SLIN'KO, I., inzhener.

Improved method of roof control. Mast.ugl. 6 no.5:10-11 My '57. (MLRA 10:7)

(Karaganda Basin--Coal mines and mining)

POMAZANOVSKIY, Yu.; SLIN'KO, I.

Load the cutter-loader fully. Sov. shakht. 12 no.6:10-11 Je '63. (MIRA 16:9)

(Donets Basin--Coal mining machinery)

SLIN'KO, I.S., POPOV, N.F.

Improved method of roof control in the "Vyshesrednii," "Sloistyi" and "Shestifutovyi" seams. Nauch. trudy KNIUI no.2:28-55 '58. (MIRA 13:8)

(Karaganda Basin--Coal mines and mining)
(Mine timbering)

KVASNIK, O.I.; SLIN'KO, I.S.

Combination of industrial processes in cutter-loader mined steep seam longwalls. Ugol' 40 no.3:51-54 Mr '65. (MIRA 18:4)

1. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut.

L 32434-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/GW/EM
ACC NR: AP6015036 (N) SOURCE CODE: UR/0125/66/000/004/0013/0017

55
B

AUTHORS: Malinochka, Ya. N.; Pavlova, S. D.; Slin'ko, L. A.

ORG: Dnepropetrovsk Institute of Iron Metallurgy (Dnepropetrovskiy institut chernoy metallurgii)

TITLE: Structure and properties of welded seams in low alloy steel pipes

SOURCE: Avtomaticheskaya svarka, no. 4, 1966, 13-17

TOPIC TAGS: weld evaluation, welding technology, metal welding, seam welding, metal property, alloy steel / 14KhGS alloy steel, 17GS alloy steel, 14GN alloy steel

ABSTRACT: The structure and properties of welded joints were investigated before and after heat treatment to determine the reasons for cracking of welded joints in 1020-mm diameter steel pipes made of 14KhGS, 17GS, and 14GN steel. Photographs of the weld microstructures are presented for various conditions of heat treatment, and the strength properties of the base metal under various temperature conditions were determined. A considerable amount of martensite is formed in the seam, increasing its strength and hardness but decreasing its plasticity. Cracks are formed during expansion of the pipe under low temperature conditions, and these grow along interaxial dendrite portions of the weld. These cracks can be prevented by tempering of the welded seam at 450—500C. N. M. Yan and E. E. Novikov helped with the experimental work. Orig. art. has: 6 figures.

SUB CODE: 13/ SUBM DATE: 18Dec65/ ORIG REF: 003
UDC: 621.791.004.12:669.15-194

Card 1/1 vmb

Slinko, L.I.

USSR/Zooparasitology - Acarina and Insect-Vectors of Disease Pathogens. G-4

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10098

Author : Nel'zina, E.N., Slinko, L.I., Kadatskaya, K.P., Ivanov, K.A., Yamshchikova, Kh.G., Poltavtsev, N.N., Skirda, G.I.

Inst : -

Title : Ixodic Ticks (Parasitiformes, family Ixodidae) of Rodents in Northwestern Caspian Coast.

Orig Pub : Sb. tr. Astrakhansk. protivochumn. st., 1955, No 1, 416-433

Abstract : The fauna of ixodic ticks in the district studied is comparatively sparse (5 species, more or less, are numerous); individual specimens may be regarded as of Kirgiz and European-Siberian origin. Closest biocenotic ties with rodents are found in Ixodes laguri laguri and Thipicephalus schulzei. The first of these (steppe species) is connected with rodents who build deep, comparatively

Card 1/2

G-4

USSR/Zooparasitology - Acarina and Insect-Vectors of Disease Pathogens.

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10098

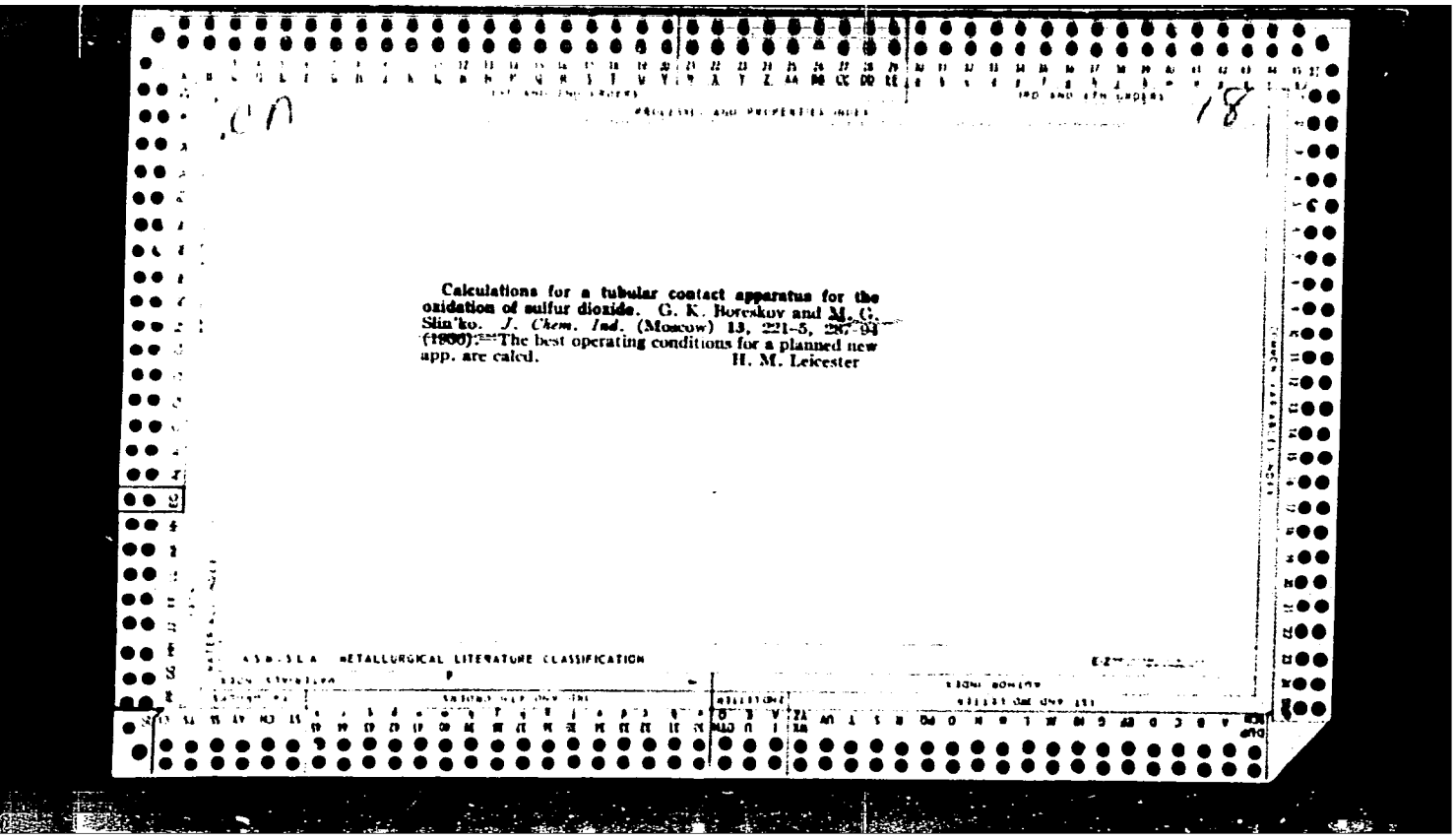
permanent burrows (susliks, hamsters) and is surmised to play a substantial role in the epizoology of tularemia and some ricketsioses among susliks, hamsters and field mice. Rh. schulzei inhabits semideserts; its principal hosts are the small and yellow susliks.

Card 2/2

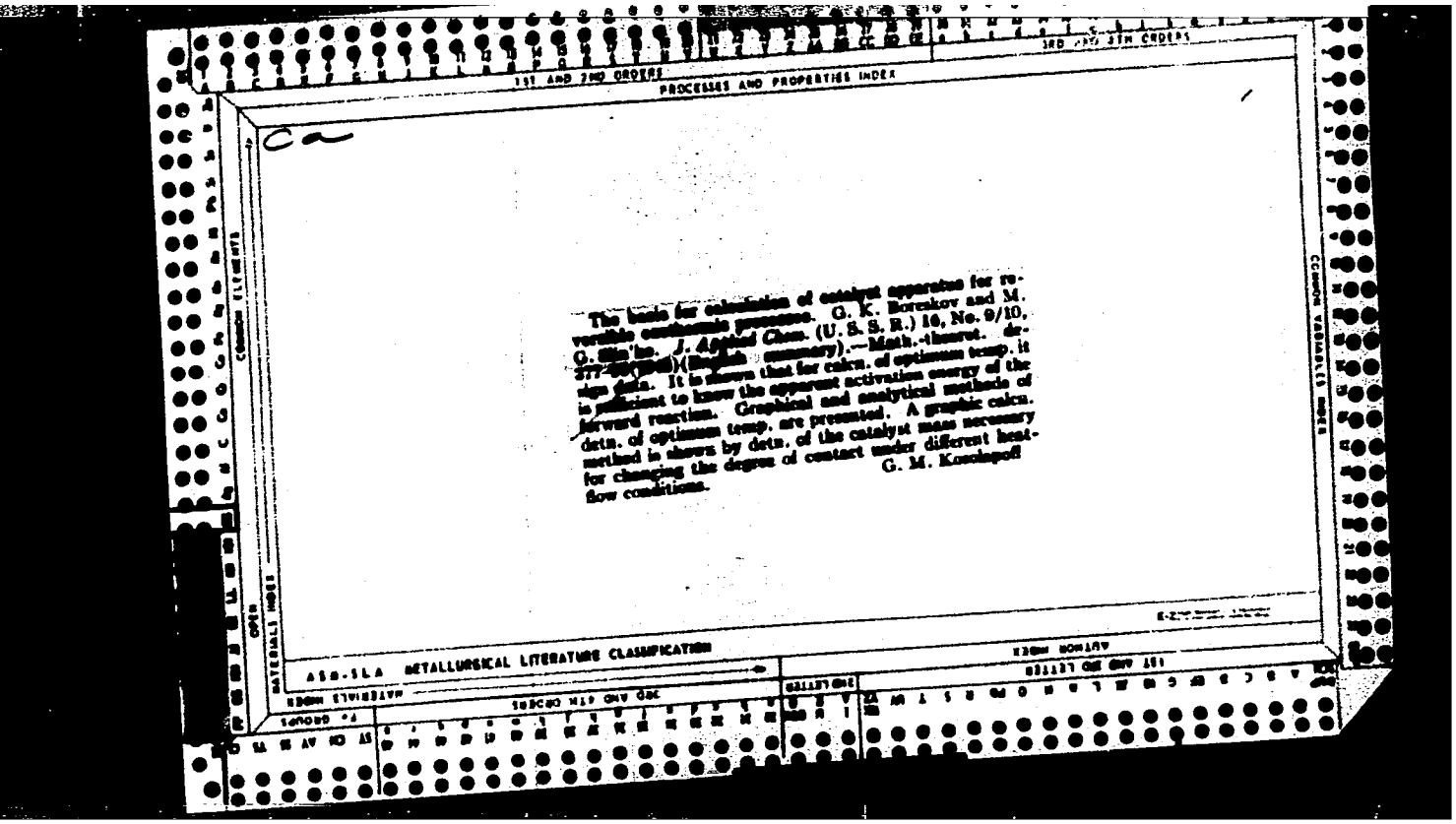
GEYSBERG, S.M.; SLIN'KO, L.V.

