MARGOLIS L. Ya.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 32/52

Authors : Vasilyev, V. N.; Yelovich, S. Yu; and Margolis, L. Ya.

Title : The reaction mechanism for the oxidation of CO over active MnO_2

Periodical : Dok. AN SSSR 101/4, 703-706, Apr 1, 1955

Abstract : The oxidation reaction of CO over active MnO_2 was investigated at a low temperature of 20°, and low static pressures. The preparation for the reaction, the apparature and the process in itself are described. An analysis of the isotopic data obtained shows that the CO, regardless of the low test pressures, interchanges with the surface of the MnO_2 and that this isotopic exchange is governed by the law of first order. The exchange of CO with MnO_2 during their reaction at 20° was found not to depend upon the nature of the contact surface. The exchange was different than the exchange without a reaction. Nine references: 7 USSR, 1 USA and 1 English (1923-1954). Table; graphs.

Institution : Acad. of Sc., USSR, Institute of Phys. Chem.

Presented by : Academician A. N. Frumkin, November 6, 1954

Maegolis, L. Ya.

The possible role of ethylene oxide in the oxidation of unsaturated hydrocarbons over vanadium contacts. L. Ya. Margolis and S. Z. Roginskii. *Doklady Akad. Nauk. S.S.S.R.* 96, 849–51(1954).—The purpose of the work reported was to elucidate the possible role of ethylene oxide as an intermediate product and the reason for its absence in the products of the oxidation of ethylene over oxides. The oxidation of ethylene oxide and its mixts. with ethylene tagged with C^{14} was carried out under static conditions over V_2O_5 at pressures of about 0.5 mm. and a temp. of 350°. From the distribution of the radioactivity between different products it was possible to follow the transformation of ethylene oxide and olefins in mixts. and to elucidate the genetic relationship of different reaction products. Data are given for a typical oxidation carried out with ethylene, ethylene oxide, and O on V_2O_5 at 350°. From the isotopic data the relative rate of formation of CO and CO_2 from the mixt. of hydrocarbon and ethylene oxide was calcd. And this calcn. showed that the presence of ethylene oxide intensifies the formation of CO from ethylene and retards its complete oxidation to CO_2. The process of oxidation and decompn. of AcH in the presence of ethylene oxide on V_2O_5 was also of great interest. CO was formed to an equal extent both from AcH and from ethylene oxide; 80% of the CO_2 was obtained from the aldehyde and 20% from ethylene oxide. The aldehyde was sorbed more strongly on the contact surface than was the ethylene oxide. The ratio of the rates of formation of CO and CO_2 was 3.4, from pure aldehyde, but it was 1.3 with the presence of ethylene oxide. The absolute rate of formation of CO_2 from the aldehyde increased by 2.6 times at a steady rate of CO generation. The ethylene oxide, changing the rate of decompn. of the aldehyde, increases its complete oxidation. Thus was encountered an example of mutual induction of two oxidizing reactions, where their conjugation apparently was connected with the effect on the condition of the contact surface, common to both reactions. Data showed that neither the aldehyde nor the ethylene oxide could be the chief intermediate product of oxidation of unsatd. hydrocarbons, and this might depend either on the absence of stable intermediate products in the process, or on the initial formation of compds. not studied yet, e.g., Ac_2O_3 or MeOH.

Gladys S. Macy

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Margolis, L. Ya.

62 ✓ Aldehydes in the catalytic oxidation of unsaturated hydrocarbons. L. Ya. Margolis and S. Z. Roginskii. *Doklady Akad. Nauk S.S.S.R.* 96, 311–14 (1954).—The oxidation of olefins on a V_2O_5 catalyst was studied by using C^{14}. A mixt. of AcH and C_2H_4 was oxidized catalytically. In one series of expts. the C^{14} was introduced in the form of the aldehyde and in the other series it was introduced in the form of the olefin. The results show that for C_2H_4 the presence of the aldehyde increased the rate of formation of CO_2 by a factor of 1.7. The rate of formation of CO and CO_2 is independent of the concn. of the hydrocarbon. J. R. L.

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Periodical : Izv. AN SSSR. Otd. khim. nauk 6, 958-965, Nov-Dec 1954

Card 2/2 Pub. 40 - 2/27

Abstract : The ratio between the activation energies of primary and secondary oxidation reactions makes it impossible to increase the aldehyde content in the reaction products by changing the reaction temperature and the concentration of the reacting substances. Seven references: 6 USSR and 1 English (1934-1954). Tables; graphs.

MARGOLIS, L. YA.

USSR/Chemistry - General chemistry

Card 1/2 Pub. 40 - 2/27

Authors : Margolis, L. Ya.; Malyarova, E. P.; and Roginskiy, S. Z.

Title : The kinetics of oxidation of simple unsaturated hydrocarbons over V-contacts

Periodical : Izv. AN SSSR. Otd. khim. nauk 6, 958-965, Nov-Dec 1954

Abstract : The order of formation of aldehydes, carbon monoxide and carbon dioxide during the oxidation of propylene over vanadium contacts is described. The reaction activation energies necessary for the formation of aldehydes, CO and CO_2 from simple unsaturated hydrocarbons were determined. The kinetics of decomposition and oxidation of acetaldehyde over V contacts was investigated and the activation energy of these reactions was established.

Institution : Acad. of Scs. USSR, Institute of Physical Chemistry

Submitted : July 24, 1954

MARGOLIS, L. YA.

The application of tracer carbon to a study of the mechanism of the catalytic oxidation of ethylene on silver. S. Z. Roginskii and L. Ya. Margolis. *Doklady Akad. Nauk S.S.S.R.* 89, [illegible]. A mixt. of ethylene (I) contg. radioactive C^{14}, ordinary ethylene oxide (II), and O at a total pressure of less than 0.5 mm. was allowed to react at 205° over a Ag catalyst in a static system. The sp. activity of the CO_2 obtained was much greater than that of the ethylene oxide. Kinetic study of the reaction showed that the concn. of II passed through a max. with time but that of I increased steadily. The behavior of II is attributed to a combination of a process producing it and one consuming it. The addn. of II inhibited the oxidation of I owing probably to selective poisoning of the catalyst. From these results it is concluded that the oxidation of I to CO_2 does not proceed through II but that 2 independent reactions are involved. Joseph B. Levy

MARGOLIS, L. Ya.

