"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

SOV/137-58-9-18822

Prospects for the Utilization of the Adsorption-complex-forming (cont.)

capacity of a carbon and α-nitroso- β-naphthol column is only one-half that of a carbon and dimethylglyoxime column. Preliminary investigations have established the optimum rate of filtration (when the coal is reduced to grains 0.2-0.5 mm in cross section) to be ~150 cc/hr through 1 cm^2 cross section of carbon and dimethylglyoxime column. During the purification process the pH of the solution is held at 5.8-6 by means of an acetate buffer. A purified 10-12% $ZnSO_4$ solution contained < 10^{-6}% Cu, $2\text{-}4 \cdot 10^{-5}$% Fe, and no Ni and and Co discernible by chemical analysis.

N.P.

1. Cadmium sulfates--Purification 2. Zinc sulfates--Purification 3. Nickel --Separation 4. Copper--Separation 5. Cobalt--Separation

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON T. B.

48-5-7/30

SUBJECT: USSR/Luminescence

AUTHORS: Gurvich A.M., Gapon T.B and Rabinovich M.S.

TITLE: Chromatographic Methods of Purifying Raw Materials Used for Synthesis of Luminophores (Khromatograficheskiye metody ochistki syr'ya, primenyayemogo v sinteze lyuminoforov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #5, pp 656-660 (USSR)

ABSTRACT: Aluminum oxide yields satisfactory results as a chromatographic adsorbent in purifying $CdSO_4$ and salts of other cations (possessing a lesser ability of sorption on Al_2O_3 than Cd^{2+}). A solution of zinc sulfate can be purified from copper traces by filtering through a column containing ZnS in a mixture with Al_2O_3.
Especially good results were obtained by filtering solutions to be purified through a column containing dimethyl-glyoxime. Using this method, salts of cadmium, alkali and alkali-earth metals can be purified from Cu, Fe, Ni and Co up to a high degree of purity, which practically does not depend on

Card 1/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

TITLE: Chromatographic Methods of Purifying Raw Materials Used for Synthesis of Luminophores (Khromatograficheskiye metody ochistki syr'ya, primenyayemogo v sinteze lyuminoforov)

initial concentrations of admixtures.

This report and two preceding ones were followed by a common discussion in which Markovskiy L.Ya. of the State Institute of Applied Chemistry communicated that the Institute compared all 3 methods and came to a conclusion that the method of using diethyl-dithio-carbamate has the best prospect.

1 Russian reference is cited.

INSTITUTION: Chemico-Pharmaceutical Plant im. Semashko; Institute of Physical Chemistry of the USSR Academy of Sciences.

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GURVICH, I. V.

AUTHORS: Gurvich, A. M., Gapon, T. B. 32-9-4/43

TITLE: Adsorption-Complex Forming Chromatographical Method of Metal Separation (Adsorbtsionno-kompleksoobrazovatel'nyy khromatograficheskiy method razdeleniya metallov)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp.1037-1042 (USSR)

ABSTRACT: By exchanging the inert carrier with an adsorbent, which is able to retain the complex forming of the reagent and the products from its reaction with the metal-cations, the authors succeeded in extending the application possibilities for such reagents in the chromatography. Especially promising is in their opinion the application of columns from activated carbon which contain an organic complex forming reagent well adsorbing in the carbon, e.g. dimethyl glyoxime, α-nitroso-ß-naphthol or ortho-hydroxyquinoline. The bottom layer of such columns only consists of activated carbon. The organic reagent and its metal-compounds are retained in the column by the carbon. This makes it possible to separate the cations. These together with the respective reagent form compounds soluble in water as well as insoluble compounds, where the reagent does not penetrate into the filtrate neitherin free condition nor in the form of a compound. The possibilities of separating metal is determined by the distinctness of the unsolidity constants of its complex-compounds with the organic reagent.

Card 1/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

Adsorption -Complex Forming Chromatographical Method of Metal Separation. 32-9-4/43

That cation which forms the least solid complex is the first to enter the filtrate. It is referred to the fact, when investigating the processes occurring in the adsorption-complex forming columns, a number of interesting data on the properties of the organic reagents, on the structure and stability of the compounds formed by them with the metals, on formation of compounds which formerly couldnot be ascertained, can be obtained. It is demonstrated that the method here described can be applied for the solution of the most different problems of preparatory, analytical and physical-chemical character. There are 2 tables, 2 figures and 16 references, 13 of which are Slavic.

ASSOCIATION: Institute for Physical Chemistry AN USSR and Institute for Radiology(Institut fizicheskoy Khimii AN SSSR i Institut rentgenologii)

AVAILABLE: Library of Congress

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

RACHINSKIY, V.V. Prinimal uchastiye GAPON, T.B.

[Research in the field of chromatography and radioactive tracers and the use of these methods in agrobiology; author's abstract of a dissertation presented for the degree of a doctor of chemical sciences] Issledovaniia v oblasti metodov khromatografii i radioaktivnykh indikatorov i primeneniia ikh v agrobiologii; avtoreferat dissertatsii, predstavlennoi na soiskanie uchenoi stepeni doktora khimicheskikh nauk. Moskva, Moskovskaia sel'khoz. akad.im. K.A.Timiriazeva, 1958. 32 p. (MIRA 13:12)
(Chromatographic analysis) (Radioactive tracers)
(Agricultural chemistry)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CHMUTOV, K.V., otv.red.; SHEMYAKIN, F.M., red.; GAPON, T.B., red.; YELOVICH, S.Yu., red.; SALDADZE, K.M., red.; TIMOFEYEV, D.P., red.; LEVI, T.G., red.izd-va; MAKUNI, Ye.V., tekhn.red.

[Chromatography, its theory and uses; proceedings of the All-Union Conference on Chromatography] Khromatografiia, ee teoriia i primenenie; trudy Vsesoiuznogo Soveshchaniia po khromatografii. Moskva, 1960. 462 p. (MIRA 13:7)

1. Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.
(Chromatographic analysis)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

S/030/60/000/010/005/018
B021/B058

AUTHORS: Gapon, T.B., Gurvich, A. M., Chmutov, K. V.

TITLE: Adsorption-complex-forming Chromatographic Method

PERIODICAL: Vestnik Akademii nauk SSSR, 1960, No. 10, pp. 58-60

TEXT: A short definition of the principle of chromatography is given. The elaboration of sedimentary chromatography based on the differences of the solubility of sediments formed by the materials to be separated with the precipitator-reagent, constitutes a great progress. The replacement of the inert carrier of the column by an adsorbent such as active carbon opens good prospects. The separation of metals in columns is mainly based on the different capabilities of the cations to form complexes with the given reagents, and on the stability of the complexes being formed. Of all variants of chromatographic purification of the raw material for luminophors, the method of using adsorption-complex-forming columns is the most suitable one for industry, since it is simple, effective, safe and economic. Mixtures of materials with very similar properties can be separated by this

Card 1/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

method. The separation of Nb and Ta in columns with coal and tannin at 100°C is mentioned as an example. Finally, it is stated that the adsorption-complex-forming chromatographic method permits to establish columns with extraordinary selectivity through simple procedures and by means of usual chemical reagents and cheap, accessible adsorbents. Not only complex-forming reactions but also other chemical reactions can be used in a similar way. It is, however, necessary that the materials to be separated show a different reactivity toward the given reagents and that the compounds formed remain solidly bonded to the surface of the adsorbents. This principle can also be used for carrying out some organic reactions and the separation of their products. There is 1 Soviet reference.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

L 61048-65 EWT(m)/EPF(n)-2/EWP(t)/EWP(b) Pu-4 IJP(c) JD/JG/GS
ACCESSION NR: AT5014250 UR/0000/65/000/000/0235/0240

AUTHORS: Aleksandrova, L. S.; Gapon, T. B.; Chmutov, K. V.

TITLE: Application of the adsorption-complex-formation chromatographic method to the selective extraction of metals

SOURCE: AN SSSR. Institut fizicheskoy khimii. Ionoobmennaya tekhnologiya (Ion exchange technology). Moscow, Izd-vo Nauka, 1965, 235-240

TOPIC TAGS: ion exchanger, ion exchanger, ion exchange resin, complex compound, chromatography, niobium, tin

ABSTRACT: An adsorption-complex-formation chromatographic method for the separation of Nb from Ta and Nb-95 from SB-125 is presented. The investigation is an extension of the work of L. S. Aleksandrova and K. V. Chmutov (Izv. AN SSSR, OKhN, No. 5, 801, 1960). Two methods for the separation of Nb and Ta are presented, based on the properties of activated charcoal-oxyquinoline and activated charcoal-N-benzoyl-N-phenylhydroxylamine columns, respectively. The performance of the first method is shown graphically (see Fig. 1 on the Enclosure). The complete separation of Nb-95 and Sb-125 was achieved on an activated charcoal-

Card 1/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

L 61048-65
ACCESSION NR: AT5014250

N-benzoyl-N-phenylhydroxylamine column. Orig. art. has: 2 graphs.

ASSOCIATION: none

SUBMITTED: 26Feb65 ENCL: 01 SUB CODE: IC, GC

NO REF SOV: 017 OTHER: 010

Card 2/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

L 61048-65

ACCESSION NR: AT5014250 ENCLOSURE: 01

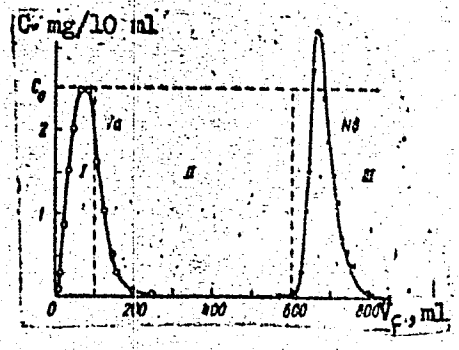

Fig. 1. Separation of Nb and Ta on a charcoal-oxyquinoline column. Region I- saturation of column with initial Nb and Ta mixture; region II- elution of Ta residues by buffer solution; region III- displacement of adsorbed Nb with a 6% oxalic and 5% hydrochloric acid solution. Co- initial concentration of Nb and Ta, V_f- volume of filtrate.