Ways of increasing the strength of staple fiber. Khim.volok. no.6:73-74 '59. (MIRA 13:5)

1. Leningradskiy zavod. (Rayon)



Calculations for a tubular contact apparatus for the oxidation of sulfur dioxide. G. K. Boreskov and M. G. Slin'ko. *J. Chem. Ind.* (Moscow) 13, 221–5, 287–93 (1936).—The best operating conditions for a planned new app. are calcd.
H. M. Leicester



The basis for calculation of catalyst apparatus for reversible exothermic processes. G. K. Boreskov and M. G. Slin'ko. *J. Applied Chem.* (U. S. S. R.) 16, No. 9/10, 377-80(1943)(English summary).—Math.-theoret. design data. It is shown that for calcn. of optimum temp. it is sufficient to know the apparent activation energy of the forward reaction. Graphical and analytical methods of detn. of optimum temp. are presented. A graphic calcn. method is shown by detn. of the catalyst mass necessary for changing the degree of contact under different heat-flow conditions.

G. M. Kondapoff

MALIN, K. M., ARKIN, N. L., BORESKOV, G. K. SLIN'KO, M. G.

Sulfuric Acid

"Production of sulfuric acid." Reviewed by D. A. Yepshteyn, Zhur.prikl.khim. 25 No. 4, 1952

9. Monthly List of Russian Accessions, Library of Congress, August 1953, Uncl.

SLIN'KO, M. G.

USSR/Chemistry - Catalysts; Sulfuric Acid — 1 Sep 53

"Catalytic Activity of Metals and of Platinum-Gold Alloys in Respect to the Oxidation of Sulfur Dioxide," G. K. Boreskov, M. G. Slin'ko, and Ye. I. Volkova

DAN SSSR, Vol 92, No 1, pp 109, 110

Studied the catalytic activity of Cr, Rh, Pd, Ag, W, Pt, Au, and of an alloy consisting of 5% Au and 95% Pt on the oxidation of SO_2. Most of the above metals had a low activity due to their instability under the conditions of the reaction. At 560° Pt

274T12

is more active than Au, but the Pt-Au alloy has a low activity. Refutes the conclusions of D. A. Dowden, Chem Soc, Issue 1, 245, 1950. Presented by Acad M. M. Dubinin 3 Jul 53.

SLIN'KO, M.G.

USSR

The catalytic activity of nickel, palladium, and platinum with respect to the oxidation of hydrogen. G. K. Boreskov, M. G. Slin'ko, and A. G. Filippova. *Doklady Akad. Nauk S.S.S.R.* 92, 353–5(1953).—A new type of circulation method is described for detg. the rate of heterogeneous catalytic reactions allowing for the direct measurement of the reaction rate and maintaining a const. temp. along the catalytic layer. The specific catalytic activities of Ni, Pd, and Pt were detd. by this method for the oxidation of H. The catalytic activity increased with an increase in the at. wt. of the metal.

J. Rovtar Leach

SLINKO, M. G.

The catalytic activity of the metals of the IV series with respect to the interaction of hydrogen and oxygen. G. K. Boreskov, M. G. Slin'ko, A. G. Filippova, and R. N. Gur'yanova. *Doklady Akad. Nauk S.S.S.R.* 94, 713–15 (1954); cf. *C.A.* 49, 4907*e*.—The catalytic activity of Ti, V, Cr, Mn, Ni, Co, Cu, and Zn on the interaction of H and O was studied by the method previously described (*loc. cit.*), which permits a direct detn. of the reaction rate at constant temp. along a layer of the catalyst and continuous observations of the nature of changes of catalyst activity. A large excess of H was used in the tests to prevent the oxidation of the catalyst. The catalyst activity was measured at 302, 254, 218, 180, and 135°, under conditions which minimize the diffusion effects. The sp. catalyst activity was expressed as the no. of ml. of ($2H_2+O_2$) reacting per hr. on 1 sq. cm. of the catalyst surface. The curve of activities passes through a sharp max. at Ni. W. M. S.

(3)

LUR'YE,G.E., redaktor; BORESKOV,G.K., redaktor; NABEREZHNYKH,M.Ye., redaktor; PSHEZHETSKIY,S.Ya., redaktor; SLIN'KO,M.G., redaktor; TEMKIN,M.I., redaktor; CHEREDNICHENKO,V.M., redaktor; SHPAK,Ye.G., tekhnicheskiy redaktor

[Heterogeneous catalysis in the chemical industry; papers from the All-Union Conference, 1953] Geterogennyi kataliz v khimicheskoi promyshlennosti; materialy Vsesoiuznogo soveshchaniia 1953 goda. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1955. 494 p. (MLRA 9:2)

1. Russia (1923- U.S.S.R.) Ministerstvo khimicheskoy promyshlennosti. (Catalysis)

Slin'ko, M. G.

FD-1729

USSR/Chemistry - Catalysis

Card 1/1 : Pub. 50-5/18

Authors : Prof. Boreskov, G. K., Dr Chem Sci; Slin'ko, M. G., Cand Chem Sci

Title : Experimental methods of determining catalytic activity

Periodical : Khim. prom., No 1, 19-26, Jan-Feb 1955

Abstract : On comparing the static methods, dynamic circulation methods, and stationary circulation methods for the laboratroy testing of catalysts, arrive at the conclusion that the stationary circulation methods are the most reliable. Point out that stationary circulation methods cannot be easily applied to the testing of catalysts on a large scale and should be replaced by simpler, although less exact circulation methods for that purpose. Describe all of these methods and the diaphragm method. Six figures. Twenty nine references; 25 USSR, 23 since 1940.

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SLIN'KO, M. G. (Phys.-Chem. Institute im. L. Ya. Karpov)
DISKUSSIYA (Discussion). In Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis), vol. 8. Izdatel'stvo Akademii Nauk SSSR, 1955. Section II: General problems of the theory of catalysis. p. 148-150.

A study of kinetics and mechanism of the interaction between hydrogen and oxygen in order to establish the role of surface chains (Laboratory of Technical Catalysis, Physico-Chemical Institute im. L. Ya. Karpov) showed that at temperatures of 180°C and above the catalytic activity of Pt, in the presence of excess oxygen, is readily established and does not change for a prolonged period of time (about 7 months). At low temperatures (140°C and below), the activity of Pt depends on the following: 1. The activity of Pt is high on rapid transition from high to low temperatures; 2. After evacuation of air for a short time or a prolonged break in work at low temperatures (56°C), the activity of Pt is low; 3. The energy of activation in the region of high activity is ~2400 cal and ~10,000 cal in the region of low activity. 4. Oxygen adsorbed on Pt does not react with hydrogen at low temperatures.

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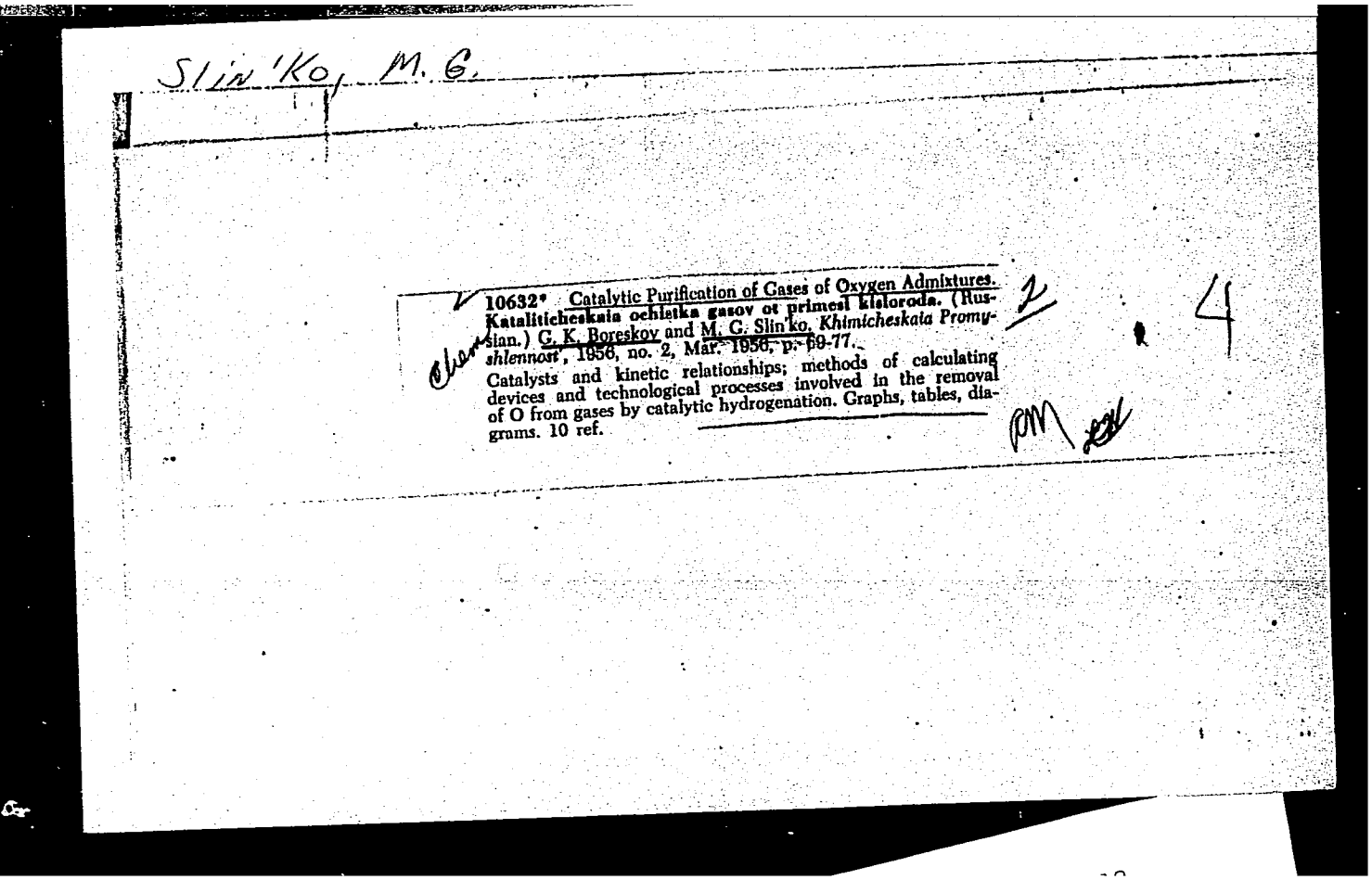