Catalytic oxidation of simplest unsaturated hydrocarbons by heavy oxygen. L. Ya. Margolis and P. G. Plyster-skaya. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1953, 697-703.—Oxidation of hydrocarbons was run under static conditions under reduced pressure as described earlier (*ibid.* 1952, 415). Oxidation of C_2H_4 and $MeCH:CH_2$ over V_2O_5, V_2O_4, and $MgCr_2O_4$ with O^{18} showed a different degree of participation in the reaction of the O of the catalyst. A definite connection exists between the formation of products of incomplete oxidation (aldehydes) and participation of the catalyst O. Mass spectroscopy was employed for analysis of the products. As the temp. is raised from 360° to 430° in the oxidation of C_2H_4 over V_2O_5, the amt. of unreacted olefin declines, but adsorption of the olefin on the catalyst remains low (6–9%) and the ratio CO/CO_2 increases. At low satn. of the surface with O_2 the amt. of O on the surface or in the gas phase alters the reaction course, since increased O concn. leads to greater degree of total combustion. The rate of oxidation on V_2O_4 is greater than on V_2O_5 (curves shown). On V_2O_5 the participation of the catalyst O reaches but 30%, while on V_2O_4 it is much higher. In the oxidation of propene absorbed on the catalyst surface, the rate of surface reaction is rather low, but as the concn. of O is lowered the rate of surface reaction rises in comparison with the reaction which involves catalyst O; decrease of O in the gas phase increases the concn. of CO, i.e. indicating incomplete combustion. Thus the formation of aldehydes is shown to proceed largely at the expense of the catalyst O content. The proportion of the surface reaction on V_2O_4 is 42%, on V_2O_5 30%, on Pt none. G. M. Kosolapoff

PA 235T25

MARGOLIS, L. Ya.

USSR/Chemistry - Isotopes 11 Sep 52

"The Synthesis of Ethylene Tagged With C^{14}," L.Ya. Margolis, B.V. Klimenok, O.A. Golovina, Inst of Phys Chem, Acad Sci SSSR

"Dok Ak Nauk SSSR" Vol 86, No 2, pp 313-315

Ethylene, tagged with C^{14}, was prepd by reducing acetylene at low (10^{-5} mm) pressures and at atm pressure using $CrCl_3$ in HCl. The use of the latter insures the complete reduction of acetylene into ethylene. Large quantities of radioactive ethylene are prepd more readily at atm pressure. If the radioactive ethylene is to undergo prolonged storage, the authors recommend converting it to ethyl bromide, which may be reconverted readily to ethylene with metallic zinc. Presented by Acad A.N. Frumkin 10 Jun 52.

235T25

(CA 47 no.22:12209 '53)

USSR/Chemistry - Catalysts, Heavy Oxygen May/Jun 52

"Study by Means of O^{18} of the Oxygen Exchange on Vanadium Catalysts," L. Ya. Margolis, Ye. G. Plyshevskaya, Inst of Phys Chem, Acad Sci USSR

"Iz Ak Nauk, Otdel Khim Nauk" No 3, pp 415-421

Heavy oxygen was obtained by electrolysis of heavy CO_2 contg 0.9% O^{18}. Using oxidation catalysts (V_2O_5, V_2O_4, $MgCr_2O_4$, Ag) which did not contain O^{18} in the gas phase. Using studied exchange with O^{18} was introduced the same catalysts into which O^{16} in the by means of H_2O^{18}, studied exchange with 220T6

MARGOLIS, L. Ya.

gas phase. The kinetics of O_2 adsorption on V catalysts at temps 250-400° were established in this manner. The inhomogeneity of the surface of V catalysts was demonstrated. Oxygen exchange at catalysts of mild and severe oxidation reaction (350-450°). at the temp of the oxidation reaction was detd The mass-spectrographic method of analysis was applied in investigating the oxygen resulting from the exchange after conversion into $CO^{18}O^{16}$ and CO_2^{16}.

220T6

2

Catalytic oxidation of ethylene on magnesium chromite
L. Ya. Margolis and O. M. Todes (Inst. Phys. Chem. Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1952, 52-63. The oxidation was studied in a static system under low pressures (0.1-2 mm. Hg) on a spinel $MgCr_2O_4$ with excess MgO, of a sp. surface area of 7.. sq. m./g. The oxidation is complete, to CO_2 and H_2O. In a stoichiometric C_2H_4 + O_2 mixt., under an initial pressure of 0.17-0.18 mm. Hg, at 275°, the rate of the reaction (measured by the increase of pressure) falls off with its progress. In 5 consecutive runs on the same catalyst, the fraction of C_2H_4 spent in oxidation decreased from one run to another, while the fraction subtracted by adsorption on the catalyst increased; thus, while 14.3, 25.3, 32.6, 42.2, 69.2% of the C_2H_4 were found adsorbed in the 5 consecutive expts., the percentages of C_2H_4 oxidized were 79.5, 7.., 62.8, 53.2, 18.6%. There is an almost const. fraction of C_2H_4 which is neither adsorbed nor oxidized; consequently, the surface does not become satd. with adsorbed C_2H_4. As for O_2, the fraction spent in oxidation decreases (same in consecutive runs: 79.5, 70.0, 62.8, 53.2, 18.6% (same percentages as for C_2H_4), and the fraction adsorbed increases: 14.5, 20.8, 23.8, 27.3, 51.3%; but the unspent residue increases: 5.5, 8.2, 13.4, 19.5, 29.1%. The surface contaminated by adsorption of C_2H_4 can be regenerated by gaseous O_2 (99 mm. Hg) and then the original activity is restored. Within each run, the rate can be represented by $d\xi/dt = \alpha e^{-\alpha t}(\xi_0 - \xi)$, where ξ is the amt. reacted; the coeff. α is termed the "heterogeneity coeff." In early runs, the law of the reaction is more nearly exponential, but on consecutive runs it becomes increasingly more nearly 1st-order with the rate $w = k(\xi_0 - \xi)$; this is interpreted as a result of decreasing heterogeneity (decreasing α) of the surface, due to increased chemisorption. Addn. of 1, 2, or 5% Na silicate to the catalyst changes the rates, but not the kinetic law. With Δp = change of the pressure (in mm. Hg), the rate of the reaction is $w = w_0 e^{-\alpha\Delta p}$ (where w_0 = initial rate), and its integral $(1/2.3)\alpha\Delta p = \log \alpha w_0 + \ldots$ Between 2 points, $\log(1 + \alpha w_0 t_1)/\log(1 + \alpha w_0 t_2) = \Delta p_1/\Delta p_2$. If a pair of points is chosen for which $\Delta p_1/\Delta p_2 = 2$, then $\alpha w_0 = (t_2 - 2t_1)/t_1^2$. The coeff. α is calcd. by $(1/2.3)\alpha\Delta p = \log(t_1 + 1/\alpha w_0) - \log(1/\alpha w_0)$. Exptl. values of w_0 (mm./min.) and of α (min.$^{-1}$) are: for the pure Mg chromite catalyst, 9.7 and 0.120; catalyst with 1% SiO_2, 9.3 and 0.010, 2% SiO_2, 10.5 and 0.050,

