 10, 25 and 40° C. «Thermochim. acta». 1971. 2. № 1. 77—85 (англ.)

K_c ;
 ΔH° ; ΔS°

(+3)

X. 1971. 14



Изучена термодинамика взаимодействия $M(2+)$ с CN^- , протекающего по р-циям: $M(CN)_{i-1}^{3-i} + CN^- \rightleftharpoons M(CN)_i^{2-i}$ (1) и $M^{2+} + iCN^- \rightleftharpoons M(CN)_i^{2-i}$ (2), где $M(2+) = Ni, Zn, Cd$ и Hg . При 10, 25 и 40° и ионной силе, равной 0, найдены константы равновесия, изменения свободной энергии, энтальпии ΔH° и энтропии р-ций (1) ($i=3$ и 4 для $M=Zn$; $i=1, 2, 3$ и 4 для $M=Cd$ и Hg) и р-ций (2) ($i=2$ для $M=Zn$; $i=4$ для $M=Ni, Zn, Cd$ и Hg). Из зависимости ΔH° от т-ры вычислены величины ΔC_p° . Сообщ. VIII см. РЖХим, 1969, 13Б726.

Е. Ф. Перегудов

Ni²⁺ CN⁻

1971

68478v Thermodynamics of metal cyanide coordination. IX. Log K, ΔH^0 , and ΔS^0 values for the Ni²⁺-, Zn²⁺-, Cd²⁺-, and Hg²⁺-CN⁻ systems at 10, 25, and 40°. Izatt, Reed M.; Johnston, Harlin Dee; Eatough, Delbert J.; Hansen, James W.; Christensen, James J. (Dep. Chem., Brigham Young Univ., Provo, Utah). *Thermochimica Acta* 1971, 2(1), 77-85 (Eng). Log K, ΔH^0 , and ΔS^0 values valid at zero ionic strength are reported or summarized from previous studies for CN⁻ interaction with bivalent Ni, Zn, Cd, and Hg at 10, 25, and 40°. From the values of ΔH^0 as a function of temp. av. ΔC_p^0 values are calcd.

RCBBV

log K,

ΔH^0

ΔS^0

+3

C.A. 1971. 74.14



$Ni(CN)_5^{3-}$

B-P-XVI-578

1971.

11 B117. Образование в растворе пентацианоникелат-иона из тетрацианоникелат-иона. Pierrard, Jean-Claude, Hugel René. Formation d'un ion pentacyanonickelate (II) à partir de l'ion tétracyanonickelate (II) en solution. Rev. chim. minér., 1971, 8, № 6, 831—840 (франц.; рез. англ., исп., нем.)

Спектрофотометрическим методом при $20 \pm 0,3^\circ$ в 0,02 М водн. р-ре $Na_2[Ni(CN)_4]$ в 2 М $NaClO_4$ в присутствии CN^- -ионов исследовано равновесие: $Ni(CN)_4^{2-} + CN^- \rightleftharpoons Ni(CN)_5^{3-}$. Константы равновесия р-ции найдена равной $0,168 \pm 0,003$. Величина константы сравнивается с имеющимися в лит-ре и отмечается их хорошее соответствие. Представлены спектры ионов $Ni(CN)_4^{2-}$ и $Ni(CN)_5^{3-}$ в области 390—520 нм. Э. А. Межов

X. 1972. 11

Ni(CN)₅³⁻

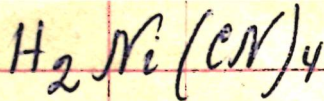
BP- XVI-518

1971

K_o

104587g. Formation in solution of a pentacyanonickelate(II) ion from the tetracyanonickelate(II) ion. Pierrard, Jean C.; Hugel, Rene (Lab. Chim. Miner. I, Univ. Reims, Rheims, Fr.). *Rev. Chim. Miner.* 1971, 8(6), 831-40 (Fr). The formation of pentacyanonickelate(II) ion from NaCN and Na₂Ni(CN)₄·3H₂O was detd. spectrophotometrically. The equil. const. of $\text{Ni(CN)}_4^{2-} + \text{CN}^- \rightleftharpoons \text{Ni(CN)}_5^{3-}$ is $0.168 \pm 0.003 \text{ l. mole}^{-1}$. No other complex ion was detected. R. Razouk