Slin'ko, M. G.

10632* Catalytic Purification of Gases of Oxygen Admixtures. **Kataliticheskaia ochistka gasov ot primesi kisloroda.** (Russian.) G. K. Boreskov and M. G. Slin'ko. *Khimicheskaia Promyshlennost'*, 1956, no. 2, Mar. 1956, p. 69-77.

Catalysts and kinetic relationships; methods of calculating devices and technological processes involved in the removal of O from gases by catalytic hydrogenation. Graphs, tables, diagrams. 10 ref.

BORESKOV, G.K., doktor khim.nauk, prof.; SLIN'KO, M.G., kand.khim.nauk.

Applying the fluidized bed method to heterogeneous catalysis processes. Khim.prom. no.6:321-330 S '57. (MIRA 11:1)

1.Fiziko-khimicheskiy institut imeni L.Ya. Karpova.
(Catalysis) (Fluidization)

Slinko, M.G.

AVDEYENKO, M.A.; BORESKOV, G.K.; SLIN'KO, M.G.

Catalytic activity of metals in respect to homomolecular isotopic exchange of hydrogen. Probl. kin. i kat. 9:61-75 '57. (MIRA 11:3)
(Catalysis) (Radioactive tracers)

DYKHNO, N.M., kand.khim.nauk; CHERNYSHEV, B.A., inzh.; SLIN'KO, M.G., kand.khim.nauk.

Removal of argon from oxygen by means of catalytic hydrogenation. Kislorod 10 no.4:14-24 '57. (MIRA 11:2)
(Argon) (Oxygen) (Hydrogenation)

SLIN'KO, M.G.

Georgii Konstantinovich Boreskov; on the occasion of his 50th birthday. Zhur.fiz.khim.31 no.7:1670-1671 Jl '57. (MIRA 10:12)
(Boreskov, Georgii Konstantinovich, 1907-)

kinetics were thoroughly investigated by A. I. Kurilenko, N. A. Rybakova, N. V. Kul'kova and M. I. Temkin (Reference 9) who pointed to the kinetics at stationary and standard composition of the catalyst. The computation equations as obtained by them are given as well as mathematical deviations for the influence of the process of the transfer to the external surface of the catalyst grains. For that purpose the value $\frac{RT_o^2}{E}$ is used which was introduced by D. A. Frank-Kamenetskiy (Reference 2) and it was stated that with a difference between the temperatures of the catalyst surface and of the gas which is smaller than the mentioned value the conditions of the kinetic range are given. The publications of Mazzolini (Reference 10), T. I. Adrianova and O. M. Todes (Reference 7) contain wrong propositions as they assumed a diffusion range instead of a kinetic range. In the explanations of the influence of the process of transfer to the internal surfaces of the catalyst grains among other things an equation is obtained ana-

logous to that of G. K. Boreskov (Reference 3) with sulfuric acid catalysts, and it is stated - as was done in the experimental investigation (Reference 9) - that the catalyst activity up to 300° is independent of the grain size. It was stated that in order to guarantee a stationary process in the kinetic range the difference between the temperatures of the center of the reaction pipe and of the pipe surface must not exceed $1{,}37 \frac{RT_c^2}{E}$ and that the difference between the temperatures of the reacting gas and of the cooling liquid must be smaller than $\frac{RT_o^2}{E}$. The individual experimental results which are given in tabular and in graphical form refer to experimental conditions mainly at 218°C. There are 6 figures, 3 tables and 11 references, 8 of which are Soviet.

Card 3/3

1. Ethylene--Oxidation 2. Silver catalysts--Performance
3. Catalysts--Temperature factors 4. Chemical reactions--Heat transfer

SLIN'KO, M.G.

Effect of mass and heat transfer processes on the velocity of the oxidation of ethylene. Khim. prom. no.3:138-146 Ap-My '58.
(Ethylene) (Oxidation) (MIRA 11:6)

76-32-4-36/43

AUTHOR: Slin'ko, M. G.

TITLE: On the ~~Part Played~~ by Mass and Heat Transfer in the Production of Ethylene Oxide (O roli masso- i teploperedachi v protsesse polucheniya okisi etilena)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 4, pp. 943-944 (USSR)

ABSTRACT: The equation formed by Mazzolini (Refs 1,2) according to which the reaction velocity of ethylene oxidation is equal to the velocity of the mass transfer of ethylene to the catalyst's surface is insufficient, as it has to be taken into account that the velocity of mass transfer and heat transfer are very similar. Two equations of the material balances and heat balances are given which can furnish one or three solutions. One solution always corresponds to the field of external diffusion, while the three solutions correspond: one to the regime of the kinetic field, the second to the regime of external diffusion and the third to an unstable regime which once passes over to the first and another time to the third. At a content of 3% ethylene of the air and a 60% selectivity the adiabatic combustion amounts to 645°C and the surface temperature of the catalyst to 845°C (at a gas temperature of 200°C). At this temperature ethylene oxide oxidizes to carbon dioxide and

Card 1/2

On the Part Played by Mass and Heat Transfer in the Production of Ethylene Oxide 76-32-4-36/43

water so that the temperature of the catalyst still rises further, from which fact is concluded that the assumptions by Mazzolini are incorrect. It is proved by data that the latter carried out his experiments under conditions where the velocity of mass transfer of ethylene had no effect on the general reaction velocity. Similar errors were committed by T. I. Andrianova and O. M. Todes (Ref 3) in their works. There are 5 references, 3 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva (Moscow Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: October 19, 1957

AVAILABLE: Library of Congress

1. Ethylene--Oxidation 2. Ethylene--Catalysis

Card 2/2

5(4)
AUTHOR: Slin'ko, M. G. SOV/76-32-12-28/32

TITLE: The Use of a Pseudo-Liquid Layer for Heating and Cooling in Laboratory Investigations (Primeneniye psevdoozhizhennogo sloya dlya obogreva i okhlazhdeniya pri laboratornykh issledovaniyakh)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2841-2842 (USSR)

ABSTRACT: The use of tube furnaces and liquid baths is inconvenient and often not appropriate. It is difficult to effect transitions to other temperatures. These difficulties can be avoided by using the pseudo-liquid layer of an inert, nonvolatile, noncaking material such as aluminum oxide, silica gel, carborundum, sand, aluminum silicates, etc. as heat transferring agents. A figure illustrates such an apparatus. Advantages: 1. no temperature differences throughout the furnace; 2. intensive heat exchange; 3. fast and continuous temperature changes are possible; 4. there is no danger of inflammation or of poisoning by organic compounds which are otherwise used as heat transferring agents. There are 2 figures.

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SOV/20-127-1-39/65

5(4)

AUTHORS: Khar'kovskaya, Ye. N., Boreskov, G. K., Corresponding Member AS USSR, Slin'ko, M. G.

TITLE: The Kinetics of Interaction Between Hydrogen and Oxygen on Platinum (Kinetika reaktsii vzaimodeystviya vodoroda s kislorodom na platine)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 145-148 (USSR)

ABSTRACT: The measuring results hitherto supplied by publications concerning the interaction mentioned in the title are contradictory (Refs 1-5). Experiments were made within too narrow concentration ranges or under conditions that did not allow accurate measurements. The mentioned interaction was therefore carried out at temperatures of from 20 to 180°, pressure of from 50 to 750 torr and different compositions of the reaction mixtures in a circulation system. Investigations were made on hydrogen, nitrogen-hydrogen mixtures, nitrogen-oxygen mixtures and oxygen. Platinum was used in the form of 0,1 mm gauge wire. The circulation rate varied between 400 and 1100 l/h. The reaction rate proved to be independent of the circulation rate and of the nitrogen partial pressure; it depended only on the

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partial pressure of hydrogen and oxygen. Figs 1-3 show the measuring results for the different concentrations and temperatures as well as the influence of the pre-treatment of platinum with hydrogen at increased temperatures, figure 4 the dependence of the reaction rate on the H_2- and O_2 concentration at 180°. Experimental data are indicative of a complicated catalytic process. In mixtures with hydrogen excess, the reaction of the first order (referred to O_2) and its being little dependant on the pressure of H_2, permit the conclusion to be drawn that here the interaction between chemically sorbed atomic hydrogen, which covers the platinum surface, and molecular oxygen, forms the limiting stage. The oxygen reaction is made easier by interaction with the d-electrons of the catalyst (adsorption type C according to Dowden, Ref 11). If the oxygen is not altogether removed from the platinum surface, O-atoms remain adsorbed to the surface by means of the d-electrons of the metal (type B), and the activity of platinum drops. When passing over to stoichiometric H_2-O_2-mixtures,

The Kinetics of Interaction Between Hydrogen and Oxygen on Platinum

the platinum surface is freed from hydrogen, and a chemical sorption of the oxygen with dissociation into atoms is made possible. (Type A). In this range the reaction proceeds by interaction of the atomically adsorbed oxygen with H_2; this requires less activating energy, and causes an increased reaction rate. In the case of oxygen excess, two stationary conditions are possible, which differ by the reaction rate and dependence on concentration of the components. The readily occurring reaction is likely to be related with a chain process, in which high-energy endothermal products participate, which are regenerated in the course of reaction. On lowering the temperature and temporarily evacuating the system, these unstable products vanish, and there only remains a relatively tightly platinum-adsorbed oxygen which reacts with hydrogen slowly and with increased energy demand. The decreased

reaction rate at increased oxygen pressure is probably due to a partial blocking of the platinum surface by tightly adsorbed oxygen. There are 4 figures and 11 references, 8 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: March 30, 1959

S/064/60/000/01/04/024
B022/B008

AUTHOR: Slin'ko, M. G.