..% SiO_2, 8.9 and 0.075. Apparently, different SiO_2 contents in the catalysts alter the part of adsorption in the oxidation. Both the activation energy and the frequency factor (between 275° and 350°) of the initial rate pass through a max. at 1% SiO_2. N. Thon

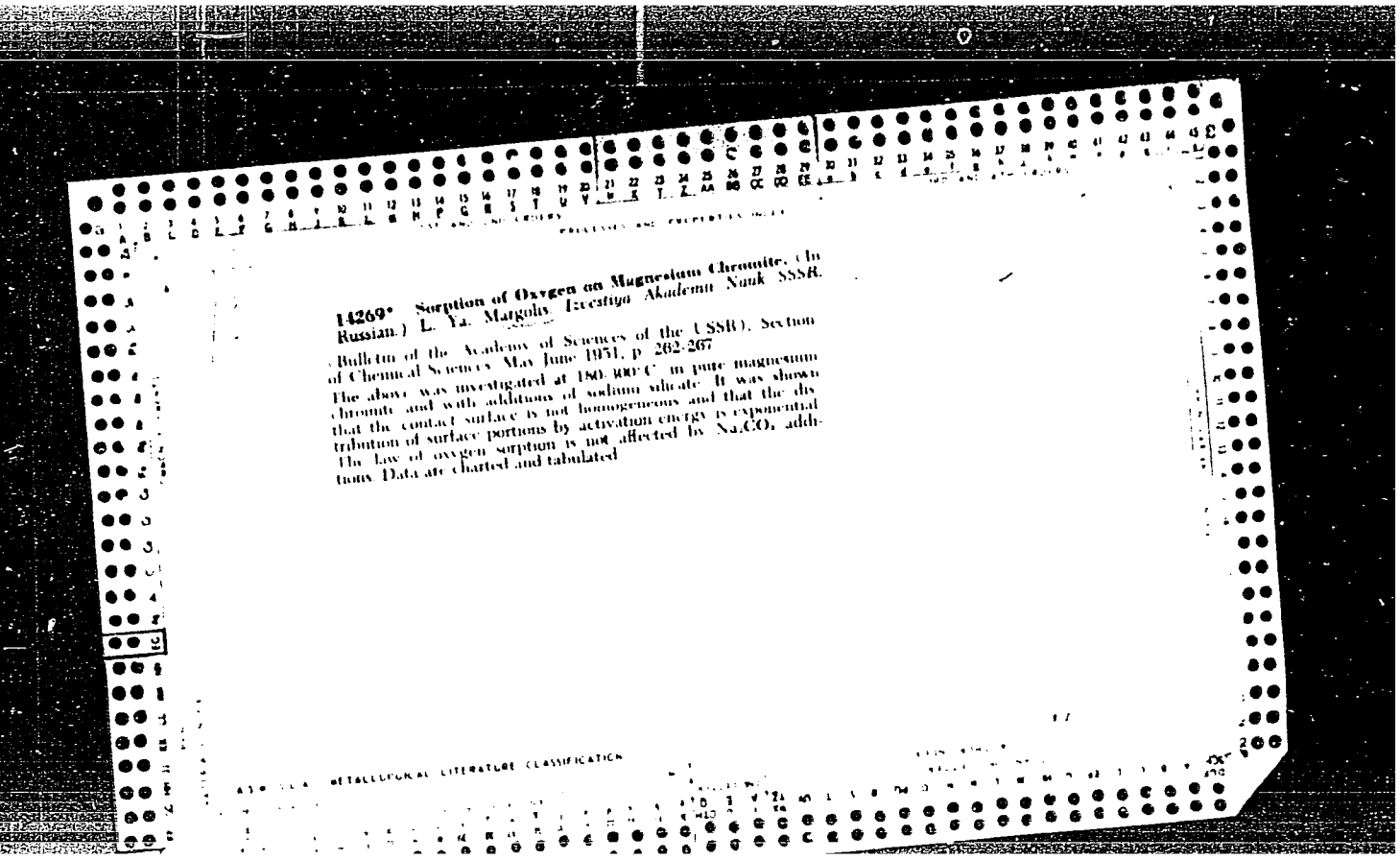
CA

Evaluation B-85325, 14 June 55

MARGOLIS, L. Ya.

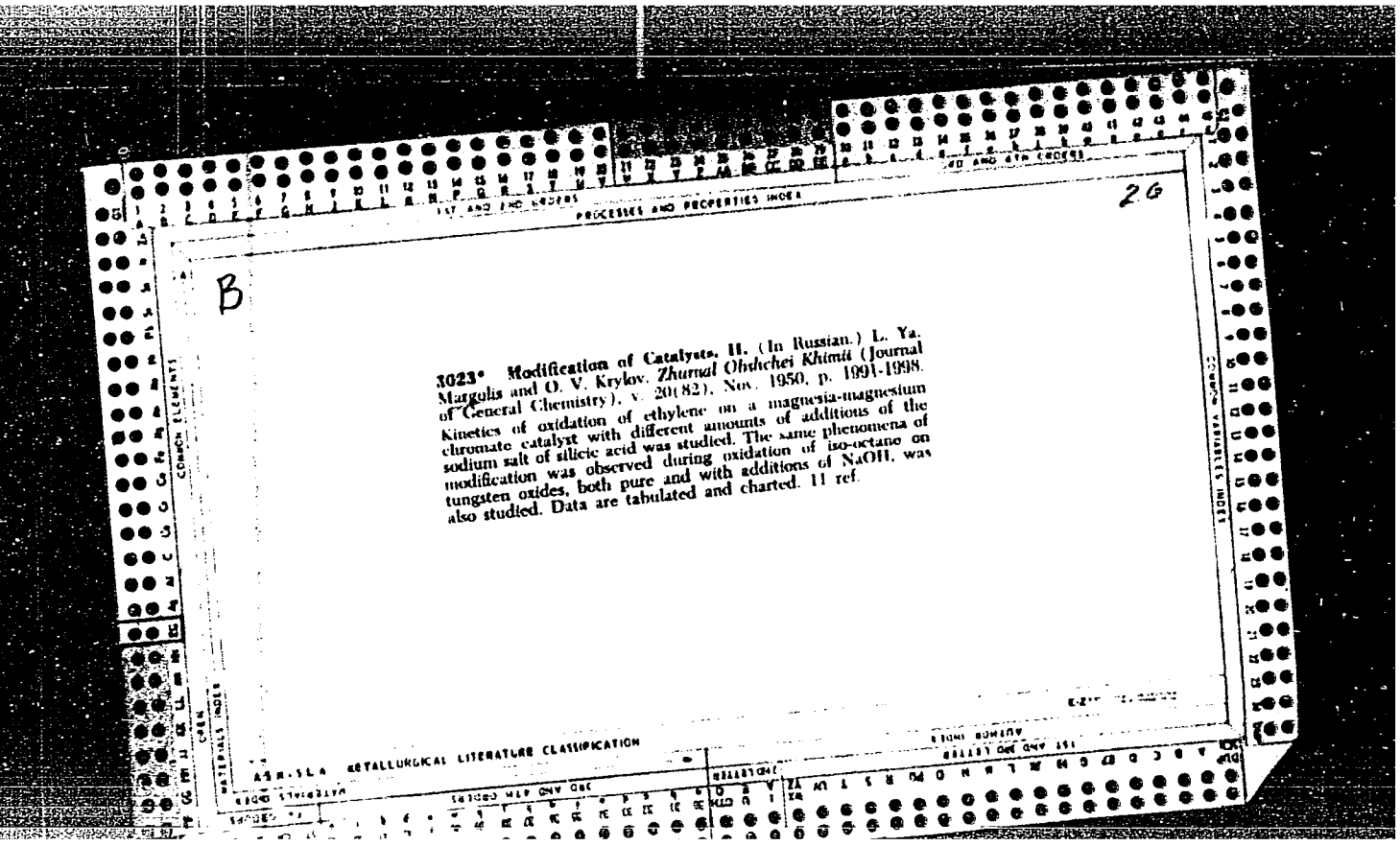
Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Organic Chemistry