Card 3/3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1. GAPON. V. I.

2. USSR (600)

4. Heart—Diseases

7. Uden's cartio-diaphragmatic syndrome and efficacy of gastric lavage. Klin. med. 30 no. 10 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

[redacted]

GAPON, YE. N.

CA: 22-3341/8

GAPON, E. N.
J. Russ. Phys.-Chem. Soc. 59, 933-49 (1927)
The internal pressure and thermal oscillations of solids.

RESTRICTED

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

Theory of physical titration. R. N. Gapon. *Ukrainskii Khem. Zhur.* 4, Sci. Pt., 149-53(1929).—Phys. titration is defined as titration in the course of which neither the titrated nor the titrating substance undergoes any change. Examples are the titration of a mixt. of EtOH and water with C_6H_6 until sepn. into 2 layers occurs, and the titration of C_6H_6 with a mixt. of EtOH and water until the whole becomes homogeneous. With the data of Lincoln (*J. Phys. Chem.* 4, 161-87(1900)) and the formula of Bancroft (*J. Phys. Chem.* 1, 780(1897)), the phys. method of titration is quite satisfactory. H. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

2

CA

Theory of stability of disperse systems. II. Stability of hydrosols of Prussian blue. E. N. Gapon. *Ukrainskii Khem. Zhur.* 4, Sci. Pt. [illegible] (1929). [illegible] 22, [illegible] The stability at the ordinary temp. of dispersed systems of Prussian blue in water for varying proportions of $K_4FeC_6N_6$ and FeCl$_3$ has been found to decrease with increasing concn. of FeCl$_3$. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

2

Investigation of the velocity of crystallization. B. N. Gapon.—*Ukrainskii Khem. Zhur.* 4, Sci. pt., 161-92(1929).—Since Nernst's theory of the velocity of crystn. fails in many cases the process of crystn. was studied as a simple heterogeneous reaction. A brief bibliography is given and the work of previous investigators is reviewed in some detail. The method of investigation of crystn. developed by Marc (*C. A.* 4, 404) and V. Fisher (Investigation on Saturated Salt Solutions, 1913) was used. The order of the velocity of crystn. from supersatd. solns. of the following salts was detd.: $(NH_4)_2CrO_4 \cdot H_2O$, $NaCrO_4$, K_2SO_4, $K_2Cr_2O_7$, $CaH_4(NO_3)_2O \cdot Na_2H_2O$, $KAl(SO_4)_2 \cdot 12H_2O$, $NH_4Al(SO_4)_2 \cdot 12H_2O$ and KNO_3. The course of crystn. was investigated at 0° and at 25°, and the velocity consts. of the salts were calcd. The velocity of crystn. of salts from supersatd. solns. is detd. by dehydration of ions and by adsorption. The energy of activation of mols. in crystn. represents the heat of dehydration of ions or the heat of formation of hydrates with the sign reversed. Detn. of the energy of activation, therefore, makes it possible to ascertain the compn. of the hydrates subject to dehydration in the process of crystn. Two methods of detg. the order of the velocity of crystn., namely the method of alternate supersatns. and the method of compensation were developed theoretically and verified experimentally. These methods were applied to the salts listed above, and it was found that for the majority of the salts the process of crystn. consists of 2 periods, initial and normal. During the initial period of crystn. if the velocity is detd. by adsorption, its order is equal to unity, *i. e.*, the velocity is proportional to the first power of supersatn.; if the velocity is detd. by the dehydration of ions its order is equal to the no of ions composing the salt. During the normal period the reaction is bimolecular; *i. e.*, the velocity of crystn. is proportional to the square of supersatn. B. N. Danilov

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Bc

p. 1

[illegible]

may be 1, 2, 3 . . . . . Three cases are considered, the product [illegible] being formed either by unimolecular, or by bimolecular, or partly by unimolecular and partly by bimolecular transformation of A. By means of the results of Lebedev and Mereshkovski (A., 1913, i, 1285) on the polymerisation of isoprene and dimethylpropenyl, it is shown that the kinetics of simultaneous reactions, in particular of polymerisation, proceed according to equations formally identical with those of catalytic reactions.

T. H. Pope.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND COVERS

PROCESSES AND PROPERTIES INDEX

Ca

2

Velocity of crystallization. II. E. N. Gapon. *Ukrainskii Khem. Zhur.* 4, 5(15-19(1929); cf. *C. A.* 24, 2355.—The abs. value of the velocity of crystn. under identical conditions (temp. and no. of nuclei) depends on the degree of supersatn. The initial period of crystn. is for many salts characterized by increase in the velocity coeff. and depends on the neutralization of the charges on the surfaces of the nuclei. The expression $(K_0 - K_a)/A$ = const. is derived, where K_0 is the initial velocity coeff., K_a is the mean coeff. of the succeeding period and A represents the quantity of salt adsorbed. Electrolytes other than that crystallizing either diminish the degree of adsorption of the substance or have no influence on adsorption; in the former case, their action is due to preferential adsorption with consequent weakening of the electrostatic field of force of the crystal surface. Such salts are those the degree of polarity of the ions of which is greater than that of the ions of the substance undergoing crystn., while for indifferent electrolytes their ions possess a smaller polarity. In the former case the velocity of crystn. is enhanced, and in the latter case diminished. The ratio of the velocity coeff. of soln. to that of crystn. is for $(NH_4)_2C_2O_4$ and $H_2C_2O_4$ equal to 1, for $Na_2C_2O_4$ 24.0, and for Na dinitrophenoxide 12.2. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

Hydration of ions and molecules. III. The velocities of hydration and dehydration. E. N. Gapon. *J. Russ. Phys. Chem. Soc.* **61**, 375-80(1929); cf. *C. A.* **22**, 3333. The transition velocity of the green hydrate of $CrCl_3$ to the violet form at 0° in 0.05 M aq. soln. was measured by titrating samples with $AgNO_3$ at 1 hr. intervals. The velocity const. decreases abruptly when the formation of the pentahydrate is complete. The mean value of the const. (calcd. from $K_1 = (1/t)\log[1/(2 - n)]$) during the first stage of the reaction equals 0.00555. The velocity const. for the second stage (the hydration of pentahydrate) $K_2 = (1/t_1)\log[1/(3 - n)] = 0.00030$. Crystn. can be regarded as dehydration accompanied by phase change. This process is chem. in nature since its velocity is in general proportional to the square of supersatn., and the temp. coeff. equals approx. 2. The ionic structure of crystals contradicts the view of crystn. as polymerization of dissolved mols. There is also no similarity between crystn. and adsorption of ions on cryst. surface, for the adsorption equation represents a monomol. reaction, the velocity being proportional to the degree of supersatn. (and not to the second power of the same). The remaining possibility is that of ionic dehydration according to the scheme $M(OH_2)_n^+ + X(OH_2)_n \rightarrow M^+, X^- + aq$. Since equiv. amts. of pos. and neg. ions deposit simultaneously on the crystal, the kinetic equation for the process will read $dc/dt = KFC^n$, where n = no. of sepg. ions and F the surface of the solid phase. The following formula is derived from kinetic considerations (cf. *C. A.* **23**, 2091). $L = SF\sqrt{kT/2\pi m}\, e^{-x/RT}$, L being the no. of mols. capable of undergoing dehydration, S the no. of mols. in soln., m wt. of the mol., k, Boltzmann's const. and w, "energy of dehydration." W is only a fraction of the energy of hydration, and represents the work necessary to split off those H_2O mols. which are most strongly held by the ion, the other mols. losing their attraction as soon as the ion approaches the elec. field of the crystal. Values of W were calcd. from the known crystn. velocities at different temps. (cf. *C. A.* **23**, 2091); by comparing W with heats of formation of cryst. hydrates, the no. of H_2O mols. lost in crystn. was found. The values thus obtained were of the same order of magnitude as those detd. by other investigators.

B. Sovenkoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

CO

3

The theory of isotopes. E. N. Gapon. *J. Russ. Phys. Chem. Soc., Phys. Pt.*, 61, 641-3(1929).--It is mathematically shown that the const. relationship between isotopes is fixed during formation of the elements. The ratio of isotope quantities is equal to the ratio of velocity consts. of their formation. V. Vesselovsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

B c

a-1

Theory of supersaturated salt solutions. E. N. Gapon (J. Russ. Phys. Chem. Soc., 1929, 61, 1791—1797).—It is shown on thermodynamical grounds that for every degree of supersaturation there must be a limiting weight of crystal below which seeding does not provoke crystallisation. Three states of supersaturated solutions may exist—stable, metastable, and labile, according to whether the result of seeding is exclusively growth of the crystals added, both this and the formation of new centres of crystallisation, or, finally, exclusively precipitation of crystals, without growth. The concentrations at which these types of supersaturated solutions exist are constant for any given salts. R. TRUSZKOWSKI.

CHEMICAL ELEMENTS

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

AUTHOR INDEX

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

a-1

BC

Induction period in the crystallization of supercooled solutions. E. N. Gapon (J. Russ. Phys. Chem. Soc. [illegible], [illegible], 1739—1741).—The length of the induction period in the crystallization of supercooled solutions is given by the expression [illegible] where C is the concentration of the [illegible] and [illegible] the order of the reaction, determined by the number of [illegible] which the given solute is [illegible], but depends also on whether the reaction is one of [illegible] or of catalytically induced crystallization. The above expression is verified for both cases, as well as for double decomposition with precipitation of the product. The energy of activation of [illegible] calculated from the induction constant is smaller than that calculated from the velocity of crystallization.