TITLE: On the Role of Mass-transfer Processes in the Catalytic Oxidation of Naphthalene to Phthalic Anhydride. Remarks on the Paper by I. I. Ioffe and A. F. Grigorov "K teorii skorostey reaktsiy v psevdoozhizhennom sloye katalizatora" ("On the Theory of Reaction Rates in a Pseudo-liquid Layer of the Catalyst")

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 1, pp. 24 - 25

TEXT: It is stated in the paper by I. I. Ioffe and A. F. Grigorov, which is critically examined, that the reaction rate mentioned in the title is determined by the rate of mass transfer of naphthalene from the gas current to the surface of the catalyst grains and that with a low rate of the gas current, external diffusion and the transition range are characteristic of the processes concerned. These statements are refuted by the author. The dependence of the mass-transfer coefficient on the diameter of the particles and the rate of the gas current is mentioned (Table). There are 1 table and 12 references, 3 of which are Soviet.

Card 1/1

stroyeniya (Institute of Computer Construction), as well as corresponding diagrams applying the data by M. I. Temkin et al. (Ref. 3) are shown (Figs. 7,8). Computations for the application of apparatus with pseudo-liquid layer in exothermic processes are also mentioned. Computations of the limit of stable working conditions of contact apparatus are explained for heterogeneous catalyses by means of pseudoliquid catalyst layers, the method by A. M. Lyapunov (Ref. 5) applied in mechanics as well as a paper by D. A. Frank-Kamenetskiy (Ref. 8) are mentioned, and an explanation of the critical conditions is given. It is finally pointed out that electronic computers permit the solution of complicated computations of the course of catalytic processes, such as multi-stage processes with reactions developing parallel and successively, catalyses in which the activity of the catalyst drops quickly, etc. There are 10 figures, 1 table, and 8 references: 7 Soviet and 1 American.

SLIN'KO, M.G.

Determination of stability conditions for exothermal contact processes in a fluidized bed. Kin. i kat. 1 no.1:153-161 My-Je '60. (MIRA 13:8)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR.
(Heat--Transmission) (Catalysis)

BORESKOV, G.K.; SLIN'KO, M.G.

Second European Symposium on Chemical Technological Processes.
Kin. i kat. 1 no. 3:483-487 S-O '60. (MIRA 13:11)

(Europe--Chemistry, Technical--Congresses)

SLIN'KO, M.G.

Methods of generalizing the experimental data on the rates of contact processes. Khim.prom. no.4:265-267 Ap '61. (MIRA 14:4)

(Catalysis)

CHESNOKOV, B.B.; SLIN'KO, M.G.; KERNERMAN, V.Sh.

Determination of the critical velocity of gas fluidization under pressure. Khim.prom. no.11:767-768 N '61. (MIRA 15:1)
(Fluidization)

SLIN'KO, M.G.; BESKOV, V.S.

Design of contact apparatus with adiabatic beds of catalysts for the oxidation of sulfur dioxide (design of contact apparatus with intermediate heat exchangers). Khim.prom. no.12:826-831 D '61. (MIRA 15:1)

(Sulfur dioxide) (Chemical engineering—Equipment and supplies)

SLIN'KO, M.G.

All-Union Conference on methods for determining the activity of catalysts. Khim.prom. no.12:870-871 D '61. (MIRA 15:1)
(Catalysis--Congresses)

S/195/61/002/003/009/009
E030/E433

AUTHORS: Slin'ko, M.G., Muler, A.L.

TITLE: On the stability of adiabatic contact plant with heat exchange

PERIODICAL: Kinetika i kataliz, v.2, no.3, 1961, 467-478

TEXT: A theory is developed for the stability of apparatus consisting of a heat exchanger with a bypass recirculator and a reactor. Within the reactor, external diffusion holds if the velocity of the process exceeds that of introducing the reacting gases (as in oxidation of methyl alcohol to formaldehyde) and otherwise internal diffusion holds (as in oxidation of ethylene to thylene-oxide, the oxidation of sulphur dioxide etc); both cases are treated. Using mass balance and heat flow equations, for general order of reaction a series of equations are developed using the Frank-Kamenetskiy method (Ref.5: D.A.Frank-Kamenetskiy, Diffusion and heat transfer in chemical kinetics, Izd-vo AN SSSR, M.-L., 1947) and are expressed as a dimensionless form:

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Type of reaction	Form of function of C	Equation (13)	Parameter
0.5th order	$C^{0.5}$	$\Delta\theta_{ад} = \frac{\theta}{2}\left(1+\sqrt{1+4\varepsilon_1^2 e^{-\frac{2\theta}{\theta b_0+1}}}\right)$	$\varepsilon_1 = \frac{\sqrt{C_0}}{k_н \tau}$
1st order	C	$\Delta\theta_{ад} = \theta\left(1+\varepsilon_1 e^{-\frac{\theta}{\theta b_0+1}}\right)$	$\varepsilon_1 = \frac{1}{k_н \tau}$
2nd order	C^2	$\Delta\theta_{ад} = \frac{\theta}{2}\left\{2+e^{-\frac{\theta}{\theta b_0+1}}\varepsilon_1 + \sqrt{\varepsilon_1 e^{-\frac{\theta}{\theta b_0+1}}\left(\varepsilon_1 e^{-\frac{\theta}{\theta b_0+1}}+4\right)}\right\}$	$\varepsilon_1 = \frac{1}{k_н \tau C_0}$
Limited by reaction products	$\frac{C}{1+a(C_0-C)}$	$\Delta\theta_{ад} = \frac{\theta}{2}\left\{1+\varepsilon_1 e^{-\frac{\theta}{\theta b_0+1}} + \sqrt{1+\varepsilon_1^2 e^{-\frac{2\theta}{\theta b_0+1}}+2\varepsilon_1(a+1)e^{-\frac{\theta}{\theta b_0+1}}}\right\}$	$\varepsilon_1 = \frac{1}{k_н \tau}$

On the stability of adiabatic ...

C is concentration of reacting gas, $\Delta\theta_a$ is the change in temperature on adsorption of the gas on the catalyst and θ the mean temperature expressed dimensionlessly as

$$T = \theta\frac{RT_o^2}{E} + T_o$$

where T is the initial gas temperature; τ is the time of contact, a is a constant, as is b_o; C_o is the initial gas concentration and k_H the velocity constant of the reaction. Eq.(13) is the general form of $\theta_a = \psi_1(\theta, \varepsilon_1, b_o)$. The transitions between the diffusion regions are determined by ε_1, which equals $1/k_H\tau C_o^{n-1}$, and its magnitude relative to the coefficient of mass transmission β and the dimensionless parameter $\varepsilon_2 = \beta/k_H C_o^{n-1}$. Acknowledgments are expressed to the Corresponding Member of AS USSR G.K.Boreskov for discussing the results of the present work. There are 9 figures and 6 references: 3 Soviet-bloc, 1 Russian translation from non-Soviet authors and 2 non-Soviet-bloc. The two references to English language publications read as follows:

Card 3/4

S/195/61/002/003/009/009
E030/E433

On the stability of adiabatic ...

Ref.2: C. van Heerden, Ind. Eng. Chem., v.45, 1242, 1953;
Ref.3: C. van Heerden, Chemical Reaction Engineering, 1,
Pergammon Press, N.Y., 1957, p.133.

ASSOCIATIONS: Institut kataliza SO AN SSSR
(Institute of Catalysis, SO AS USSR)
Fiziko-khimicheskiy institut im. L.Ya.Karpova
(Physicochemical Institute imeni L.Ya.Karpova)

SUBMITTED: April 8, 1961

Card 4/4

SLIN'KO, M.G.; YEMEL'YANOV, I.D.

Stability of reversible exothermic processes in a fluidized bed. Kin.i kat. 2 no.4:622-625 Jl-Ag '61. (MIRA 14:10)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR.
(Fluidization)

SOKOL, D.; SLIN'KO, M.G.

First International Conference in Prague on Fluidization Techniques. (MIRA 14:10)
Kin.i kat. 2 no.4:637-638 Jl-Ag '61.
(Fluidization--Congresses)

LEZHNEVA, K.A.; BORISOVA, T.I.; SLIN'KO, M.G.

Anodic oxidation of sulfur dioxide on gold and platinum-gold alloys. Kin.i kat. 2 no.6:854-861 N-D '61. (MIRA 14:12)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.
(Sulfur dioxide)
(Oxidation) (Platinum-gold alloys)

SLIN'KO, M.G., kand.khimicheskikh nauk

Use of electronic calculating machines for the design of contact apparatus. Zhur.VKHO 6 no.5:544-548 '61. (MIRA 14:10)
(Electronic calculating machines) (Chemical apparatus)

BORESKOV, G.K.; SLIN'KO, M.G., kand.khim.nauk

Modeling of catalytic processes. Vest. AN SSSR 31 no.10:29-35 O '61. (MIRA 14:9)

1. Chlen-korrespondent AN SSSR (for Boreskov).
(Catalysis)

S/064/62/000/003/001/007
B110/B101

AUTHORS: Slin'ko, M. G., Ostrovskiy, G. M.