Catalytic oxidation of hydrocarbons. L. Ya. Margolis. *Uspekhi Khim.* 20, 170–93(1951).—Review of the practical and the theoretical aspects of catalytic oxidation of hydrocarbons, with 105 references. It is concluded that the process involves as intermediates some O-containing substances which are neither aldehydes nor ketones. G. M. K.



14269* **Sorption of Oxygen on Magnesium Chromite.** (In Russian.) L. Ya. Margolis. *Izvestiya Akademii Nauk SSSR.* Bulletin of the Academy of Sciences of the USSR). Section of Chemical Sciences. May-June 1951, p. 262-267

The above was investigated at 180-800°C in pure magnesium chromite and with additions of sodium silicate. It was shown that the contact surface is not homogeneous and that the distribution of surface portions by activation energy is exponential. The law of oxygen sorption is not affected by Na_2CO_3 additions. Data are charted and tabulated



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3023* **Modification of Catalysts. II.** (In Russian.) L. Ya. Margolis and O. V. Krylov. *Zhurnal Obshchei Khimii* (Journal of General Chemistry), v. 20(82), Nov. 1950, p. 1991-1998.

Kinetics of oxidation of ethylene on a magnesia-magnesium chromate catalyst with different amounts of additions of the sodium salt of silicic acid was studied. The same phenomena of modification was observed during oxidation of iso-octane on tungsten oxides, both pure and with additions of NaOH, was also studied. Data are tabulated and charted. 11 ref.

creasing amts. of Na_2SiO_3 up to a max. at 2%. The max. is less sharp than in the former case. As a 2nd example, the complete oxidation of isooctane on WO_3 was studied, with NaOH as an impurity. Pure H_2WO_4 was put into soln. by means of an excess of a concd. soln. of NH_4OH. The soln. was evapd. to dryness in a porcelain crucible; the resulting white crystals were decompd. by heating 2 hrs. in air at 450°. The yellow powder WO_3 thus obtained was active. The activity was detd. at a flow rate of 10 l./hr. and a contact time of 0.1 min. The catalyst was supported on asbestos (50%). The activity k was computed from the 1st-order kinetic law; k is proportional to the amt. of catalyst up to 6% on asbestos. The amt. of NaOH impregnating the contact varies between 0.25 and 8% of WO_3. The calcd. k_0 does not have a very high precision (15–20%); this is due to the small activity of the catalyst in the temp. range investigated (280–440°). k, k_0, and E present a sharp max. at 0.75–1% impurity. A linear relation between E and log k_0 is verified. The following catalysts are inactive: (a) asbestos 50, WO_3 50, NaOH 17.3; (b) asbestos 50, NaOH 50; (c) asbestos 99, NaOH 1%. The data are said to confirm the theory of contact modification.

Michel Boudart

CA TRANSLATION AVAILABLE - W-18722
11 Jul 51

2

NO. 11

Modification of catalysts for complete oxidation. I. L. Ya. Margolis and O. M. Todes. *Zhur. Obshchei Khim. (J. Gen. Chem.)* 20, 1981-90(1950).—Roginskii's theory of catalyst modification (*C.A.* 42, 17946) is verified by the kinetics of isooctane oxidation on (I) $MgCr_2O_4$-MgO, (II) $CuCr_2O_4$-CuO, (III) V_2O_5. The catalysts were impregnated with known amts. of impurities (0.5–10%), supported on asbestos and dried at 100°. For I and II the impurities were H_3PO_4, H_3BO_3, $BaSO_4$, Na_2SiO_3, $Ba(NO_3)_2$, and HF. Up to 20% these impurities fail to catalyze when supported directly on asbestos. Sp. surface areas of I with 1–3% H_3PO_4 are 63 ± 4 sq. m./g. (N_2 adsorption at −190°). Pure I and II have spinel structures (by x-rays). The reaction is of order 2, 1, or 0 according to the impurity content (*C.A.* 42, 17946). The order and the activity *k* change abruptly at some crit. concn. of the impurity. Plots of log *k* against (1/*T*) give the activation energy *E* (kcal./mole); k_0 is calcd. from $k = k_0 \exp.(-E/RT)$. The activity is investigated in a 150° interval of temp. between 250° and 500°, depending on the catalyst. KOH is without effect on I but it affects III. The effect of impurities is discussed on the basis of the following results: (*a*) Both k_0 and *E* increase sharply with the impurity content up to a max. They decrease with further addn. of the impurity. The max. corresponds to 2 to 4% impurity and is very pronounced in all cases. *E* varies between 0.0 and 40; log k_0 between 3 and 17. (*b*) There is a linear relation between *E* and log k_0 which fits all data reasonably well. No explanation is offered. From (*a*) it is concluded that the concept of promoter and poison has to be broadened. A given "modifier" may be either a promoter or a poison according to its concn. It may change the order of the catalyzed reaction and it exerts an influence on both *E* and k_0. II. L. Ya Margolis and O. V. Krylov. *Ibid.* 1991–8. —The theory of contact modification is subjected to further test. The complete oxidation of C_3H_8 on $MgCr_2O_4$ + MgO (I) contg. various amts. of Na_2SiO_3 was investigated in an app. already described by M. and Todes (*C.A.* 42, 17946). I was impregnated with the impurity, the catalyst dried at 100° and supported on asbestos. The concn. of Na_2SiO_3 was varied between 1.5 and 5% of pure I; the concn. of the catalyst *c* on the asbestos, between 1 and 3%. Samples contg. 3 g. asbestos were used throughout. The rate const. *k* is proportional to the concn. of catalyst on the support: $k_s = k/c$ is used to det. *E* from log k_s-(1/*T*) plots; k_0 is deduced by $k_s = k_0 \exp.(-E/RT)$. The kinetic equation for $C_3H_8 + 5\,O_2 = 3\,CO_2 + 4\,H_2O$ was found by varying the C_3H_8 concn. *x* at a const. flow rate of 20 l./hr. The % of C_3H_8 oxidized depends only slightly on *x*, indicating a 1st-order reaction. *k* was computed by $k = (2.3/kt)\log[1/(1-y)]$; k_0 is the O_2 concn. = 20.5 (in vol. %); $t = 0.051$, the contact time in min.; *y* is the percentage of CO_2 after the reaction. The temp. was varied between 260° and 470°. The results show a behavior similar to the one found for isooctane oxidation: *E* and k_0 increase with in-