R. Trusskowski.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

2

Kinetics of crystallization of supersaturated solutions. E. N. Garon. *J. Russ. Phys.-Chem. Soc.* 61, 2319-26(1929).—The curve representing the velocity of crystn. of supersatd. solns. is similar to that for an autocatalyzed reaction. In the presence of indifferent salts the induction period is greatly shortened, the velocity of reaction is increased, and the point of max. velocity is attained sooner than in their absence. Nonelectrolytes and colloids are without influence on the velocity of crystn. B. C. A.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES

Hydration of ions and molecules. IV. Crystallization velocity of sodium picrate from water-alcohol mixtures. E. N. Gapon.— *J. Russ. Phys.-Chem. Soc.* 61, 2327-30 (1929).—The relationship between crystn. velocity and dehydration of ions was demonstrated in a previous communication (C. A. 24, 768). In the expression for the crystn. velocity const. $K = se^{-E/RT}$ (1) the value of E (= the work of dehydration) depends on the degree of hydration of the solute. The addn. of EtOH should therefore accelerate crystn., as was actually found by Fisher in the case of Na picrate. Addnl. data for 15, 25, 30 and 50% by vol. mixts. of EtOH and H_2O were obtained by G. using Fisher's technic. The crystn. velocity const. K was calcd. from $K = (1/t)[(1/C) - (1/C_0)]$ where C = supersatn. in g. of salt per 100 cc. of the satd. soln. Values of log K varied linearly with $\sqrt{x}$ (x = mol fraction of EtOH), i. e., $(\log K_x - \log K_0)/\sqrt{x}$ = const. = b. The significance of b is found by assuming the change in the energy of dehydration to be proportional to the square root of the mol. fraction x. Equation (1) then assumes the form $K_x = se^{-\frac{(E_0 - b\sqrt{x})}{RT}}$ (2). Dividing (2) by (1), gives $(K_x/K_0) = e^{b\sqrt{x}/RT}$ and $\log (K_x/K_0) = 0.4343\, b\sqrt{x}/RT$; or $b = 0.4343\, b'/RT$. No proportionality was found between the crystn. velocity const. and soly. of Na picrate.

B. Sovenoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

2

The theory of syneresis. B. N. Gapon. *Ukrainskii Khem. Zhur.*, Sci Pt., 5, 59-61(1930).—The quantity of a liquid sepd. during the process of syneresis in % of the initial quantity of solvent (X_s) is relat d to the concn. of the solute by the ratio $X_s/(P_s - P) = H$, where H is the "syneresis const.," and P_s is the concn. of solute at which no syneresis is observed. P_s can be detd. if data are obtained for 2 different concns.

B. N. Daniloff

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

a-1

BC

Dependence of yield on temperature. E. N. Gaddis (Ukraine Chem. J., 1939, 5, [Sci.], 165—168).—The following expressions are derived from the kinetic equations of velocity of reaction: $\log \log A/(A-x) = a_1 - b_1/T$ for unimolecular, and $\log x/(A-x) = a_2 - b_2/T$ for bimolecular reactions, in which x represents the yield of products per minute, A is the initial concentration of substrates, T the absolute temperature, and a and b are constants.

R. Truszkowski.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1st and 2nd orders

PROCESSES AND PROPERTIES INDEX

Relation between energy of activation and constant S of Arrhenius' equation. K. N. Gapon. *Ukrainskii Khim. Zhur.* 5, Sci. Pt., 169-80(1930).—By the example of 4 reaction groups, it is shown that in a given group the reactions are characterized by the so-called inversion temp. T_i, at which the reactions proceed at the same rate. From this fact results the relationship between the energy of activation E and the const. S of Arrhenius' equation $\log S = \log K_i + (E/RT_i)$, where K_i is the rate of reaction const at T_i. Thus K_i and T_i are connected by the equation $\log K_i = \log \psi + (\varphi/RT_i)$, where ψ and φ are consts., characteristic of all reactions. An equation is given describing the kinetics of 28 monomol reactions. S. I. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

a-1

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

Relation between the surface energy of heteropolar substances and their solubility. E. N. Gapon. *J. Russ. Phys.-Chem. Soc.* 62, 129-31(1930).—The following expressions are derived: $\sigma(Mv)^{2/3} = k_1T$, $\sigma\beta = k_2$, $LT = k_3(Mv)^{1/3}$ and $L = k_4\delta$, where σ represents the sp. surface energy of a heteropolar substance (alkali metal halides), M the mol. wt., v the mol. vol., T the m. p., k_1, k_2, k_3 and k_4 are consts., the value of which depends exclusively on the nature of the cation, β is the coeff. of compressibility and L the molar concn. of a satd. soln. at 18°. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

10

Rate of polymerization. I. Mechanism of polymerization of diethylene hydrocarbons. B. N. Gapon. *J. Russ. Phys.-Chem. Soc.* **62**, 1385-93(1930).—G. discusses the mechanism of polymerization of org. compds. having 2 double bonds and draws the following conclusions: (1) The essence of activation of a hydrocarbon mol. in the process of polymerization consists in the breaking of one double bond and the changing of quadrivalent C atoms at the rupture into tervalent. (2) The theoretical value of the energy of activation is equal to the energy of breaking of one double bond under conditions where chain reactions are absent. (3) Active mols. on reacting with normal ones, give products of polymerization, while they cannot react among themselves. **II. Rate of polymerization of isoprene.** *Ibid* 1395-1400.—By using the method of heating samples of isoprene in sealed tubes in a thermostat, in the absence of light, a study was made of rate of polymerization at 100°, 110°, 130° and 150°. In the activation of the mols. of isoprene there appear 3 active forms giving rise to 4 primary products: dipentene, 1,3-dimethyl-3-vinyl-6-cyclohexene, and 2 polymers. An equation is developed for a process which goes on simultaneously in various directions independently of each other. The consts. of rates of reaction of the primary products and their temp. coeffs. are detd. The values of the heat of activation and the reaction consts. for all 3 reactions are calcd. The consts. of the rate of formation of the primary products are in the same order to each other as the heats of formation *E* and the reaction consts. *S*.

S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

10

Rate of polymerization. III. Rate of polymerization of diisopropenyl. B. N. GARUN. *J. Gen. Chem.* (U. S. S. R.) 1, 496-501 (1931); cf. *C. A.* 25, 2068.—The rate of polymerization of diisopropenyl was measured at 110°, 130° and 150°. In the activation of these mols. there appear 2 active forms giving rise to 2 primary products: a dimer and a polymer. Velocity consts. of the formation of primary products, temp. coeffs., heats of activation and reaction consts. are detd. The regularity disclosed here coincides in general with the regularity established in the study of the polymerization of isoprene. **IV. Rate of polymerization of myrcene.** *Ibid* 502-5.—Myrcene is most likely a mixt. of 2 isomers. Accordingly, on activation, there will be 3 active forms, giving rise to 2 dimers and 2 polymers. An investigation was made of the kinetics of polymerization and it was found that 2 processes occur: a polymerization and an isomerization. The rates of these 2 processes were established at 150°. **V. Rate of polymerization of hydrocarbons of the divinyl series.** *Ibid* 505-9.—The rates of polymerization of a series of compds. were calcd. on the basis of exptl. results obtained by Lebedev and Merezhkovskii (*C. A.* 6, 320). This series includes: isoprene, diisopropenyl, 1,3-pentadiene, 2,4-hexadiene, tetramethylbutadiene, 1,1-dimethylisoprene, cyclopentadiene, 1-phenyl-1,3-butadiene, cyclohexadiene, 1,2-dimethylene-3,3,4,4-tetramethylcyclobutane, 1-methylene-2-isopropylidene-4,4-dimethylcyclobutane, diisopropylidene-1,2-cyclobutane, myrcene and diallyl. **VI. Rate of polymerization of hydrocarbons of the allene series.** *Ibid* 770-8.—The kinetics of polymerization of hydrocarbons of the allene series are compared with those of the divinyl series. Lebedev's data were used to calc. the rates of polymerization of the allene series. S. L. M.

ASB-ISA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

3

Pauli's principle and the structure of the atomic nucleus. I. E. N. GAPON. J. *Gen. Chem.* (U. S. S. R.) 1, 641-50(1931).—Theoretical. II. *Ibid* 1080-94. The at. wt. of isotopes of elements of the H-Cu series can be derived from Aston's and Pauli's principles, and from the principle of increasing complexity of the nucleus. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

AC

A-1

Velocity of polymerization. V. Hydrocarbons of the divinyl series. VI. Hydrocarbons of the allene series. E. M. Gapon (J. Gen. Chem. Russ., 1931, 2, 765—769, 770—778).—V. The velocity coeffs. of the polymerization of 13 hydrocarbons have been calc. from Lebedev's data (A., 1913, i, 1200).

VI. The process of polymerization of hydrocarbons of the allene series differs from that of the divinyl series in that in the latter case monomeride mols. combine with each other, and with the polymeride, whilst in the former both this process and that of combination between polymeride mols. take place. The velocity coeffs. of 6 hydrocarbons are calc. from Lebedev's data. R. Truszkowski.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Velocity of polymerisation of hydrocarbons of the divinyl and allene series. K. N. Gaboh (J. Gen. Chem. Russ., 1961, 1, 779—784).—The possible number of primary polymerides of hydrocarbons of the divinyl series, as well as of s-substituted allene hydrocarbons, is equal to the number of types of active mol., whilst in the case of as-allenes it is greater. The velocity of polymerisation of s-substituted hydrocarbons is greater than is that of the as-, and diminishes with increase in homologous series; the introduction of a Me group into divinyl hydrocarbons reduces the velocity by 80%, and into allene hydrocarbons by 33%. Retardation of velocity due to introduction of a substituent is greater when the terminal than when the central atoms of the chain are affected. C_5H_8 hydrocarbons of the divinyl series have a higher velocity of polymerisation than their structural isomerides of the allene series, whilst the reverse is the case for C_5H_{10} hydrocarbons. The velocity coeff. of polymerisation, K, at 150° of divinyl hydrocarbons becomes 6^n times smaller when n Me groups are introduced into the mol. K is greatly increased in those cases in which conjugated chains are converted by polymerisation into conjugated rings, and this effect is greater the fewer atoms enter into the rings. K falls for both di- and poly-meride formation in homologous series. Increase in the mol. wt. or number of substituents in the terminal atoms of butadiene reduces, and in the central atoms increases, the polymeride content of the product. The reaction of polymerisation is characterised by its low temp. coeff. and energy of activation, as compared with bimol. reactions in gases. R. Truszkowski.

A-1

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

BC

a-1

Fault's principle and the structure of the atomic nucleus. [illegible] (J. Gen. Chem. Russ., [illegible]) [illegible] wt. of isotopes of elements of the [illegible] series can be derived from Aston's and Fault's principles, and from the principle of increasing complexity of the nucleus.