TITLE: Use of computers for controlling contact processes

PERIODICAL: Khimicheskaya promyshlennost', no. 3, 1962, 1 - 7

TEXT: As regards computer control, contact processes fall into the following groups: (A) steady processes in the stable region, using catalysts of long-sustained effect, requiring either (a) maintenance of the optimum made that corresponds to given initial conditions, or (b) optimum conditions close to the permissible limit. (B) steady processes in the unstable region with catalysts of long-sustained effect, (C) unsteady processes with decreasing catalyst activity, (D) contact processes with variable composition of the reaction mixture. The following are cases corresponding to each of these groups: (A) (a) reversible exothermal processes (sulfur dioxide oxidation, NH_3 synthesis, reaction of CO with H_2O vapor etc.). Here the optimum conditions can be tabulated with the aid of computers. (b) Irreversible exothermal processes (partial hydrocarbon oxidation; production of ethylene oxide, maleic anhydride, phthalic

Card 1/2

3606
S/195/62/003/001/008/010
E071/E136

11.1330

AUTHORS: Slin'ko, M.G., Buzhdan, Ya.M., Beskov, V.S., and Yemel'yanov, I.D.

TITLE: Optimal conditions for the production of ethylene oxide

PERIODICAL: Kinetika i kataliz, v.3, no.1, 1962, 145-154

TEXT: The use of computers in the design of multilayer contact plants is illustrated on an example of determining the optimum technological conditions for the process of oxidation of ethylene in consecutive layers of a catalyst with an ideal mixing and in a stationary layer at ideal displacement. It was shown that for two parallel reactions in which the energy of activation of the side reaction is higher than that of useful reaction, the temperature should increase with an increasing degree of conversion. The necessary amount of catalyst for various outputs of ethylene oxide was calculated.
There are 6 figures and 4 tables.

Card 1/2

BORESKOV, G.K.; VASILEVICH, L.A.; GUR'YANOVA, R.N.; KERNERMAN, V.Sh.; SLIN'KO, M.G.; FILIPPOVA, A.G.; CHESNOKOV, B.B.

Oxidation of ethylene in a fluidized bed of a catalyst. Kin.i kat. 3 no.2:214-220 Mr-Ap '62. (MIRA 15:11)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR i Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Ethylene) (Oxidation) (Fluidization)

SLIN'KO, M.G.; OSTROVSKIY, G.M.

Use of calculating machines in the control of catalytic processes. (MIRA 15:4)
Khim.prom. no.3:153-159 Mr '62.
(Catalysis) (Calculating machines)

SLIN'KO, M.G.; TYURYAYEV, I.Ya.; KUZNETSOV, Yu.I.

Optimum operating conditions for hydrocarbon dehydrogenation columns. Khim.prom. no.4:253-259 Ap '62. (MIRA 15:5)
(Hydrocarbons) (Dehydrogenation) (Catalysis)

BORESKOV, G.K.; SLIN'KO, M.G.

Theory of similitude principles applied to heterogeneous catalysis. Khim.prom. no.6:418-424 Je '62. (MIRA 15:11)
(Catalysis) (Chemical models)

SLIN'KO, M.G.; BESKOV, V.S.; SKOMOROKHOV, V.B.

Stability of contact apparatus having internal heat exchange.
Khim.prom. no.9:641-647 S '63. (MIRA 16:12)

BESKOV, V.S.; BUZHDAN, Ya.M.; SLIN'KO, M.G.; Prinimal uchastiye AKIMUTIN, N.M.

Design of contact units with adiabatic beds of a catalyst for the oxidation of sulfur dioxide. Khim. prom. no.10:721-724 O '63. (MIRA 17:6)

VOLIN, Yu.M.; OSTROVSKIY, G.M.; SLIN'KO, M.G.

Principle of the maximum in determining the optimum conditions of exothermic processes. Kin.i kat. 4 no.5:760-767 S-O '63. (MIRA 16:12)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova i Institut kataliza Sibirskogo otdeleniya AN SSSR.

BORESKOV, G.K.; SLINKO, M.G. [Slin'ko, M.G.]

Application of the methods of similitude theory in heterogenous catalysis. Analele chimie 18 no.2:176-189 Ap-Je '63.

BORESKOV, G.K.; SLIN'KO, M.G.

Basic principles of the modeling and optimalization of chemical reactors. Khim.prom. no.1:22-29 Ja '64. (MIRA 17:2)

BESKOV, V.S.; LIBERZON, L.M.; SLIN'KO, M.G.; Prinimali uchastiye. AKIMUTIN, N.M. BURYAK, K.A.; SHINDEROVA, T.A.

Determining the static characteristics of a contact apparatus for the oxidation of sulfur dioxide in order to achieve the optimization of the process. Khim. prom. 40 no.9:678-680 S '64. (MIRA 17:11)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR (for Akimutin).
2. Nauchnyy institut udobreniy i insektofungisidov imeni professora Ya.V. Samoylova (for Shinderova).

KAGAN, Yu.B.; ROZOVSKIY, A.Ya.; SLIN'KO, M.G.; PONOMARENKO, A.T.

Kinetics of heterogeneous catalytic reactions as a function of ignition conditions. Part 2: Reaction of an arbitrary order. Kin.i kat. 5 no.6:1111-1114 N-D '64. (MIRA 18:3)

1. Institut neftekhimicheskogo sinteza imeni Topchiyeva AN SSSR i Institut kataliza Sibirskogo otdeleniya AN SSSR.

NEDUMOVA, Ye.S.; BORESKOV, G.K.; SLIN'KO, M.G.

Kinetics of isotope exchange between hydrogen and water vapors on nickel catalysts. Part 1: Effect of transport processes on the reaction rate. Kin. i kat. 6 no.1:65-73 Ja-F '65. (MIRA 18:6)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva i Institut kataliza Sibirskogo otdeleniya AN SSSR.

BESKOV, V.S.; KUZIN, V.A.; SLIN'KO, M.G.

Modeling of chemical processes in the stationary bed of a catalyst. (MIRA 18:3)
Khim. prom. 41 no.1:4-9 Ja '65.

L 8495-66 EWT(m)/EWP(j)/T/EWP(t)/EWP(b) IJP(c) JD/RM

ACC NR: AP5026478 SOURCE CODE: UR/0195/65/006/005/0909/0915

AUTHOR: Yermakov, Yu. I.; Boreskov, G. K.; Slin'ko, M. G.; Skomorokhov, V. B.

ORG: Institute of Catalysis, SO AN SSSR (Institut kataliza SO AN SSSR)

TITLE: Kinetics and mathematical modeling of the process of suspension polymerization of ethylene on a chromium trioxide catalyst

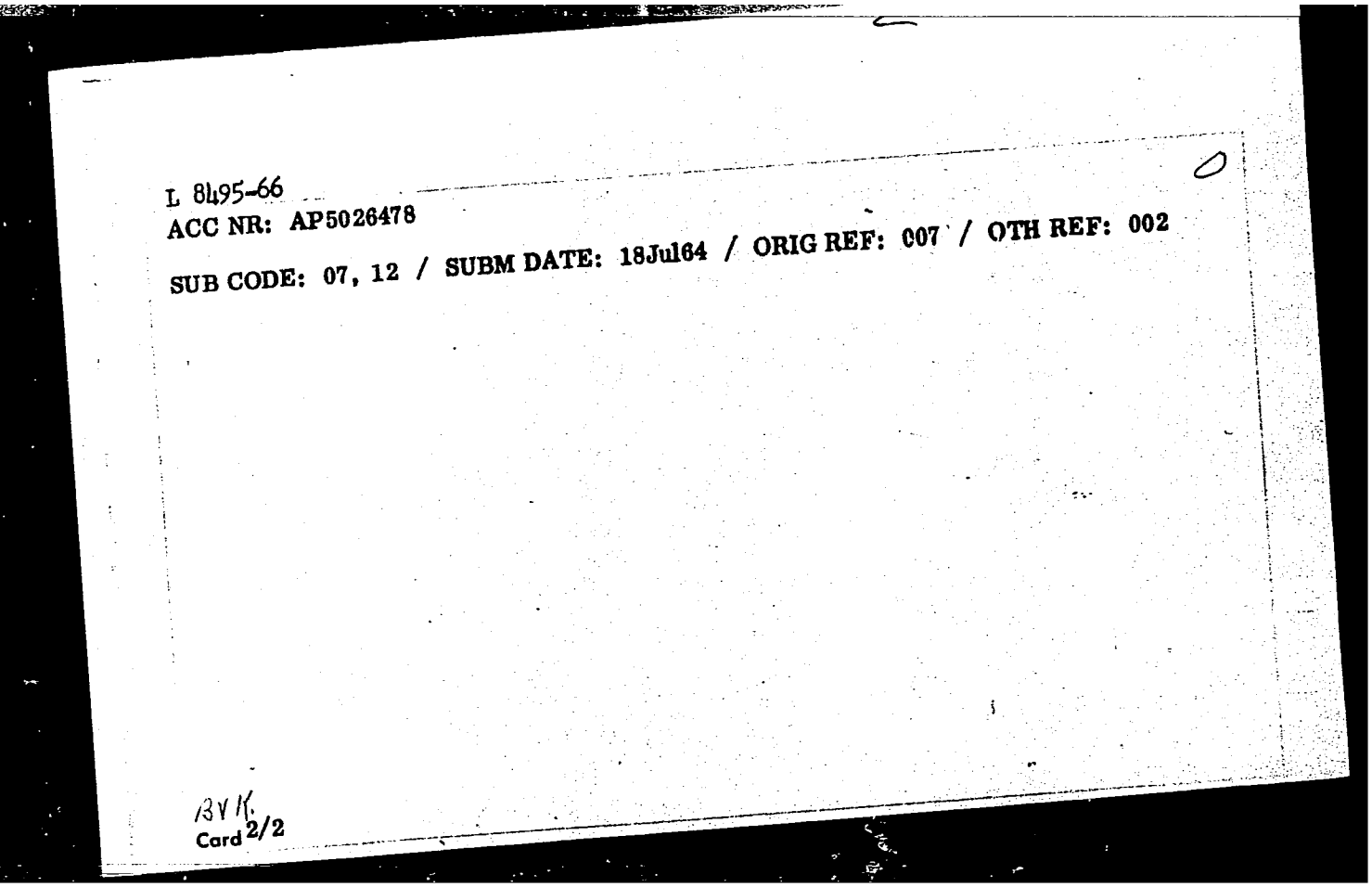
SOURCE: Kinetika i kataliz, v. 6, no. 5, 1965, 909-915

TOPIC TAGS: polymerization rate, ethylene, mathematic model, chromium oxide

ABSTRACT: The kinetic relationships obtained by studying the suspension polymerization of ethylene on a chromium trioxide catalyst are considered mathematically. The process was simulated on an MN-14 analog computer. The experimental curves of the polymerization rate versus catalyst concentration and ethylene pressure are compared with the curves obtained by the computer, and it is shown that the mathematical description correctly expresses the relationships found experimentally. The proposed mathematical description may be used for calculating the optimum conditions of the reactor unit in an industrial application of the process of suspension polymerization. Orig. art. has: 4 figures and 14 formulas.