C.A. 1972. 76.18

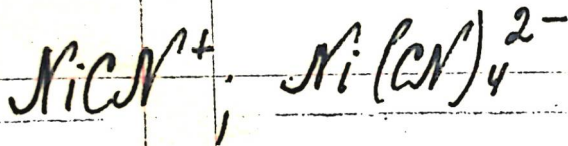


1974

 $\Delta H^\circ, \Delta G^\circ$ $\Delta S, K_{\text{ion}}$

159801f Protonation of tetracyanonickelate
Kabir-ud-Din (Dep. Chem., Aligarh Muslim Univ., Aligarh, India). *Z. Phys. Chem. (Frankfurt am Main)* 1974, 88(1-6), 316-22 (Eng). The ionization consts. K_1 and K_2 of $\text{H}_2\text{Ni}(\text{CN})_4$, detd. in aq. soln. by electrometry at 25-50°, obeyed the relations $\text{p}K_1 = 11,419.90/T - 69.65 + 0.1219 T$ and $\text{p}K_2 = 5777.98/T - 32.74 + 0.0669 T$. The thermodyn. quantities for the ionization at 30° were $\Delta G^\circ = -6.47$ and -9.17 kcal mole⁻¹, $\Delta H^\circ = -0.98$ and $+1.7$ kcal mole⁻¹, $\Delta S^\circ = +18.2$ and $+35.9$ cal mole⁻¹ degrees⁻¹ and $\Delta C_p^\circ = +338.2$ and $+1.85.6$ cal mole⁻¹ degree⁻¹, resp.

C.A. 1974. 81 N24



1974

(Кстаб)

177198* Complex formation in the nickel(II)-cyanide system. Persson, Hans (Chem. Cent., Univ. Lund, Lund, Swed.). *Acta Chem. Scand., Ser. A* 1974, A260, 98-99 (1974). The formation of complexes in aq. soln, Ni^{2+} -CN⁻ was studied by potentiometric measurements with a glass electrode in 0.1M and ionic strength 3.0M (NaClO_4). These measurements are best described if two mononuclear complexes, NiCN^+ and $\text{Ni}(\text{CN})_2$, are assumed to exist with stability consts. $\beta_1 = (1.08 \pm 0.14) \times 10^4 \text{ M}^{-1}$ and $\beta_2 = (1.16 \pm 0.08) \times 10^{11} \text{ M}^{-2}$, resp. (the error given is three times the standard deviations). The intermediate complexes $\text{Ni}(\text{CN})_3$ and $\text{Ni}(\text{CN})_4$ are so weak that the corresponding

C.A. 1975, 82 v12

9282-111-2306
B92-111-2306

strictly regarded as a first order reaction. From the calcs. approx. max. values of β_1 and β_2 were estimated to be $9 \times 10^{13} M^{-1}$ and $1 \times 10^{14} M^{-2}$, resp. There was no sign of any fifth or sixth mononuclear complex in the pH range that was investigated. The conclusion that $Ni(CN)_4^{2-}$ is a very strong complex can definitely be discarded. Protonated cyanide complexes have been reported to dominate the complex formation at pH < 5. In the present investigation no such complexes could be discovered although a careful anal. of potentiometric data in this pH region was performed. Protonated Ni cyanide complexes, if they exist at all, must therefore be far weaker than suggested previously (Kolski, G.B., and Margerum, D.W., 1962). The fourth mononuclear complex strongly dominates the complex formation, and the potentiometric measurements indicate a max. amt. of $NiCN^+$ of only $(10 \pm 4) \%$. Therefore spectrophotometric investigations were performed to verify the existence of the first complex. No pos. evidence of $NiCN^+$ was obtained, however, indicating that the first complex is considerably weaker than suggested by the results from the potentiometric measurements. The value of β_1 given above may be regarded as a max. value.