R. Truszkowski.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND CODES

PROCESSES AND PROPERTIES INDEX

A

2

Determining energy levels of molecules from kinetic data. E. N. Gapon. *J. Gen. Chem.* (U. S. S. R.) 1, 1177-8(1931).—Energy levels of mols. can be detd. from the kinetics of chem. reactions of these mols. taking place simultaneously in various directions. Isoprene and bisopropenyl are given as examples. The 1st has 2 dimers and 1 polymer, with energies of activation of 22,400, 21,500 and 18,800 cals., resp. The 2nd has a dimer and a polymer, with energies of activation equal to 22,000 and 17,400 cals., resp.

S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

5

Physicochemical study of the process of development and the developers. IV. V. O. Dzisko and E. N. Gapon. *J. Gen. Chem.* (U.S.S.R.) 1, 1179-80(1931); cf. C. A. 25, 5358. The reducing powers of pyrocatechol, of hydroquinone and of metol were detd. at 25° as described in the earlier articles. Metol was the most efficient, hydroquinone being next. Similarity was sought between the development and crystn. by observing the diffusion development. A glass tube filled with sensitive emulsion was exposed to light and then immersed in the developer in the dark, the characteristic layers of the diffusion development were produced. The work is to be continued.

Leo Nasarevich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

3

Ca

Determination of the number of isotopes. E. Gapon and D. Ivanenko. *Physik. Z. Sowjetunion* 2, 99-100(1932).—The constitution of nuclei is considered on the assumption that all nuclear electrons are in neutrons, and that the neutrons as elementary particles satisfy the antisym. statistics. It is possible to calc. the no. of isotopes.
R. J. Rosenbaum

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

3

β-Disintegration. E. N. Gapon. *J. Expt. Theoret. Phys.* (U. S. S. R.) 2, 203 (1932).—The mean kinetic energies of electrons from Ra D, U X_1, Ra E_1 and U X_2 are calcd., resp., to be 0.03, 0.07, 0.55 and 0.68, all $\times 10^{-6}$ ergs. F. H. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

3

Pauli's principle and the structure of the atomic nucleus. III. E. N. GAPON. *J. Gen. Chem.* (U. S. S. R.) 2, 97-102(1932); cf. *C. A.* 26, 4749.—A classification of the elements is given, based on their at. structures, from which it follows that the isotope Ge^{70} should exist, as well as Te^{128}, ^{130} and ^{132}, and the isobars Ge^{74}-Se^{74}-Kr^{74}, Zr^{96}-Mo^{96}-Ru^{96} and Sn^{124}-Te^{124}-Xe^{124}. B. C. A.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

Pauli's principle and the structure of the atomic nucleus. IV. Mechanical moment of atomic nucleus. E. N. Gapon. *J. Gen. Chem.* (U. S. S. R.) **2**, 707-9 (1932); cf. preceding abstr.—The mech. moment of at. nucleus of the type $4n + 1$ and $4n + 3$ can be calcd. by assuming: (1) the resultant vector for the residue $4n$ and $4n + 2$ equal zero; (2) the remaining proton is characterized by the same quantum no. n, l, m and s; (3) the electron of the exterior core is found in the group of unequal no. of electrons.

G. S. Stamatoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

Relationship between the energy of activation and the constant S of the Arrhenius equation. R. N. Gafon. *J. Gen. Chem.* (U. S. S. R.) 2, 710-14(1932); cf. C. A. 25, 2020. $RT_i = Nh\nu$ gives a relationship between temp. of inversion and frequency ν. $\ln K = \frac{Q}{R}\left(\frac{1}{T_i} - \frac{1}{T}\right)$ gives a relationship between the equil. const. and T_i. Q is the heat of reaction. The exponential relationship between the energy of activation and reaction velocity const. finds a limited applicability in reactions of higher orders. G. S. S.

Energy of activation. Victor K. La Mer. *J. Am. Chem. Soc.* 55, 1739-41 (1933). The study of the kinetics of the ionic reactions (I) $BrCH_2CO_2Na$ and $Na_2S_2O_3$ and (II) $BrCH_2CH_2CO_2Na$ and $Na_2S_2O_3$ was extended to det. the energy of activation, E_{act} and the const. B in the equation $\log k = B - E_{act}/2.3RT$ as functions of temp. and concn. E_{act} decreases with T for reaction I but increases for reaction II by an amt. greater than the probable error. From data on diacetone alc. decompn. E_{act} (20-30°) = 17,040; E_{act} (25-35°) = 18,098, an increase which is 8 times the exptl. error. For PhONa + various alkyl iodides in EtOH, E_{act} is 21,067(30.1-42.5°); 21,604(42.5-58.5°); 21,263(58.5-90.1°); the increase in E_{act} at low temps. followed by a decrease at higher temps. is repeated uniformly by 8 primary alkyl iodides. The same behavior is indicated for $CO(CH_2CO_2H)_2$ decompn. The importance of considering the entropy of activation, S_{act}, is well illustrated by the $BaCl_2$ and $LaCl_3$ addns. in reaction I; in spite of an increase of 1800 cal. in E_{act}, the velocity nevertheless increases, because of an increase in S_{act} as shown by the marked increase in B. C. J. West

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

The theory of atomic nuclei. I. Historical and theoretical. P. N. Gavin. *J. Gen. Chem.* (U. S. S. R.) 2, 837-42(1932); cf. *C. A.* 27, 1290. Taking as a basis Rutherford's theory that the nucleus consists of an inner positively charged zone and an outer neutral zone, G. develops a new theory of the structure of atom nuclei. Of the 4 possible combinations: (1) protons + inner zone, neutrons + outer zone, (2) protons + inner zone, (α + 2β) particles + neutrons + outer zone, (3) α-particles + protons + inner zone, neutrons + outer zone and (4) α-particles + protons + inner zone, (α + 2β) particles + neutrons + outer zone, the 3rd combination is selected as the most likely.

In regard to the inner zone it is postulated that it can hold any no. of α-particles and a max. of 2 protons, but no free electrons. On the basis of this theory the packing effect of even-numbered elements, such as He, C, O, Ne, A, Kr, Sn, Xe, Hg and of their isotopes, is calcd. **II. Radioactive β-decomposition.** *Ibid.* 842-8.—The variation in the speed of β-particles, emitted by radioactive substances, is discussed in the light of the new theory of nuclear structure. The energy value of the nuclear β-particle, ϵ^{β}, should be considered only as a mean statistical value, while the actual values of individual β-particles are either larger or smaller. **III. Theory of defect of mass in atom nuclei (packing effect).** *Ibid.* 849-50.—The ideas developed by Ambartzumian and Ivanenko (cf. *C. A.* 25, 899), in regard to nuclear electrons, are applied to the problem of loss of mass due to packing of particles in the nucleus. **IV. Distribution of α-particles and neutrons in the atomic nucleus.** *Ibid.* 351-61; cf. *C. A.* 27, 226.—Tables are given showing distribution of α-particles and protons in the inner zone and of neutrons in the outer zone, also losses due to packing effect in both zones, calcd. and experimentally detd., for all the elements and their isotopes. S. I. Maiorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

A-1

Models of atomic nuclei. E. N. Garon (J. Gen. Chem. Russ., 1932, 2, [illegible]).—Models of the structure of nuclei are given, based on the assumption that α-particles are composed of 2 neutrons and 2 protons. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

15

Quantitative laws in the study of the absorption properties of soils. K. N. Gapon. *Chemisation Socialiste Agr.* 1938, No 11-12, 18-28. G. develops a formula by which he dets. the exchange capacity of soils by getting 2 exptl. points, using definite concns. of electrolytes on 2 samples of soil, on a straight line which represents graphically the isotherm equation. Taking the exptl. data of Gedroiz he shows how the calcns. by the formula correspond to the actual dctns. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

Fundamental law of nuclear transformations. E. N. Gapon. *Physik Z. Sowjet-union* 4, 132-3(1933); cf. *C. A.* 27, 4103.—Nuclear transformations are possible, only when more stable nuclei are formed. S. Bradford Stone

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

BC

03 III 1

Adsorption of cations and anions by soil amphoiyteids. [illegible] (Proc. Godesia Inst. Fert., Moscow, [illegible]).—Theoretically the adsorption of cations by amphoiyteids should increase with increase in p_H, and that of anions should decrease. This is substantiated by Mattson's experimental data.