UDC 541.124:542.952.6:547.313.2

Card 1/2



L 8495-66
ACC NR: AP5026478

SUB CODE: 07, 12 / SUBM DATE: 18Jul64 / ORIG REF: 007 / OTH REF: 002

13Y K
Card 2/2

BORESKOV, G.K.; SLIN'KO, M.G.

Mathematical modeling of chemical reactors. Khim. i tekh. topl. i masel 10 no.8:30-33 Ag '65. (MIRA 18:9)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR.

SLIN'KO, N.F.; FEDORENKO, G.I.

Increasing the durability of tapping hole and trough refractories. Metallurg 6 no.5:7-9 My '61. (MIRA 14:5)

1. Zamestitel' nachal'nika domennogo tsekha Krivorozhskogo metallurgicheskogo zavoda (for Slin'ko). 2. Master domennoy pechi Krivorozhskogo metallurgicheskogo zavoda (for Fedorenko).
(Blast furnaces--Equipment and supplies)
(Refractory materials)

ZAGREBA, A.V.; SLINK'KO, N.F.; FEDORENKO, G.I.

Calculation and correction of the burden during the blast furnace process. Metallurg 6 no.10:1-7 O '61. (MIRA 14:9)

1. Krivorozhskiy metallurgicheskiy zavod. 2. Nachal'nik domennogo tsekha Krivorozhskogo metallurgicheskogo zavoda (for Zagreba). 3. Zamestitel' nachal'nika domennogo tsekha Krivorozhskogo metallurgicheskogo zavoda (for Slin'ko). 4. Master Krivorozhskogo metallurgicheskogo zavoda (for Fedorenko).

(Blast furnaces—Equipment and supplies)

ZAGREBA, A.V.; SLIN'KO, N.F.; FEDORENKO, ..I.

Blowing-out and the operations of a blast furnace with a 2000 m3 capacity. Metallurg 7 no.1:8-13 Ja '62. (MIRA 15:1)
(Blast furnaces)

SLINKO, M. T.

Distr: 4E2c/4E4j

Photocolorimetric determination of iron in titanium. B. I. Nikitina and N. T. Slinko. U.S.S.R. 107,911. Oct. 25, 1957. Fe is detd. without sepg. the Ti. The detn. is made with the aid of sulfosalicylic acid in an ammoniacal medium so that the Ti is fixed in a colorless complex. M. Hosch

BURMISTROV, V.M., ZAYTSEVA, K.K., SLINKO, V.G., CHALISOV, I.A.

"Characteristics of the Course and Early Dermal Plastic Surgery of Third Degree Thermal Burns in Animals Affected by Penetrating Radiation," p. 44 Military Medicine 1956

lecture delivered at a conference of Soviet military physicians at the Military Medical Academy im. S.M. Kirov, Leningrad, 29-October - 2 Nov 56.

BURMISTROV, V.M., kand.med.nauk (Leningrad, ul. Petra Lavrova, d.48, kv.1)
SLIWKO, V.G., kand.med.nauk.

Necrectomy and dermoplasty in third-degree thermal burns in the latent period of radiation sickness [with summary in English]. Vest.khir. 80 no.6:74-78 Je '58 (MIRA 11:7)

1. Iz Voyenno-meditsinskoy ordena Lenina akademii im. S.M. Kirova.
(RADIATION, eff.
on skin transpl. after third degree exper. burns in animals (Rus))
(BURNS, exper.
eff. of radiations on skin transpl. in exper. third. degree burns in animals (Rus))
(SKIN TRANSPLANTATION, exper.
eff. of x-irradiations on auto & homografts in exper. third degree burns in animals (Rus))

BURMISTROV, V.M., mayor meditsinskoy sluzhby, kand.med.nauk; SLINKO, V.G., kand.med.nauk

Local course of third degree burns in radiation sickness. Voen.-med. zhur. no.8:12-16 Ag'58. (MIRA 16:7)
(BURNS AND SCALDS) (RADIATION SICKNESS)

IOFFE, A.I.; SLINKOV, V.K., nauchnyy sotrudnik; KUNGS, Ya.A., nauchnyy sotrudnik

System of the automatic control of log frame saws. Trudy VSNIPIlesdrev no.8:3-13 '63. (MIRA 18:11)

1. Nachal'nik laboratorii elektrotekhniki i avtomatiki Vostochno-Sibirskogo nauchno-issledovatel'skogo i proyektnogo instituta lesnoy i derevoobrabatyvayushchey promyshlennosti (for Ioffe). 2. Laborariya elektro-tekhniki i avtomatiki Vostochno-Sibirskogo nauchno-issledovatel'skogo i proyektnogo instituta lesnoy i derevoobrabatyvayushchey promyshlennosti (for Slinkov, Kungs).

L 39699-65 EPF(c)/EPR/EWG(j)/EWP(k)/EWP(z)/EWP(m)/EWP(b)/EWP(e)/EWP(t) Pf-4/Pr-4/
Ps-4 IJP(c) ES/JD/JG

ACCESSION NR: AP5006780 S/0195/65/006/001/0155/0158

34
32
B

AUTHOR: Slinyakova, I. A.

TITLE: The genesis and porous structure of beryllium oxide

SOURCE: Kinetika i kataliz, v. 6, no. 1, 1965, 155-158

TOPIC TAGS: beryllium inorganic compound, colloid, catalyst

ABSTRACT: A study was made of the effect which the genesis of beryllium oxide xerogels has on the porous structure of beryllium oxide catalysts (for synthesis of organic compounds). Reaction of the medium for precipitation and ripening of the suspension affects the porous structure of beryllium oxide. In the case of precipitation in a medium with a pH of 7.7-8.5, xerogels of beryllium oxide are formed with a highly developed specific surface. Precipitation and ripening in a medium with a pH of 5.5 produce samples which have a small specific surface, a small volume of adsorption pores, and a large number of macropores. Change in the calcining temperature from 150 to 400°C increases somewhat the specific surface of the calcined beryllium oxides. The nature of the anion of the beryllium salt (SO_4^{2-} or NO_3^-) employed for the precipitation of beryllium hydroxide affects the porous structure of the final product. The SO_4^{2-} ion facilitates the formation of beryllium oxides

Card 1/2

L 39699-65

ACCESSION NR: AP5006780 2

with a highly developed specific surface. "The author expresses gratitude to I. Ye. Neymark for his advice and help in carrying out this work." Orig. art. has: 3 figures, 2 tables.

ASSOCIATION: Institut fizicheskoy khimii imeni L. V. Pisarzhevskogo AN UkrSSR (Institute of Physical Chemistry, Academy of Sciences UkrSSR)

SUBMITTED: 24Jul63 ENCL: 00 SUB CODE: IC

NO REF SOV: 008 OTHER: 003

Card 2/2 MS

SLIN'YAKOVA, I. B.

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
General and Physical Chemistry

(4)

The role of structure of adsorbents in molecular chromatography. L. E. Neimark; I. B. Slin'yakova, and F. I. Khatset; *Issledovaniya v Oblasti Khromatog., Trudy Vsesoyuz. Soveshchaniya Khromatog., Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1950, 98–102(Pub. 1952).—Adsorption of C_6H_6 from solns. in heptane by SiO_2 gel specimens with high or low degrees of porosity showed that selective adsorption of C_6H_6 takes place only with fine-porosity specimens. By repeated adsorption-desorption cycles complete sepn. was readily achieved. The mere surface area of the adsorbent does not establish the sepn. activity of a given specimen of an adsorbent; the pore structure is the important factor. G. M. Kosolapoff

MF
11-11-54

1. CHERNOBYL'SKAYA, M. N. AND SLINYAKOVA, I. B.

2. USSR (600)

7. "Concerning a Method of Discovering Infection in the Acetone-Butyl Industry", Naukovi Zapiski Kiivs'k. Derzhav. Univers. im. T.T. Shevchenko (Scientific Notes of the Kiev State University imeni T.T. Shevchenko), Vol 9, No 8, 1950, pp 145-149.

9. Mikrobiologiya, Vol XXI, Issue 1, Moscow, Jan-Feb 1952, pp 121-132. Unclassified.

DUBININ, M.M., akademik, otvetstvennyy redaktor; GAPON, Ye.N.; GAPON, T.B.; ZHYRAKHINA, Ye.S.; RACHINSKIY, V.V.; BELEN'KAYA, I.M.; SHUVAEVA, G.M.; ROGINSKIY, S.Z.; YANOVSKIY, N.I.; FUKS, N.A.; KISELEV, A.V.; NEYMARK, I.Ye.; SLINYAKOVA, I.B.; KHATSET, F.I.; LOSEV, I.P.; TROSTYANSKAYA, Ye.B.; TEVLINA, A.S.; DAVANKOV, A.B.; SALDADZE, K.M.; BRUMBERG, Ye.M.; ZHIDKOVA, Z.V.; VEDENEEVA, N.Ye.; NAPOL'SKIY, S.A.; MIKHAYLOVA, Ye.A.; KAZANSKIY, B.A.; RYABCHIKOV, D.I.; SHEMYAKIN, F.M.; KRETOVICH, V.L.; BUNDEL', A.A.; SAVINOV, B.G.; VENDT, V.P.; EPSHTEYN, Ya.A.