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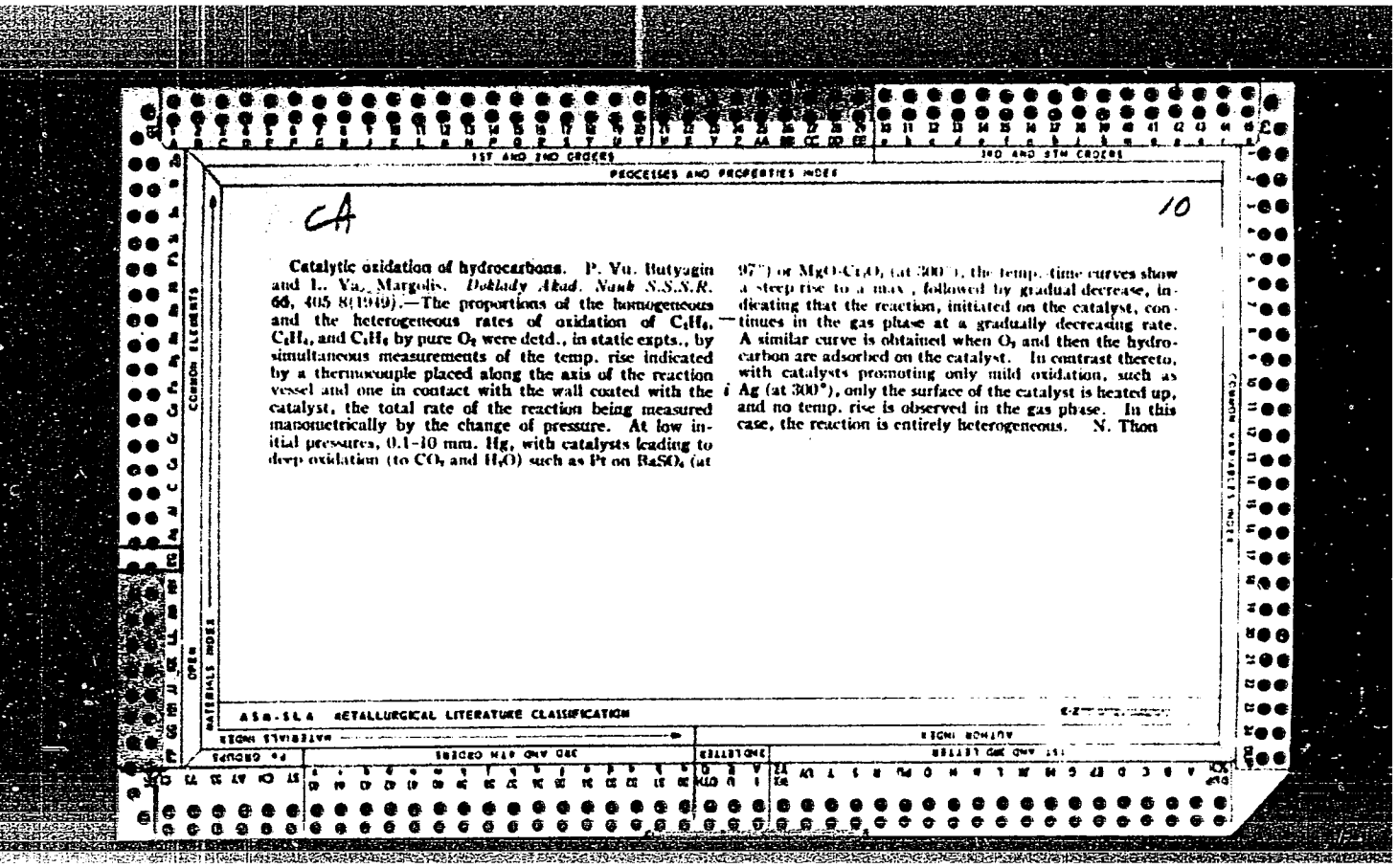

CA 10

Catalytic oxidation of hydrocarbons. P. Yu. Butyagin and L. Ya. Margolis. *Doklady Akad. Nauk S.S.S.R.* 66, 405–8(1949).—The proportions of the homogeneous and the heterogeneous rates of oxidation of C_2H_6, C_3H_8, and C_4H_8 by pure O_2 were detd., in static expts., by simultaneous measurements of the temp. rise indicated by a thermocouple placed along the axis of the reaction vessel and one in contact with the wall coated with the catalyst, the total rate of the reaction being measured manometrically by the change of pressure. At low initial pressures, 0.1–10 mm. Hg, with catalysts leading to deep oxidation (to CO_2 and H_2O) such as Pt on $BaSO_4$ (at 97°) or MgO-Cr_2O_3 (at 300°), the temp.-time curves show a steep rise to a max., followed by gradual decrease, indicating that the reaction, initiated on the catalyst, continues in the gas phase at a gradually decreasing rate. A similar curve is obtained when O_2 and then the hydrocarbon are adsorbed on the catalyst. In contrast thereto, with catalysts promoting only mild oxidation, such as Ag (at 300°), only the surface of the catalyst is heated up, and no temp. rise is observed in the gas phase. In this case, the reaction is entirely heterogeneous. N. Thon

larger addns. poisoned the catalyst and lowered E and K_0. The linear dependence of log K_0 on E and $1/T$ held also for the promoted or poisoned catalysts, so that the same additive could act either as a promoter or a poison, depending on the reaction temp. Oxygenated compds. such as MeCHO, butyric aldehyde, and Et_2O, yielded other O compds., rather than CO_2 and H_2O, on contact with IV and V. It is proposed that the catalytic as well as the homogeneous oxidation of O compds. proceeds through unstable intermediates which are not aldehydes or ketones but may be peroxides. Under the same conditions, AcOH yielded CO_2 and H_2O.