A M

COMMON ELEMENTS

COMMON VARIABLES INDEX

MATERIALS INDEX

OPEN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

1ST AND 2ND LETTER

2ND LETTER

3RD AND 4TH ORDERS

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

Theory of exchange adsorption in soils. I. K. N. Capon. *J. Gen. Chem.* (U. S. S. R.) 3, 144-62, 163-8, 169-63(1933).—For an adsorbent in contact with a liquid or gaseous phase contg. mols. of substances M_1 and M_2, both of which can be adsorbed, the mass action law imposes the following equil. conditions: $F_1C_1/F_2C_2 = K$, where F_1 and F_2 are areas of the adsorbent surface occupied by M_1 and M_2, and C_1 and C_2 are their resp. concns. From this, $1/\Gamma = (1/\Gamma_\infty)\{1 + (1/K)(C_1/C_2)\}$ (I), where Γ_∞ is max. no. of M_1 mols. that can be adsorbed (assumed to be proportional to the sum of F_1 and F_2), and Γ is the no. of adsorbed mols. of M_1 (supposedly proportional to F_1). By plotting $1/\Gamma$ against C_1/C_2, a rectilinear adsorption isotherm is obtained from which the value of $1/\Gamma_\infty$ can be read. If $1/\Gamma_\infty$ is known, two expts. suffice to calc. K (adsorption const. whose value, for a given choice of M_1 and M_2, depends only on the temp.); the equation used would be: $1/\Gamma_\infty K = \{(1/\Gamma') - (1/\Gamma'')\}/\{(C_1'/C_2') - (C_1''/C_2'')\}$ (II). From the data of Gedroiz (*C. A.* 26, 2088), G. calcd. the adsorption capacity $(1/\Gamma_\infty)$ and K. The four values obtained (0.43, 0.50, 0.46, 0.54) were deemed in sufficient agreement to confirm the equation (I); the adsorption isotherms were straight lines. (Γ and Γ_∞ were calcd. in mols. per 10 g. of the sample, C_1 and C_2 in mols. per l.; $\sqrt{C_1}$ was substituted for C_1 in equations (I) and (II), since two NH_4 ions displace one of Ca.) K should be independent of the nature of the adsorbent if all portions of its surface have equal attraction for the adsorbate. Since the zeolite and humin fractions of soil attract Ca ions unequally, the value of K is probably a function of their ratio. The adsorption capacity $(1/\Gamma_\infty)$ can, however, be calcd. from two expts. with different soils; equations (I) and (II) are used. Equation (I) holds also when Ca ion is displaced from soil by treatment with solns. of const. Na-ion content but varying concn. (published data by Gedroiz). In the reaction between Na_2CO_3 soln. and Ca-contg. soil, the soln. is satd. with $CaCO_3$. Hence C_1 (concn. of Ca-ion) is const., and the equation becomes $(1/C_2) = K'\{(\Gamma_\infty/\Gamma) - 1\}$. The extn. of soda from solonetz soils also is discussed; special forms of equation (I) are used to explain the influence of dilu. and of p_H. Gedroiz has shown that the adsorption capacity of soils for cations increases with the atomic wt. of the latter. vant Hoff's isochore gives the amt. adsorbed as a function of the concns. and the heat of reaction. If the integration const. of the isochore is the sum of the chem. consts. of the reacting ions, Gedroiz's rule can be formulated quantitatively, since the chem. consts. can be calcd. from the at. wts. (from the equation of Sackur, Tetrode and Stern). The rule, in its simplest math. form, reads: $\log \varphi = \text{const.} + 3 \log M'/2$ (φ is "absorption energy" in milliequivs. of the cation per 100 g. of the soil, M' its atomic wt.). On the assumptions that the surface of a neg. charged particle contains active spots which attract H ions without losing the cations already held and that such a "unilateral" adsorption is subject to mass-action law, for soil suspensions $C_H = C_H^0 - w'g$. C_H^0 is concn. of H-ion before the addn. of soil to the suspension medium, C_H concn. of H-ion after the addn., g no. of g. of the soil added and w' a const. This relationship has already been reached experimentally by Wiegner (*C. A.* 24, 3414). The theoretical derivation holds only when the adsorption const. is much greater than C_H^0 and the adsorption capacity (the latter expressed in g.-equivs. per 1 g. of the soil). An analogous equation holds for the effect of positively charged soils on the concn. of OH ion. B. Soyenkoff

15

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

15

Theory of exchange adsorption. IV. R. N. Gapon. *J. Gen. Chem.* (U. S. S. R.) 3, 660-6(1933); cf. C. A. 28, 4149[8].—On the assumption that a sample of soil contg. an adsorbed cation is in contact with a soln. contg. a different cation, the equil. concns. can be deduced from the adsorption isotherm. It is thus shown that, with the 2 cations equal in valence, the equil. is not affected by addn. of water. If the valence is not the same, the cation of lower valence is displaced from the adsorbent to an extent that increases with diln. Larger quantities of the soln. (concn. being the same) displace larger amts. of the adsorbed cation. Four methods are described to det. the adsorption capacity of soils for a given cation. V. *Ibid.* 667-9.—A trimolecular reaction in which 2 cations (M_1 and M_2) are simultaneously displaced from the adsorbent by a third should conform to the equation: $(\Gamma_{1\infty} - mC_1)/(\Gamma_{2\infty} - nC_1) = K'''C_1^{1/m}/C_1^{1/n}$. $\Gamma_{1\infty}$, m and C_1 denote the adsorption capacity for valence, and concn. (in the soln.) of M_1. $\Gamma_{2\infty}$, C_1 and n similarly refer to M_2. K''' is a const.; its value in one case (displacement of Ca and Mg ions by NH_4 ion from chernozem) was found to be 0.276. Other equations, applicable to this reaction type, are also given. B. S.

A14-5LA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

CA

15

Exchange reactions in soils. E. N. Gapon. *Pedology* (U. S. S. R.) 29, 192-201(1934).—G. discusses the general theory of exchange reactions and develops a series of equations for detg. this property under various conditions. He applies the equations to the data of other investigators, showing their validity. J. S. Joffe

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

SA

A53
bb

936. α-Particles in Light Nuclei. E. Gapon and D. Iwanenko. *Comptes Rendus de l'Acad. des Sciences, U.S.S.R.* 4, pp. 275–277, Nov. 21, 1934. *In English.*—When the differences in the mass defects (calculated, e.g., for Li^6 as Li^6 + neutron − Li^7, the mass of the neutron being taken as 1·0078) are plotted against the atomic weights of the isotopes a curve is obtained showing maxima for atomic weights 4, 8, 12, and 16, beyond which data are doubtful. This is deemed to point to the existence of α-particles as such in at least the lighter nuclei [see Abstract 5065 (1932)].

C. A. S.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

OA

The adsorption of univalent cations by the s... E. N. Gapon and A. E. Pryanishnikova. *Chemisation Socialistic Agr.* (U. S. S. R.) No. 2, 48-51(1937).—The adsorption isotherms of Li and Na of a soil satd. with Ca when obtained by the method of variable vols. are straight lines which come to one point. This point corresponds to the inverse value of the exchange capacity of the soil in an unbuffered soln. at a neutral reaction. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Dependence of exchange adsorption on dilution. I. R. N. Gapon and A. F. Pryamshnikova. *Colloid* [illegible] With increased dilu[illegible] H^+ is replaced by Ba^{++}. For Budarinski black loam the exchange capacity is 13 mg. equiv. per 100 g. of soil. For Ca, relative to NH_4, the value is 37 mg./100 g. while the absorption capacity is 45.3. The latent Ca ions are equal to 8.3 mg. equiv. per 100 g. of soil.

F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Dependance of exchange adsorption on dilution. II. F. N. Gapon and A. N. Ivanov. *Colloid J.* (U. S. S. R.) 3, 143-6(1937); cf. *C. A.* 32, 707[8]. A continuation of previous work. The following systems were investigated, with mirosovka chernozem: (1) XCa (100 g.) + CH_3COONH_4 (1 mol. per V.L.), (2) XCa (100 g.) + NaCl (1 mol. per V.L.), (3) XH (100 g.) + $BaCl_2$ (0.5 mol. per V.L.) and (4) XH (100 g.) + NaCl (1 mol. per V.L.), where X and V are variables. With increase of diln. adsorption decreases for (1) and (2) and increases for (3), in accordance with theory. In case of (4) adsorption increases with diln., contrary to theory. III. F. N. Gapon and N. I. Gorbunov. *Ibid.* 147-50. S. L. Madorsky. Math.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Equation of exchange adsorption isotherms F. N. Gepon. *Colloid J.* (U. S. S. R.) 3, 859-62(1937); cf. C. A. 32, 4038[1].—Math. John Lizak

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

2

The theory of exchange adsorption. VI. E. N. Gapon. *J. Gen. Chem.* (U. S. S. R.) 7, 1438-43(1937); cf. C. A. 28, 4510[8]; 31, 7150[1]. A math. discussion of the theory of exchange adsorption. S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

15

PROCESSES AND PROPERTIES INDEX

Exchange adsorption. I. Exchange of two cations having the same exchange ability and adsorptive capacity. E. N. Gapon. *J. Gen. Chem.* (U. S. S. R.) 7, 1447-52 (1937). This work is similar to that described in C. A. 31, 7150[9] and represents an investigation of adsorption isotherms of H^+, Li^+ and Na^+ of soils satd. with Ca^{++} and Mg^{++} ions. **II. Conditions for the applicability of Vageler's empirical equation to the adsorption of cations.** *Ibid.* 1453-66. Vageler's (C. A. 26, 3865) empirical equation $a = SC_0(C_0 + qS)$, where a is the amt., in mg. equivs. of ion adsorbed on the adsorbent, S = max. adsorptive capacity of the adsorbent, detd. by the method of continuous washing, C_0 = initial concn. of the electrolyte in mols. per l. and q = adsorption coeff., was applied to the case of adsorption of NH_4^+ on soil samples satd. with Ca^{++}. It was found that Vageler's equation can be applied only when C_0 is large (0.5-2.0). S. L. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

2

Ca

Exchange adsorption. III. Application of the distribution law to the exchange of two cations. E. N. Gapon. *J. Gen. Chem.* (U. S. S. R.) 7, 2801-5(in English 2806-7)(1937); cf. C. A. 32, 2804.—With the distribution law as a basis, formulas are deduced for the exchange of 2 cations adsorbed on soil samples. These formulas are proved experimentally in the case of exchange adsorption of Ca^{++} and Ba^{++} on chernozem. **IV. Application of the distribution law to the exchange of three cations.** *Ibid.* 2806-12 (in English 2812).—A theoretical deduction of formulas and their exptl. proof in the case of Ca^{++}, Ba^{++} and K^{+} adsorbed on chernozem.

S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPONE, E. N.

"Recherches sur l'adsorption d'echange. Communication IV". Gapone, E. N. (p. 2812).