[Research in the field of chromatography transactions of the All-Union Conference on Chromatography, November 21-24, 1950] Issledovaniia v oblasti khromatografii; trudy Vsesoiuznogo soveshchaniia po khromatografii, 21-24 noiabria 1950 g. Moskva, Izd-vo Akademii nauk SSSR, 1952. 225 p. (MLRA 6:5)

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

SLINYAKOVA, I.B.

USSR

Hydrophilic and adsorption properties of some naturally occurring sorbents. F. D. Ovcharenko, I. B. Nelmark, I. B. Slinyakova, and S. S. Bykov. *Dopovidi Akad. Nauk Ukr. RSR* 1952, 47-51(Russian summary, 452).—Native Ukrainian clays, a Kamenets-Podol'ski bentonite (I), an Askangel' (II), and a Dubrovskii kaolin (III) were investigated *per se* or after activation with ions. The influence upon the properties decreased in the series: $Ca^{++} > H^+ > Na^+ > K^+$. Example: dried I can bind 19.58 g. H_2O/100 g. and the heat of wetting for natural I is 19.6, dried I 20.4. Ca—I 19.4, H—I 18.2, Na—I 13.2, and K—I 7.74 cal./g. I Ca—I adsorbs 0.22, H—I 0.175, and K—I 0.144 ml. C_6H_6/g.; the values for MeOH and H_2O show a similar trend. From satd. vapor I will adsorb 19.8, II will adsorb 9.9, and III will adsorb 12.9% C_6H_6. Isotherms are presented for the activated and unactivated clays for adsorption of MeOH, H_2O, and heptane. It is concluded that I would be the best clay for the industrial drying of gases and for the adsorption of valuable vapors from gases, if these are present in low concns. only.

Werner Jacobson

OVCHARENKO, F.D.; NEYMARK, I.Ye.; SLYNYAKOVA, I.B.; BYKOV, S.F.; DUMANS'KYY, A.V., diysnyy chlen.

Hydrophilic and adsorption properties of certain natural sorbents. Dop. AN URSR no.6:447-452 '52. (MLRA 6:10)

1. Akademiya nauk Ukrayins'koyi RSR (for Dumans'kyy). 2. Instytut fizychnoyi khimiyi i instytut zahal'noyi ta neorganichnoyi khimiyi Akademiyi nauk Ukrayins'koyi RSR (for Ovcharenko, Neymark, Slynyakova and Bykov).
(Sorbents) (Clay)

NEYMARK, I.Ye.; SLINYAKOVA, I.B.

Effect of the conditions of obtaining chalk-like silica gels, on their properties and structure. Koll.zhur. 15 no.4:277-283 '53. (MLRA 6:8)

1. Institut fizicheskoy khimii Akademii nauk SSSR imeni L.V.Pisarzhevskogo (Kiyev). (Silica gel)

Slinyakova, I. B.

/1
3

Effect of the formation conditions of chalk-like silica gels on their properties and structure. I. E. Neimark and I. B. Slinyakova. *Colloid J. U.S.S.R.* 15, 285-90(1953) (Engl. translation).—See *C.A.* 47, 11887e. H. L. H.

NF

NEYMARK, I.Ye.; PIONTKOVSKAYA, M.A.; SLINYAKOVA, I.B.

Structure and sorptive capacity of Ukrainian bentonites.
Bent. gliny Ukr. no.1:47-52 '55. (MIRA 12:12)

1.Institut fizicheskoy khimii AN USSR.
(Ukraine--Bentonite)

NEYMARK, I.E., SLINYAKOVA, I.B.

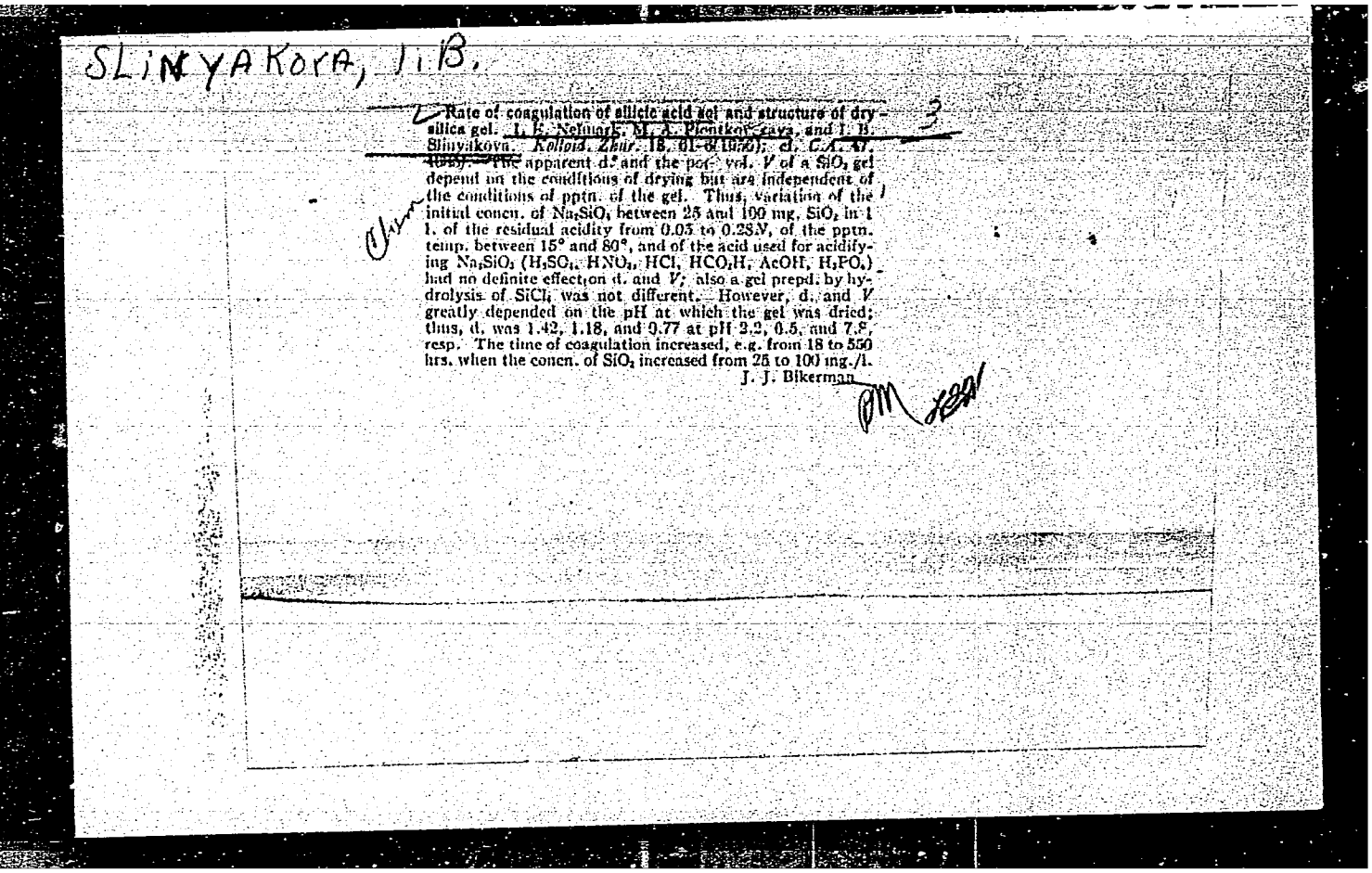
Changes in the structure of silica gel under the action of alkali and hydrofluoric acid. Dop. AN URSR no.5: 469-473 '55. (MLRA 9:3)

1. Institut fizichnoi khimii imeni L.V. Pisarzhevs'kogo AN URSR. Predstaviv diysniy chlen AN URSR O.I. Brods'kiy.
(Silica gel)

SLINYAKOVA, I. B.

SLINYAKOVA, I. B.: "The effect of production conditions on the porous structure and sorption properties of silica gels." Acad Sci Ukrainian SSR. Inst of Physical Chemistry imeni L. V. Pisarzhevskiy. Kiev, 1956. (DISSERTATION FOR THE DEGREE OF CANDIDATE IN CHEMICAL SCIENCE)

So.: Knizhnaya letopis' No 15, 1956, Moscow



SLINYAKOVA, I. B.

Rate of coagulation of silicic acid gel and structure of dry silica gel. I. B. Nefimov, M. A. Plenkova-Lavs, and I. B. Slinyakova. *Kolloid. Zhur.* 15, 61-8 (1953). Cf. *C.A.* 47, 4085f. The apparent d. and the pore vol. *V* of a SiO_2 gel depend on the conditions of drying but are independent of the conditions of pptn. of the gel. Thus, variation of the initial concn. of Na_2SiO_3 between 25 and 100 mg. SiO_2 in 1 l. of the residual acidity from 0.05 to 0.28 *N*, of the pptn. temp. between 15° and 80°, and of the acid used for acidifying Na_2SiO_3 (H_2SO_4, HNO_3, HCl, HCO_2H, AcOH, H_3PO_4) had no definite effect on d. and *V*; also a gel prepd. by hydrolysis of $SiCl_4$ was not different. However, d. and *V* greatly depended on the pH at which the gel was dried; thus, d. was 1.42, 1.18, and 0.77 at pH 2.2, 0.5, and 7.8, resp. The time of coagulation increased, e.g. from 18 to 550 hrs. when the concn. of SiO_2 increased from 25 to 100 mg./l.

J. J. Bikerman

SLINYAKOVA, I. B.

5000

2

9063* Influence of Cations and the pH of Silicic Acid Hydrogels on the Structure of Dry Silica Gel. **Vliianie kationov i pH gidrogelia kremnevoi kisloty na strukturu sukhogo silikagelia.** (Russian.) I. E. Neimark and I. B. Slinjakova. *Kolloidnyi Zhurnal*, v. 18, no. 2, Mar.-Apr. 1956, p. 219-226.

The pore structure of the silica gels can be controlled over a wide range by varying the pH of the hydrogel. Tables, graphs, 8 ref.

Slinyakova, I. B.