Andrew Dravnieks

MARGOLIS, L. Ya.

Kinetics of the catalytic oxidation of hydrocarbons. I. Ya. Margolis and O. M. Todes. *Problemy Kinetiki i Kataliza, Akad. Nauk S.S.S.R. 6, Geterogennyi Kataliz*, 281–92(1949).—Catalytic oxidation of C_4H_{10}, C_5H_{12}, C_6H_{14}, isooctane (I), cyclohexane (II), Me cyclohexane (III), and C_6H_6 to CO_2 and H_2O was studied between 300 and 600° in the presence of Pt, Mg chromite (IV), and Cu chromite (V) catalysts. No CO and only negligible amts. of aldehydes and acids were detected in the products. The oxidation was 2nd order for I, II, and III, but 1st order for the normal, aromatic, or olefinic hydrocarbons. The 2nd-order reactions had apparent activation energies, E, of 15–45 kcal. Each of the 1st-order reactions exhibited 2 values of E; a higher one (8–46 kcal.) at lower temp., and a lower one (2.7–6.5 kcal.) at higher temp. An abrupt change in E occurred in the vicinity of 350°. The pre-exponential factor, K_0, remained const. when the flow rate was increased by a factor of 6; both E and K_0 varied considerably above 350° with a change in the type of hydrocarbon used. These and other indications show that the rates above 350° are not diffusion-controlled. It is proposed that at higher temp. the oxidation is preceded by cracking. In case of I, oxidation became diffusion-controlled at 700–800°; between 250 and 550° it was 2nd order in the presence not only of IV and V, but also of Pt, Pd, and spinel-type catalysts. E (kcal.) was 45 with IV, 30 with Fe chromite, and 15 with V, Pt, and Pd; log K_0 was linearly dependent on E (Pt fell out of line) and on $1/T$. Because of the latter correlation, contact catalysts which are relatively inefficient at lower temp. may surpass others at higher temp. Sparingly volatile inorg. compds. such as H_3PO_4, H_3BO_3, H_2SO_4, $BaSO_4$, and Na_2SiO_3, when added to IV and V in amts. of 0.5–10%, decreased the order of the reaction. At concns. of approx. 2%, they promoted the catalyst and raised both E and K_0.

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PA 9/49T10

MARGOLIS, L. YA.

USSR/Chemistry - Organic Compounds Jun 48
Chemistry - Oxidation, Catalysis of

"Catalytic Oxidation of Various Types of Organic Compounds in a Stream," L. Ya. Margolis, O. M. Todes, Inst of Phys Chem, Acad Sci, Sec of Catalysts and Fuel Chem, 7 3/4 pp

"Zhur Obshch Khim" Vol XVIII (LXXX), No 6

Studies complete oxidation kinetics of various hydrocarbons on spinel catalysts and platinum. Reaction constant varies in accordance with Arrhenius' Law over a wide temperature range. Submitted 7 Apr 1947.