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii). 1937, Volume 7, No. 23.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

14

Investigation of the acidity of the soil. A. E. Pryanishnikova and E. N. Gapon. *Vsesoyuz. Akad. Sel'skokhoz. Nauk Lenina, Nauch.-Issledovatel. Inst. Udobrenii, Agrotekh. i Agropochvovedeniya Gedroliza, Trudy Leningrad. Otdel.* 1938, Pt. 2, 119–33; *Chem. Zentr.* 1940, II, 2308.—It is not possible to bring the exchange capacity of a soil satd. with H back to its original value by treating with nonbuffered solns. of neutral salts until the pH of the soln. used and the filtrate becomes the same. After oxidation of the humus substances of soils satd. with H, Ca appears in the filtrate in the form of a compd. present in a state of mol. dispersion. If the soil satd. with H is repeatedly treated with H_2O_2 the original adsorption capacity can be almost completely destroyed. The remaining adsorptive capacity is due to adsorbed Ca ions which show a capacity for exchange after oxidation of the humus. The explanation for this phenomenon is given in a scheme of distribution of the cations and anions of the humus in layers. With podzolic soils satd. with H the adsorptive capacity can be completely reestablished by washing with the nonbuffered soln. of a neutral salt. The acidity of podzolic soils is due to humus, adsorbed mineral acids and exchangeable $Al_4O_4H^+$ ions. Exchangeable H ions, which are characteristic of acidoids, are not present in podzolic soils. The common adsorption of H and Ca by podzols followed the equation of Gibbs; the stability of the adsorptive capacity was found to depend upon the Ca. This demonstrates that a specific adsorption of OH ions does not take place under these conditions. Podzol under cultivation has a larger buffering capacity than that not under cultivation. With podzol not under cultivation a displacement of 1 unit in pH produces a corresponding change in adsorptive capacity. With podzol under cultivation unit change in pH produces a greater change in adsorptive capacity

M. G. Moore

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

Ca

14

The equivalence and reversibility of exchange reactions of the soil in nonbuffered solutions. E. N. Gapon. *Vsesoyuz. Akad. Sel'sko-Khoz. Nauk Lenina, Nauch.-Issledovatel. Inst. Udobrenii, Agrotekh. i Agropochvovedeniya Gedroltsa, Trudy Leningrad. Otdel.* 1938, Pt. 2, 160-77; *Chem. Zentr.* 1940, II, 2203. In nonbuffered solns. of pH about 7 a complete equivalence of the cation exchange by soils was observed which was due to the fact that the point of neutral exchange is approx. pH 7. The conditions of a reversible reaction are fulfilled in the exchange of Ca and Ba ions against NH_4 ions. The exchange of K ions is not a completely reversible process. In a completely reversible reaction the appearance of the phenomenon of hysteresis is possible. M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

OA

Methods for determining the relative adsorbabilities of cations by soils. E. N. Gapon. *Vsesoyuz. Akad. Sel'skoi Khoz. Nauk Lenina, Nauch.-Issledovatel. Inst. Udobrenii, Agrotekh. i Agropochvovedeniya Gedroitsa, Trudy Leningrad. Otdel.* 1938, Pt. 2, 375-406; *Chem. Zentr.* 1940, II, 2800; cf. C. A. 32, 280[6]; 33, 1853[8] — The relative adsorptions of Mg and Ca are approx. equal if the soln. contains them in equal amts. Different mobilities of cations are not found for different soils. When the ratio Mg:Ca in the soln. is 1:1, the soil will have a ratio Mg:Ca = 1:3.

M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

2

Adsorption of organic acids by silica gels. E. N. Gapon.—*J. Phys. Chem.* (U. S. S. R.) 11, 651-3(1938).—The degree of adsorption of org. acids by SiO_2 gel from CCl_4 depends on the size of the mol. or on the no. of atoms of the hydrocarbon in the mol. of the acid. The approx. formula is $a = [11.3/(m + 1)] [c^{1/2}/(c^{1/2} - 0.031(1.3)^{m-1})]$ where a = amt. of the adsorbed acid in millimols./g. of the adsorbent, m = no. of atoms of the hydrocarbon, c = the equil. concn. in mol./l. The exptl. values for the max. adsorption obtained by Bartell and Fu (cf. *C. A.* 33, 3612), S_{HCOOH} = 4.00, S_{CH_3COOH} = 3.77, S_{CH_3COOH} = 2.74, S_{CH_3COOH} = 2.22 compare favorably with 5.65, 3.77, 2.82 and 2.26, resp., obtained from the empirical formula $S = 11.3/(m + 1)$.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Thermodynamic equations of the adsorption isotherms of two ions. E. N. Gapon. *J. Phys. Chem.* (U. S. S. R.) 11, 782-92(1938); cf. *C. A.* 32, 6023P.—From the thermodynamic equation of Gibbs for the adsorption of two ions $(\partial\sigma_1/\partial \lg c_1)c_1 = (\partial\sigma_2/\partial \lg c_2)c_2$ is derived an equation for the adsorption isotherm of two ions $\sigma_1 = \alpha_1 + \beta \lg c_1/c_2$ and $\sigma_2 = \sigma_2 + \beta \lg c_2/c_1$, where σ_1 and σ_2 = amts. of the adsorbed ions in mg. equiv. for a definite wt. of the adsorbent, c_1 and c_2 = equil. concns. of the same ions in soln. These equations were verified on the adsorption of Ba^{++} and Cd^{+++} on bentonite obtained by Vanselow (*C. A.* 30, 2913), and of Na^+ and NH_4^+ on permutite obtained by Jenny [*C. A.* 21, 3786]. The mean deviations of the calcd. results from the exptl. results were for Ba^{++} −0.17%, and for NH_4^+ +3.5%. These thermodynamic equations of the adsorption isotherm are fully applicable to the adsorption of the potential-detg. ions, and are partly applicable to the exchange adsorption of ions. In case of an exchange of two ions these equations are especially true for solns. with a const. ionic concn. If the ionic concn. is changed an activity coeff. must be added and the equations are transformed into $\sigma_1 = \alpha_1 + \beta \lg \gamma_1c_1/\gamma_2c_2$ and $\sigma_2 = \alpha_2 + \beta \lg \gamma_2c_2/\gamma_1c_1$, where γ_1 and γ_2 = activity coeffs. 7 references. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

1

Ion exchange between solid and liquid phases. I. Dependence of cation exchange upon dilution. A. N. Ivanov and E. N. Gapon. *J. Phys. Chem.* (U. S. S. R.) 15, 660-64(1941).—I. and G. present a math. development of ion exchange as dependent upon the dilu. of the soln. until, treated as a membrane exchange. The theory is applicable to cation exchange between Al silicates and electrolyte soln. The amt. of adsorbed cations is independent of the dilu. of the equil. soln. if the exchanging ions have the same valence. If ions of different valences are involved, dilu. of the equil. soln. increases the adsorption of the ion of greater valence. II. Differential coefficients of sorption of two ions. E. N. Gapon. *Ibid.* 665-72.—Math. treatment of the differential sorption coeffs. of two ions in ion exchange between solid and liquid phases. In many cases the sorption of one ion is expressed by $s_1 = a_1^0 + \omega \log (a_1^{1/n_1}/a_2^{1/n_2})$, where s_1 is adsorbed quantity, a_1, a_2 are ion activity, and n_1, n_2 are valences.

G. M. Kondapoff

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

CA

2

The adsorption of water vapor by Al silicates. L. A. Zucy and E. N. Gapon. *Pedology* (U. S. S. R.) 1943, No. 8, 13-18(in English 19).—Bentonite was electrodialyzed to pH 3.8 and then treated with 90 milliequiv. of N and 90 and 45 milliequiv. Ca. The adsorption isotherm of water vapor by H, Na and Ca bentonites was then compared with that of kaolin and humic acid. The bentonite and humic acid gave an S-shaped curve; whereas the kaolin did not and the quantity of adsorption was small. At low vapor pressures the bentonites in their effect on adsorption, can be arranged as follows: Na bentonite < H bentonite < Ca bentonite; at pressures approaching satn. the arrangement of the cations is H < Ca < Na. Kaolin has little effect on the adsorption of water vapor. J. S. J.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS — 3RD AND 4TH ORDERS

CA

PROCESSES AND PROPERTIES INDEX

2

Dependence of the adsorption capacity upon the concentration of H and metallic cations. K. N. Gapon. *J. Gen. Chem.* (U. S. S. R.) 13, 382-90(1943)(English summary).—The dependence of adsorption capacity of zeolites, bentonite, etc., upon the concn. of H and metallic cations is represented by the equation: $S = \alpha + \beta(pH - (1/n)pM)$, where α and β are consts., n = cation valence and pM = neg. logarithm of cation concn. The cation adsorption from alk. soln. follows: $S = \alpha' + \beta_0 pH$; from a buffered soln. it is: $S = \alpha'' + [n/(n+1)]\beta_0(pH - (1/n)pM)$. G. M. Kondapol'

Lab. Phys. Chem., Moscow Agric. Acad. im. Timiryazev

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

11 A

CA

Theory of the salt composition of human blood plasma. A. I. Rosenberg and E. N. Gapon. *Biokhimiya* 9, 208-[illegible](1944).—The blood plasma is satd., or nearly so, with regard to $CaCO_3$ but is never supersatd. Hence, there is no need for the theory of the protective action of plasma proteins with respect to the "supersatd." soln. of $CaCO_3$. The calcium phosphate in the plasma is in a nonsatd. soln. H. Priestley

Lab. Biophysics + Biochem., Acad. agriculture Moscow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

11F

The mechanism of hemolysis reversion. B. N. Gapon and A. I. Rosenberg (Timiryazev Acad., Moscow). *Biokhimiya* 11, 181-6(1946); cf. *C.A.* 18, 122; 30, 5310[9].—Hemolysis is completely reversible. With the addn. of an electrolyte, like NaCl, its anion combines with the stroma, and the cation with the hemoglobin; the bond between the stroma and the hemoglobin in the coagulated part is weakened, and the erythrocytes are reformed. The state of the reformed erythrocytes, however, is not identical to the original erythrocytes. Complete reversion of hemolysis takes place at the point of min. osmotic resistance (the lowest concn. of NaCl where no coloration is imparted to the plasma by the hemoglobin). The reversion is incomplete at the point of max. osmotic resistance (the concn. of NaCl where least reversion of erythrocytes takes place). H. Priestley

Sub. Biochem. & Biophysical Problems,

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Ca

2

Ion exchange between solid and liquid phases. III. R. N. Gapon. *J. Phys. Chem.* (U.S.S.R.) 20, 297-302 (1946); cf. C.A. 38, 3190. It is assumed that the surface charge of an adsorbent is detd. by the potential and capacity of the elec. double layer and that this potential is detd. only by the activity of the alkali (for cation adsorption) or acid (for anion adsorption), whereas the capacity depends on the activity of all electrolytes in the soln. These assumptions yield for the adsorption the equations found earlier (C.A. 36, 4005). J. I. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND DEGREE

PROCESSES AND PROPERTIES INDEX

CA

2

Standard entropies of ions in the crystalline state. E. S. Gapon. *J. Phys. Chem.* (U.S.S.R.) 20, 941-6 (1946)(in Russian). —The standard entropies S are calcd. on the assumption of their additivity and setting the entropy of $H^+ = 0$ and that of $H_2O = 10$. It is found that, for ions having the same no. of electrons (e.g., O^{--}, F^-, Na^+, etc.) S increases with the pos. charge. For ions of a const. charge S is greater, the greater the no. of electrons. A table of ions is given in which S of an ion is approx. the av. of the S values of its 4 neighbors. The relation between S and the ionic radius r often can be expressed as $S = a + b \log r$, a and b being const. J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

4

Calculation of oxidation-reduction potentials from spectroscopic and thermochemical data. E. N. Gapon. *J. Phys. Chem.* (U.S.S.R.) **20**, 1025-8(1946)(in Russian). - The normal potentials of oxidation-reduction electrodes can be calcd. from the ionization potentials, the heats of hydration of individual ions, and the abs. entropies of the individual ions. If the heats of hydration of K^+ and F^- are assumed to be equal and the entropy of H^+ is assumed to be zero, the values 3.80 and 3.74 v. are found for Fe^{++}-Fe^{+++} and Cr^{++}-Cr^{+++}, resp.

I. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Adsorption of organic acids by silica gel. II. G. P. Rykhlikov and E. N. Gapon (All-Union Inst. Fertilizers, Agropedol., and Agrotechnol., Moscow). *J. Phys. Chem.* (U.S.S.R.) 20, 1029–41(1946)(in Russian); cf. *C.A.* 33, 3033[9].—Formic (I), acetic, propionic, and butyric (II) acid solns. in CCl_4 were shaken with 4 different SiO_2 gels. The amt. x (in g.-mol.) adsorbed by 1 g. of gel, without regard to the adsorption of CCl_4, satisfied the equation $x = S c^{1/n}/(c^{1/n} + K)$, S and K being consts. and c the equil. concn. of the acid (g.-mol./L.). *Distribution* of the fatty acids between H_2O and CCl_4 showed that the acids are assocd. in CCl_4 to triple mols.; this explains the exponent $1/n$. At a given c, x increased from II to I on all gels. S, which is the amt. adsorbed at very high c, was independent of the nature of the acid for a gel prepd in a slightly alk. medium (cf. Rykhlikov and Bruns, *C.A.* 34, 1222[9]); it was 12.8 millimols. A conn. gel and two gels prepd. in acid media gave S values which increased from II to I. It is concluded that the inversion of Traube's rule in the instance of the acid gels is due to their fine porosity, whereas that observed on the "alk." gel is due to an orientation effect. The order of the gels according to their S values is different for I and the other acids.

I. I. Bikerman

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

4

Calculation of normal electrode potentials from spectroscopic and thermochemical data. B. N. Gapon. *J. Phys. Chem.* (U.S.S.R.) 20, 1299-11(1946)(in Russian); cf. *C.A.* 41, 2340*f*.—The normal potentials of some metal electrodes are calcd. They differ by about 3.9 v. from the potentials referred to the normal H electrode. E.g., K/K^+ has 0.01, H/H^+ 3.97, and Ag/Ag^+ 4.78 v.

J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

15

Specific surface area of soil humus. E. N. Gapon. *Kolloid. Zhur.* 9, 329-34(1947); cf. C.A. 41, 4350h. If S is the amt. of cation adsorbed and x is pH, the const. β in $S = \alpha + \beta x$ is proportional to the surface area of the adsorbent. If the adsorbent is a mixt. of several substances, its β is the sum of the β values of the components. If this rule does not hold, the components were altered by mixing. With the expts. by Kocbergin in the collective vol. "Physicochem. Studies on Soils and Fertilizers" 2, 223(1939), it is shown that humus in soil has a smaller (5-30 times) adsorbing surface s than humic acid, but humic acid added to ignited chernozem preserves its β. Usual soil humus has $s = 1900$ sq. m./g. S of a mixt. of adsorbents is not equal to the sum of their S values because α is not an additive const. I. I. Bikerman

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, E. N. PA 16T15

USSR/Medicine - Bacteria - Azotobacter Mar 1947
Medicine - Agriculture

"The Mechanism of Atmospheric Nitrogen Fixation by Azotobacter," E. N. Gapon, Laboratory of Biophysico-chemical Problems of the Timiriazev Academy of Agriculture, Moscow, 8 pp

"Mikrobiologiya" Vol XVI No 3

Analysis of the process, showing that azotobacter utilized, for the fixation nitrogen, about 5% of the active hydrogen of the various substrates.

16T15

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

2

Effect of solvent on the adsorption of a solute. E. N. Gapon (Timiryazev Agricult. Acad., Moscow). *J. Phys. Chem.* (U.S.S.R.) 21, 179-80(1947).—If the solute is neither assocd. nor dissocd., the solvents are completely immiscible and not adsorbed at all, the adsorption layer is unimol., and if the adsorption takes place according to Langmuir's mechanism (cf. C.A. 34, 4322[9]), then the activities (a_1 and a_2) of the solute in two solvents at a const. degree of completion of the unimol. layer are in the ratio $a_1:a_2 = b_1 \exp. [(U_1 - U_2)/RT]/b_2$, where b_1 and b_2 are the consts. in the Langmuir equations for the two solvents, and U_1 and U_2 are the adsorption potentials of the solute in the two solvents. If the adsorption isotherm in one solvent is known, that in the other solvent can be calcd. using the distribution coeff. of the solute between the two solvents and the heat of transfer of the solute from one into the other solvent. J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, E. N.

TA 14T102

USSR/Chemistry - Entropy Jun 1947
Entropy

"The Question of the Calculation of the Standard Entropies of Ions in the Crystalline State," E. N. Gapon, 2 pp

"Zhur Fiz Khim" Vol XXI, No 6, pp 759-60

Shows in tabular form the former and present entropies of various mineral crystals, which resulted from 126 experiments.

14T102

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, E. N. FA 2475

USSR/Chemistry - Entropy Sep 1947
Chemistry - Hydration

"Entropy of Ion Hydration," E. N. Gapon, 11 pp

"Zhur Fizicheskoi Khim" Vol XXI, No 9 - pp. 1057-68

The author divides the article into four parts: Entropy of ion hydration; the relation between the entropy of hydration and the radius of the ion; the entropy of ions of solutions in connection with the state of elements in Mendeleyev's periodic system; radius of ions having the electronic shells of inert gases and their position in Mendeleyev's periodic system. Tables with various values for ions to fit the equation $S_g^o - S_l^o = S_{tr}^o + S_i^o$. Experiments were conducted at the Agricultural Academy imeni K. A. Timiryazev in Moscow. 2475

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, YE. N.

PA 60T14

USSR/Electricity
Electrolysis
Electrodes, Potential

Jun 1947

"Thermodynamic Electrode Potentials," Ye. N. Gapon

"Dok Akad Nauk SSSR, Nova Ser" Vol LVI, No 7 pp. 707-10

Gives long table of data on electrodes of various elements, and discusses briefly calculation of thermodynamic electrode potentials from data which are not electrochemical.

[redacted]

60T14

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

CA

Theory of the fixation of atmospheric nitrogen by microorganisms. K. N. Gapon (Timirjasev Agr. Acad., Moscow, Russia). *Doklady Akad. Nauk S.S.S.R.* 58, 249-52 (1947); *Chem. Zentr.* 1948, I, 970; cf. C.A. 43, 8445a. The theory is advanced that atm. N is absorbed by an enzyme of the type of hemoglobin in the activated form and then hydrogenated. The H so used is taken from the substrate by the microorganisms. NH_3 is thus formed. By less direct hydrogenation, with NH_4OH as an intermediate product, an analogous fixation product is formed. The *inhibiting action of* CO on the enzyme is analogous to its action on hemoglobin. The theory explains the relation which *exists between the amt.* of N combined and the *wt.* of the substrate. *M. G. Moore*

Lab Biophysics + Chem. Problems,

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PA 38T9

USSR/Chemistry - Ions - Transfer
Chemistry - Chromatography - Adsorption

Nov 1947

"Chromatographic Transfer Adsorption of Ions," T. B. Gapon, Ye. N. Gapon, F. M. Shemyakin, Moscow Agricultural Academy imeni K. A. Timiryazev, 3 pp

"Dok Ak Nauk" Vol LVIII, No 4

Theory of transfer adsorption of ions has been worked out sufficiently. Authors discuss the isotherm equation for the transfer of two ions. It was developed by one of the authors and has the form:

$\frac{S_1}{S_2} = K_{12} \frac{a_1^{1/z_1}}{a_2^{1/z_2}}$, where S_1, S_2 - are the amounts of adsorbed ions, a_1, a_2 - the activity of the ions

38T9

USSR/Chemistry - Ions - Transfer (Contd) Nov 1947

in the solution, and z_1, z_2 - the valencies of the ions. Submitted by Academician M. M. Dubinin, 13 Apr 1947.

GAPON, YE. N.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PA 38T11

GAPON, YE. N.

USSR/Chemistry - Entropy Nov 1947
Chemistry - Ions, Gaseous

"Entropy of Solution Ions in Connection with Local Elements in D. I. Mendeleyev's Periodic System," Ye. N. Gapon, Agricultural Academy imeni K. A. Timiryazev, Moscow, 3½ pp

"Dok Ak Nauk" Vol LVIII, No 5 - pp. 823-6

Discusses the entropies of ions in solutions, particularly those ions which have the configuration of an inert gas such as F^-, Cl^-, Br^-, and I^-. Gives various formulas and equations for calculating the entropy. Submitted by Academician I. I. Chernyayev, 25 Apr 1947.

38T11

[redacted]

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

FA 70T106

GAPON, YE. N.