6
4E4
4E2

Effect of the reaction of the precipitation medium and of the pH of the wash water on the structure of chalk-like silica gels. I. E. Nelmark and I. B. Slinyakova (Inst. Phys. Chem., Acad. Sci. Ukr. S.S.R., Kiev). *Kolloid. Zhur.* 19, 700–12(1957); cf. *C.A.* 50, 9103a.—To a Na_2SiO_3 soln. a $FeCl_3$ soln. was gradually added and the ppt. was crfd. with 6*N* HCl. When the amt. of $FeCl_3$ added was so small that the ppt. formed at pH 11, the final gel (after drying) was coarsely porous; the vol. V_1 of pores in 1 g., was e.g., 2.1 cc., and the vol. V_2 of macropores was, e.g., 0.95 cc./g. When so much $FeCl_3$ was added that the pH was 0.37, V_1 and V_2 were 0.66 and 0.24, resp. Similar results were obtained also when Na_2SiO_3 was pptd. with $NiCl_2$. The pH of H_2O used to wash the gels after the removal of Cl^- had no strong effect on V_1 and V_2. As the Fe in the fresh ppt. could not be removed with 6*N* AcOH, it could not be present as $Fe(OH)_3$. Apparently, a compd. $Na_2O.aFe_2O_3.bSiO_2.mH_2O$ first formed.

J. J. Bikerman

SLINYAKOVA, I. B.

69-20-1-8/20

AUTHORS: Kiselev, A.V.; Lygin, V.I.; Neymark, I.Ye.; Slinyakova, I.B.; Chen' Ven'-khan.

TITLE: Electron Microscopic and Adsorption Studies of Silica Sols and Silica Gels (Elektronno-mikroskopicheskoye i adsorbtsionnoye issledovaniya silikazoley i silikageley)

PERIODICAL: Kolloidnyy Zhurnal, 1958, Vol XX, # 1, pp 52-58 (USSR)

ABSTRACT: The globular theory of the structure of many gels (silica-gels, alumo-silica-gels, titano-gels) postulates that the framework of these gels is made of ball-shaped primary particles. In the article the results of an electron microscopic study are represented. The substances investigated are stabilized sols, peptized hydro-gels washed with liquids of different pH, and xerogels obtained from these hydrogels. The sols and hydrogels were investigated after application and drying on a collodion support. The collodion supports by applying a 1%-solution of collodion in amylacetate on the surface of distilled water. Hydrosols were investigated by making a carbon replica of them. A carbon film of 100 angstrom was applied in a vacuum device by means of thermal

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spraying. The carbon film is fixed by paraffin and shaded by chromium. The obtained replica has a dissolution of 50 angstrom and is investigated by means of the electronic microscope UEM-100 working with 60 kv. The sol particles of 50-100 angstrom form in the early stages of the colloid before the formation of the hydrogel. During further gel formation the size of the particles is not increased. The electron microscopic investigation of xerogels is more difficult, because the dense framework does not allow a detailed analysis. Carbon replicas were used, therefore, to investigate the porous structure. Fig. 3, v,g, represents the stereomicrophotography of a xerogel, the initial hydrogel of which has been washed by a liquid with a pH of 10.2. In fig. 3,d the hydrogel has been washed with a liquid of pH 8.2. The adsorption method leads to the same results: the adsorption isotherms of methanol vapors and the distribution curves of the pore diameters show that a decrease in the pH value of the washing liquid causes the formation of

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AUTHOR: Slinyakova, I.B., Neymark, I.Ye.

TITLE: The Structure and Adsorptive Properties of Silica Gels Prepared from Alkaline Media (Struktura i adsorbtsionnyye svoystva silikageley poluchennykh iz shchelochnykh sred)

PERIODICAL: Kolloidnyy Zhurnal, 1958, Vol XX, # 1, pp 84 - 91 (USSR)

ABSTRACT: Alkaline silica-gels are prepared by precipitation in an excess of sodium silicate. In the article, the influence of several factors, especially the pH of wash-water, on the porous structure and the sorptive properties of the gels has been investigated. The hydrogels precipitated in an alkaline medium were divided into two groups. One was washed by an aqueous solution of pH 2.0-2.5, the other with pH 8.5-10.3. The washing was continued for 12 days. Table 1 shows the structural-sorptive characteristics of these silica-gels. The two groups differ, especially in their specific surface and the distribution of the pores according to radius. The adsorption isotherms in silica-gels washed by acid water, are higher in the field of small values than in silica-gels washed by alkaline water. This indicates that in acid-washed silica-gels the micropores and the specific surface is higher. The effective pore

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radius of such gels is small. The increase of the specific surface, by washing with acid solutions of pH 2, is explained by the reaction of the acid with unreacted sodium silicate in the intermicellar space of the gels. In the washing of alkaline hydrogels by weakly acid solutions (pH >2.0) an alkalization of the washing water takes place, which is caused by the ion exchange of the silicate cation against the hydrogen ion of the acid. The specific surface of these coarsely porous silica gels is not large. Table 2 shows the reaction of the washing water after washing, and the structural characteristics of the silica-gels obtained. The experimental facts demonstrate that it is possible to produce silica gels with a large specific surface containing many fine and coarse pores. The treatment of alkaline hydrogels with concentrated acids leads to the formation of silica-gels with a large mass of small pores, and to a very high total porosity. Table 4 shows that the washing of alkaline hydrogels by concentrated acids increases only the effective radius of the pores. The specific surface of the investigated gels ranges

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from 550 m^2/g to 700 m^2/g.
There are 6 figures, 4 tables, and 7 references, 6 of which are Soviet, 1 English.

ASSOCIATION: Institut fizicheskoy khimii AN UkrSSR imeni L.R. Pisarzhevskogo, Kiyev (Institute of Physical Chemistry of the AS Ukrainian SSR imeni L.R. Pisarzhevskiy, Kiyev)

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doubled. The study of the effect of the temperature of sediment maturation revealed that higher temperatures equally result in an increase in the total of pore volume. The increase, however, was less remarkable than in the aforementioned case. The greatest effect was obtained by substituting isobutyl alcohol and benzene for the intermicellar liquid of a hydrogel (iron hydroxide). Table 3 shows that in the case of isobutyl alcohol as intermicellar liquid, ferrogels are formed with considerable over-all porosities, five-six times those of unsubstituted samples. The sorption pore volume was doubled and also tripled in some cases. Benzene was less effective as an intermicellar liquid. The total of pore volume was approximately doubled. The experiments have shown that the effect of basic factors (surface tension of intermicellar liquid, temperature of sediment ripening pH value etc.) on the porous structure of hydrated iron oxides is analogous to the effect of the same factors on silica

Preparation and Adsorption Properties of Ferrogels of Various Porous Structures

gels. It is probable that the fundamental principles concerning the formation of the porous structure of hydrophylic sorbents, which were developed by the authors,can also be applied to ferrogels. The authors mention the Soviet scientists: G.M. Virskaya, B.G. Zaprometov, A.V. Dumanskiy, S.A. Levina and N.F. Yermolenko. There are 5 graphs, 4 tables and 17 references, 13 of which are Soviet, 3 English and 1 German.

ASSOCIATION: Institut fizicheskoy khimii AN USSR im. L.V. Pisarzhevskogo, Kiyev (Institute of Physical Chemistry of the AS UkrSSR imeni L.V. Pisarzhevskiy, Kiyev)

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AUTHORS: Neymark, I. Ye., Chuyko, A. A., Slinyakova, I. B.

TITLE: Olefine-substituted silicas as active fillers of polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 5, 1961, 711-715

TEXT: The authors varied the properties of silica by substituting the OH groups of its surface, and studied the effectiveness of the modified silica as a filler of polymethylmethacrylate. Since the presence of double bounds on the surface of the filler promised an especially high activity, the authors modified coarse-pored silica gel, silipur (fine-disperse silica), and powdered silica gel by the following methods: 1) introduction of the allyl radical by reaction of an organomagnesium allyl compound and silica chlorinated on its surface; 2) treatment of chlorinated silica gel with allyl alcohol in the autoclave at 200°C for 2 hr; 3) treatment of silica gel with methylvinyl dichlorosilane vapor and subsequent removal of the nonreacted chlorosilane by heating in vacuo to 200°C; 4) esterification of the nonchlorinated silica by allyl alcohol at 200°C for 2 hr. The results are listed in a table. The quantity of the organic substance chemically sorbed on the sur-

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face of silica was determined by bromination of the double bond; it is termed "iodine number." In the samples 8-10, the methylvinyl dichlorosilane chemically sorbed was determined from the increase in weight. The sorption isotherms for methanol, benzene, and heptane showed that the adsorptive power decreases with increasing substitution of the OH groups by unsaturated organic radicals. Fig. 1 illustrates this phenomenon for silica gel modified by allyl radicals. The same behavior was exhibited by silica gel containing methylvinyl radicals. Samples of the modified silica gel were used as fillers of polymethylmethacrylate (PMMA). 0.1% benzoyl peroxide was added to methylmethacrylate, and polymerization was carried out (with varying quantities of fillers) in sealed ampoules at 60°C for 20 hr. Fig. 3 presents the thermomechanical curves of the polymers obtained. The samples 1, 2, 3 indicated in the Fig. were soluble in boiling dichloroethane after 7 hr, while samples 4, 5, and 6 were only swollen even after 50 hr. Compared to sample 1, the vitrification temperature of sample 5 increased by 12°C, and that of sample 6 by 19°C. The double bonds of olefine-substituted silica caused an intense cross linking of PMMA. Thus, the physico-chemical properties of polymers can be improved, and the cost of polymers can be reduced by the use of modified silica. There are 3 figures, 1 table, and

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15 references: 13 Soviet-bloc and 2 non-Soviet-bloc. The reference to English-language publication reads as follows: M. C. Brooks, F. W. Boggs, R. H. Evart, Indian Rubber Bull., 1958, N 118, 15.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo AN USSR (Institute of Physical Chemistry im. L. V. Pisarzhevskiy, AS UkrSSR)

SUBMITTED: July 20, 1960

Table: Content of radicals in modified silica gel.
Legend: 1) number of samples; 2) radical; 3) modification method; 4) number of radicals, mmole/g silica gel; 5) iodine number; 6) synthesis of allyl; 7) ditto; 8) methylvinyl; 9) organo-magnesium; 10) chlorinated silica gel treated with alcohol; 11) esterification; 12) treatment with organosilicon compounds.