9/49T10

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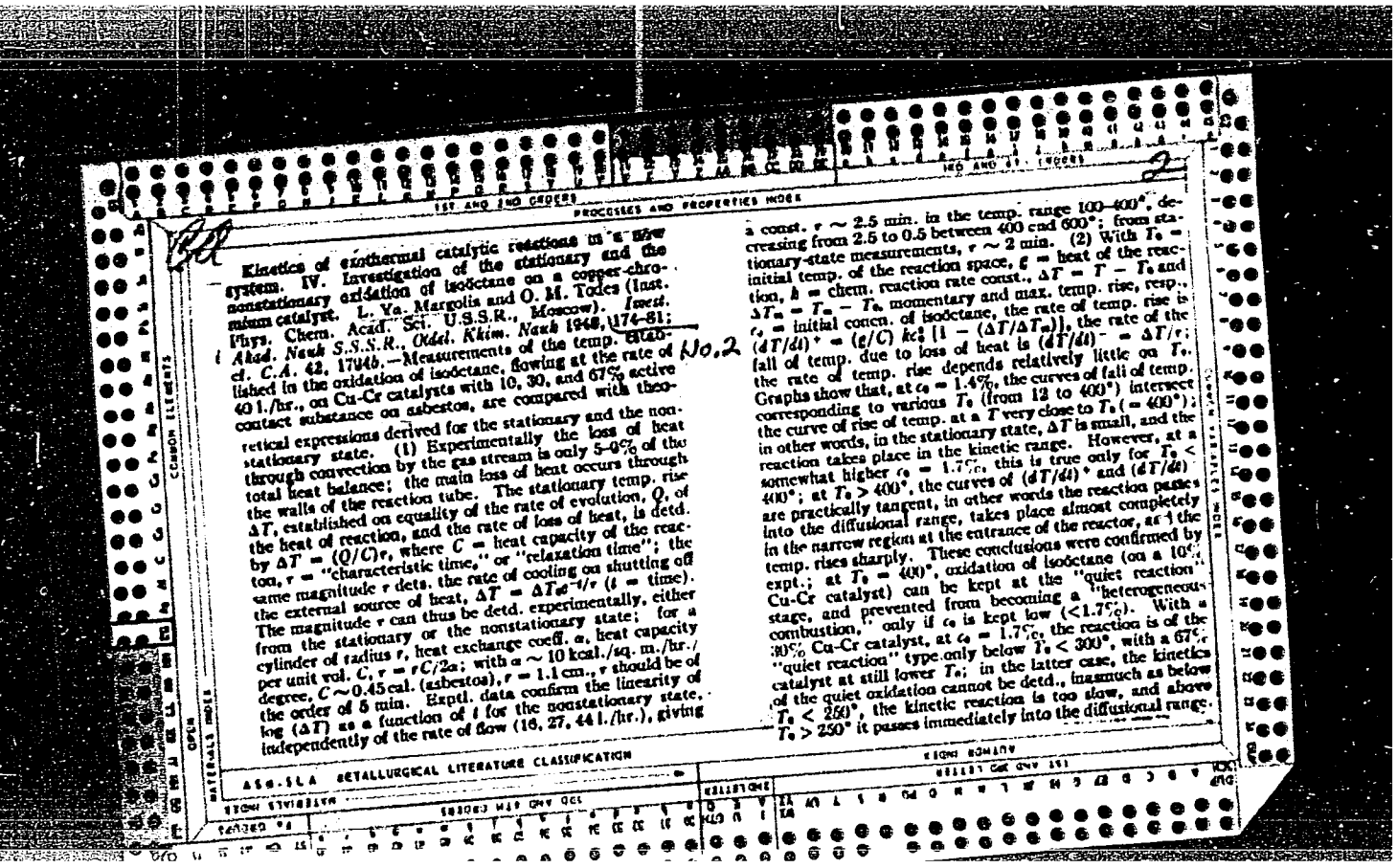
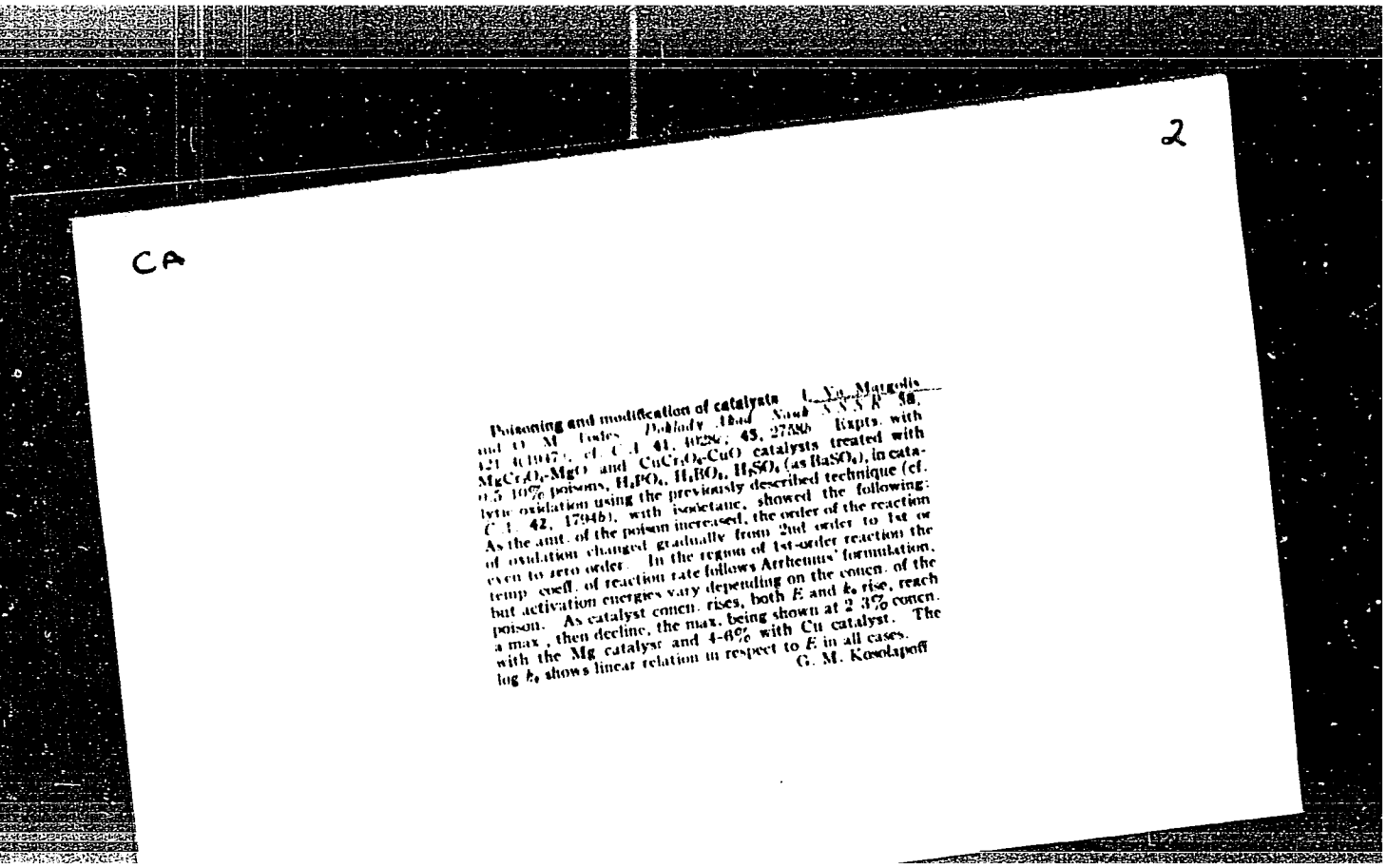


Kinetics of exothermal catalytic reactions in a flow system. IV. Investigation of the stationary and the nonstationary oxidation of isooctane on a copper-chromium catalyst. L. Ya. Margolis and O. M. Todes (Inst. Phys. Chem. Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1946, 474–81; cf. *C.A.* 42, 1794*b*.—Measurements of the temp. established in the oxidation of isooctane, flowing at the rate of 40 l./hr., on Cu-Cr catalysts with 10, 30, and 67% active contact substance on asbestos, are compared with theoretical expressions derived for the stationary and the nonstationary state. (1) Experimentally the loss of heat through convection by the gas stream is only 5–6% of the total heat balance; the main loss of heat occurs through the walls of the reaction tube. The stationary temp. rise ΔT, established on equality of the rate of evolution, Q, of the heat of reaction, and the rate of loss of heat, is detd. by $\Delta T = (Q/C)\tau$, where C = heat capacity of the reaction, τ = "characteristic time," or "relaxation time"; the same magnitude τ dets. the rate of cooling on shutting off the external source of heat, $\Delta T = \Delta T_0 e^{-t/\tau}$ (t = time). The magnitude τ can thus be detd. experimentally, either from the stationary or the nonstationary state; for a cylinder of radius r, heat exchange coeff. α, heat capacity per unit vol. C, $\tau = rC/2\alpha$; with $\alpha \sim 10$ kcal./sq. m./hr./degree, $C \sim 0.45$ cal. (asbestos), $r = 1.1$ cm., τ should be of the order of 5 min. Exptl. data confirm the linearity of $\log(\Delta T)$ as a function of t for the nonstationary state, independently of the rate of flow (16, 27, 44 l./hr.), giving a const. $\tau \sim 2.5$ min. in the temp. range 100–400°, decreasing from 2.5 to 0.5 between 400 and 600°; from stationary-state measurements, $\tau \sim 2$ min. (2) With T_0 = initial temp. of the reaction space, ϵ = heat of the reaction, k = chem. reaction rate const., $\Delta T = T - T_0$ and $\Delta T_m = T_m - T_0$ momentary and max. temp. rise, resp., c_0 = initial concn. of isooctane, the rate of the fall of temp. due to loss of heat is $(dT/d\tau)' = (\epsilon/C)kc_0^2[1 - (\Delta T/\Delta T_m)]$, the rate of the rise of temp. $(dT/d\tau)'' = -\Delta T/\tau$; the rate of temp. rise depends relatively little on T_0. Graphs show that, at $c_0 = 1.4\%$, the curves of fall of temp. corresponding to various T_0 (from 12 to 400°) intersect the curve of rise of temp. at a T very close to T_0 (= 400°); in other words, in the stationary state, ΔT is small, and the reaction takes place in the kinetic range. However, at a somewhat higher $c_0 = 1.7\%$, this is true only for $T_0 < 400°$; at $T_0 > 400°$, the curves of $(dT/d\tau)'$ and $(dT/d\tau)''$ are practically tangent, in other words the reaction passes into the diffusional range, takes place almost completely in the narrow region at the entrance of the reactor, and the temp. rises sharply. These conclusions were confirmed by expt.; at $T_0 = 400°$, oxidation of isooctane (on a 10% Cu-Cr catalyst) can be kept at the "quiet reaction" stage, and prevented from becoming a "heterogeneous combustion," only if c_0 is kept low (<1.7%). With a 30% Cu-Cr catalyst, at $c_0 = 1.7\%$, the reaction is of the "quiet reaction" type only below $T_0 < 300°$, with a 67% catalyst at still lower T_0; in the latter case, the kinetics of the quiet oxidation cannot be detd., inasmuch as below $T_0 < 250°$, the kinetic reaction is too slow, and above $T_0 > 250°$ it passes immediately into the diffusional range.