USSR/Soil Science
Chemistry - Heat of Hydration

Mar/Apr 1948

"Heat of Hydration of Soils," Ye. N. Gapon, L. A. Zuyev, All-Union Inst of Fertilizers, Agr Soil Studies; Agr Technol imeni K. K. Gedroyts, Agr Acad imeni K. A. Timiryazev, 10½ pp

"Kolloid Zhur" Vol X, No 2

Discusses the integral and differential heat of hydration, results of experiments, evaluation of results, and conclusions reached. Submitted 20 Jan 1947.

70T106

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

15

CA

Work of wetting and heat of wetting of soils. E. N. Gapon. *Kolloid. Zhur.* 10, 250-64(1948); cf preceding abstr.—The thermodynamic relations between the differential heat Q_d, integral heat Q_i, differential work A_d and integral work A_i of wetting are derived. For soils, A_i decreases in the series Mg > Ca > H > Na. Q_i is always greater than A_d but the difference is small at low humidities. On the av., $A_i = 0.51\ Q_i$. The equation given by Andrianov, C. A. 35, 7619, is not confirmed.

I. I. Bikerman

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, YE. N.

USSR/Soil Science Feb 48
Water Vapor - Adsorption

"Adsorption of Water Vapors by Soils," L. A. Zuyev, Lab Physicochem Soils, VIUAA imeni Gedroyts; Ye. N. Gapon, Lab Physicochem, Moscow Agr Acad imeni Timiryazev, 7½ pp

"Pochvoved" No 2

Results of measurement of water vapor adsorption with the aid of MacBaine scales. The adsorption curve frequently is S-shaped. Freindlich's equations used for initial stages of the experiments. No data obtained on the absorption of cation with reference to adsorption of water vapors.

PA 62T103

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

B

26

Chromatographic Analysis of Ions. (In Russian.) E. N. Gapon and T. B. Gapon. *Uspekhi Khimii* (Progress in Chemistry), v. 17, July-Aug. 1948, p. 452-467.

A review. 42 ref.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

Chromatographic analysis of ions. 1. Chromatographic exchange adsorption of ions. T. B. Gapon and E. N. Gapon. Zhur. Anal. Khim. 3, 203-12(1948).
A review of ionic-exchange chromatography. M. Ho-eh

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

USSR/Chemistry - Chromatography Jul/Aug 48
Chemistry - Ions, Electrolytic

"Chromatographic Analysis of Ions: I, Chromatographic Exchange Adsorption of Ions," T. B. Gapon, Ye. N. Gapon, Moscow Tech Inst of Fishing Ind and Econ imeni A. I. Mikoyan, 10 pp

"Zhur Analit Khimii" No 4

Shows that, depending on character of chemical process occurring during percolation of a solution of salts through a column of adsorbent, the ion chromatograms formed may be of three types: (I) molecular, (II) exchange - ionic, (III) precipitation. (II) is divided into (a) primary, (b) washed, and (c) developed. Assigns name of permutid to (II). Chromatographic division of ions in permutid is due to (1) differences in exchange, caused by permutid structure (intra- and extra-crystalline exchange) and (2) differences in the adsorbability of the ions. Chromatographic division of cations on oxide of aluminum, barium aluminate, bentonite clay and permutid is connected with exchange of aluminate group cation for solution cation. Sequence in which exchange cation chromatograms are formed on permutid is as follows (moving along column from top to bottom):

Fe^{3+}, Cr^{3+}, Cu^{2+}, UO_2^{2+}, Co^{2+}, Ni^{2+}, Mn^{2+}.

Shows, working from exchange adsorption isotherm, that cation zones cannot be chemically pure with respect to one cation. Submitted 20 Oct 47.

18/49T8

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, YE. N.

PA 15/49T12

USSR/Chemistry - Ionic Theory Sep 48
Chemistry - Ions, Electrolytic,
Exchange of

"The Dynamics of Ion Exchange," Ye. N. Gapon and T. B. Gapon, Moscow Tech Inst of Fish Ind and Breeding imeni A. I. Mikoyan, 10 3/4 pp

"Zhur Priklad Khimii" Vol XXI, No 9 - p. 437-47

During exchange of two ions (M_1, M_2) between solid absorbent and solution, molar increment of ion M_2 in adsorbed state is determined by exchange constant K_{12}, original molar share of ion M_2 in adsorbed state (a_2^0) and in solution (m_2^0) and ionic ration $\Delta\gamma$. Gives system for computing dynamics of sorption of two ions. Submitted 13 Mar 1948. 15/49T12

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, YE. N.

PA 64T17

USSR/Chemistry - Heat of Hydration
Chemistry - Alkali Metals

Feb 1948

"Heat of Hydration of Ions of Alkali Metals and Halogids," Ye. N. Gapon, Agr Acad imeni K. A. Timiryazev, Moscow, 11 pp

"Zhur Fiz Khim" Vol XXII, No 2 pp. 233-42

Studies of heat of hydration of simple single valent ions with configurations of inert gases showed that this phenomenon has great significance in solution of the problem for calculating the absolute heat of hydration of ions. Also disproves the reliability of some contemporary methods for calculating the absolute heat of hydration of ions. Submitted 28 May 1947.

64T17

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

C A

2

Chromatographic ion-exchange adsorption. I. Theory of ion-exchange chromatograms. E. N. Gapon and T. B. Gapon (Inst. Fisheries and Fish Industry, Moscow) Zhur. Fiz. Khim. (J. Phys. Chem.) 22, 889-99(1948).—V

Equations are derived for ion exchange during filtration of soln. of mixts. of uni-univalent electrolytes through an ion exchanger contg. mobile univalent ions. J. J. B.

COMMON ELEMENTS

COMMON VARIABLES

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

1ST AND 2ND LETTERS

3RD AND 4TH ORDERS

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PA 55/49T98

GAPON, YE. N.

USSR/Physics - Ions Aug 48
Physics - Chromatographs

"The Chromatographic Exchange Adsorption of Ions: II. A Description of Exchange-Ion Chromatographs," Ye. N. Gapon, T. B. Gapon, Moscow Eng Inst of Fishing Ind and Econ imeni A. I. Mikoyan, Moscow, 12 pp

"Zhur Fiz Khim" Vol XXII, No 8 pp 979-990

Considers dynamic exchange adsorption of two and three ions, and determines conditions for making exchange-ion chromatographs. Submitted 18 Nov 47.

55/49T98

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PROCESSES AND PROPERTIES INDEX

71. Theory of the Chromatographic Analysis of M S Tsvet by E N Gapon and T B Gapon Doklady Akad Nauk SSSR 59 921-924 (1948(Feb 11 (In Russian)

As the formation of chromatograms by organic and inorganic substances is due to entirely different mechanisms, a general theory of chromatographic adsorption should not be attempted. Nevertheless, it is possible to distinguish between three main types of mechanisms: (1) molecular adsorption, (2) ion exchange between the adsorbent and the solution, and (3) precipitation. The authors present some fundamental considerations for a theory of the first two types. (1) In discussing the chromatographic analysis based on molecular adsorption, the ideas of Dubinin, who has studied the dynamics of vapor sorption, are followed. (M M Dubinin and S Yavich, Zhur Prikkad Khim 9 1198 (1936); M M Dubinin and M Khrenova, Zhur Prikkad Khim 9 1204 (1936)). The equations used are those of Langmuir describing the equilibrium between the components in the solution and on the adsorbent. The adsorption constants, characteristic of every component, determine the shape and position of the maximum of the individual adsorption curves taken along the adsorbent column. Subsequent development expands and separates the individual curves. (2) In the

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

equilibrium equations describing the phenomenon of ion exchange, the volume of the pores per unit volume of the adsorbent is taken into account. An exact computation of the composition along the column would require the integration of a differential equation. The authors preferred the more expedient method of finite differences.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

PA-77T10

GAPON, YE,N.

Apr 1948

USSR/Chemistry - Precipitations
Chemistry - Chromatography

"Chromatographic Analysis of Precipitations," T. B. Gapon and Ye. N. Gapon, Moscow Tech Inst of Fish Industry and Hatcheries imeni A. I. Mikoyan, 4 pp

"Dok Ak Nauk SSSR" Vol LX, No 3

Describes chromatographic analysis of precipitations as an integral part of process of chromatographic analysis. Submitted by Acad M. M. Lubinin 14 Feb 1948

77T10

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, YE. N. PA 68T14

USSR/Chemistry - Chromatography May 1948
Chemistry - Absorption

"Mechanism of Chromatogram Foundation," Ye. N. Gapon, T. B. Gapon, Moscow Agr Acad imeni K. A. Timiryazev, 5½ pp

"Dok Ak Nauk SSSR" Vol LX, No 5 - pp. 817-20

Formation of molecular chromatograms is characteristic not only for solutions but also for gases. Presents graphs which show distribution of sorption and state of mixtures on adsorbent. Representative chromatogram of two gases. Submitted by Academician M. M. Dubinin 10 Mar 1948.

[redacted] 68T14

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

GAPON, E. N.

USSR/Chemistry - Ions, Electrolytic, Exchange of Jun 1948
Chemistry - Phosphates

"The Dynamics of Ion Exchange," D. D. Ivanenko, V. V. Kachinskiy, T. S. Gapon, E. N. Gapon, Moscow Agr Acad Imeni K. A. Timiryazev, 4 pp

"Dok Ak Nauk SSSR" Vol LX, No 7

Study of the dynamics of the exchange of phosphate ions. Submitted Mar 1948

PA76T3

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9

USSR/Chemistry - Minerals, Soil Jul 48
Chemistry - Adsorption, Exchange

"Chromatographic Exchange Adsorption of Cations by Soil Minerals," Ye. N. Gapon, Dr Chem Sci, T. N. Chernikova, Cand Chem Sci, 2½ pp

"Dok v-s Ak Selkhoz Nauk" No 7

Describes studies conducted to determine dynamics of subject exchange adsorption. Tests conducted on kaolin and bentonite as soil minerals showed they had characteristics similar to aluminum and permutite oxides as far as chromatographic exchange adsorption was concerned. Localized nature

[redacted] 33/49T14

USSR/Chemistry - Minerals, Soil (Contd) Jul 48

of cation distribution renews problems on soil adsorption capacity. Submitted 2 Feb 48.

[redacted] 33/49T14

GAPON, YE. N.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R000514310008-9"