2

CA

Poisoning and modification of catalysts. I. Yu. Margolis and O. M. Todes. *Doklady Akad. Nauk S.S.S.R.* 58, 421-4(1947); cf. *C.A.* 41, 4028e; 45, 2758b. Expts. with $MgCr_2O_4$-MgO and $CuCr_2O_4$-CuO catalysts treated with 0.5-10% poisons, H_3PO_4, H_3BO_3, H_2SO_4 (as $BaSO_4$), in catalytic oxidation using the previously described technique (cf. *C.A.* 42, 1794b), with isobutane, showed the following: As the amt. of the poison increased, the order of the reaction of oxidation changed gradually from 2nd order to 1st or even to zero order. In the region of 1st-order reaction the temp. coeff. of reaction rate follows Arrhenius' formulation, but activation energies vary depending on the concn. of the poison. As catalyst concn. rises, both E and k_0 rise, reach a max., then decline, the max. being shown at 2-3% concn. with the Mg catalyst and 4-6% with Cu catalyst. The $\log k_0$ shows linear relation in respect to E in all cases.

G. M. Kosolapoff

USSR/Chemistry - Catalysts Oct 1947
Chemistry - Isotherms

"Poisoning and 'Modification' of Catalysts," L. Ya. Margolis, O. M. Todes, Catalysts and Topochem Sec, Inst Phys Chem, Acad Sci USSR, 3 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVIII, No 3

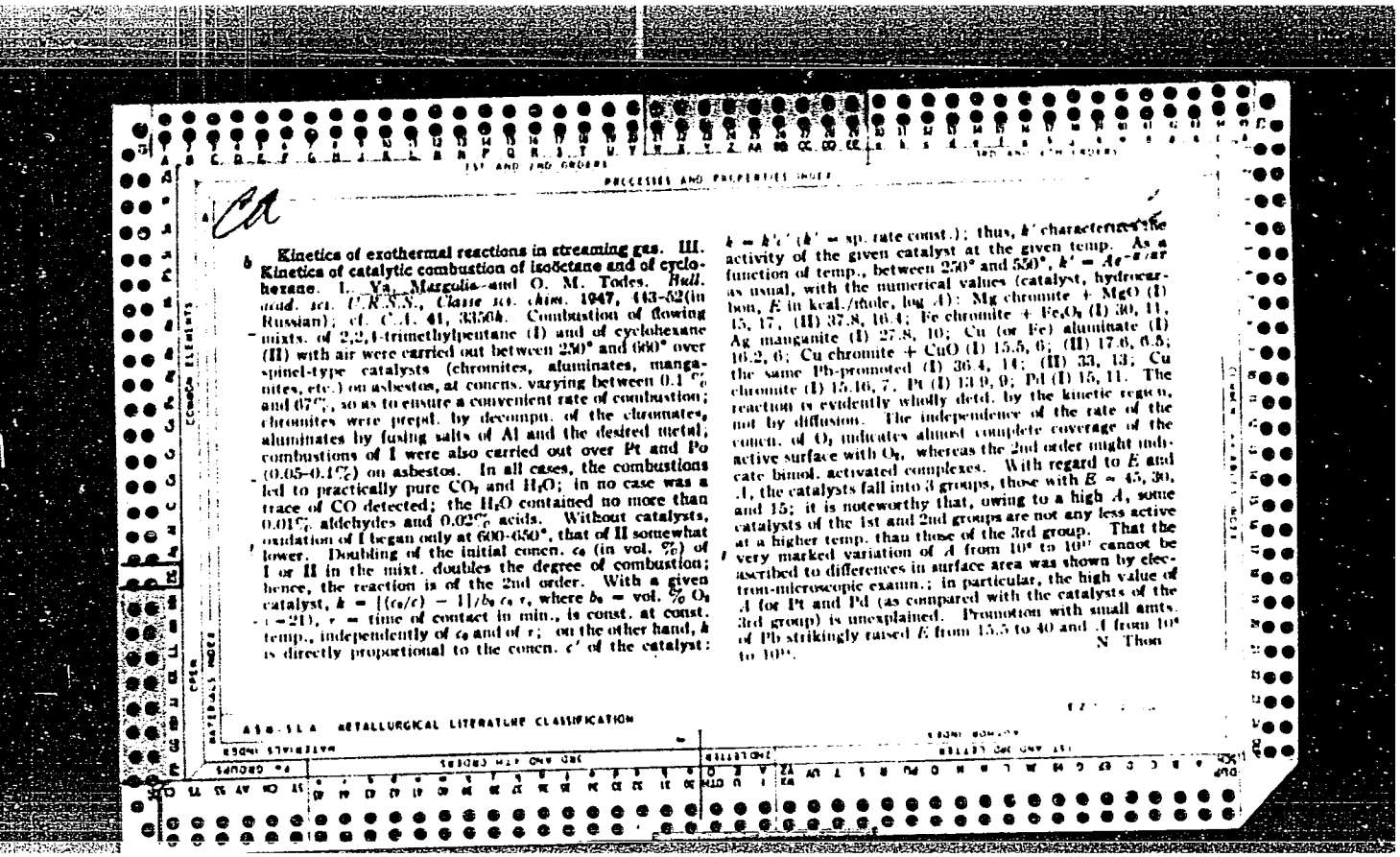
Roginskiy's works showed that concentrated isotherm of the admixture has optimum amount of catalytic activity: Small additions of isotherms promote the reaction, whereas too large amounts "poison" the catalyst. Authors describe results of experiments conducted to determine the effect of small additions on spinel-type catalysts. Their interest directed

49T2

USSR/Chemistry - Catalysts (Contd) Oct 1947

to this reaction as result of investigations of results of catalytic oxidation of iso-octane. Submitted by Academician A. N. Frumkin, 31 Mar 1947.

MARGOLIS YA. L.



CA

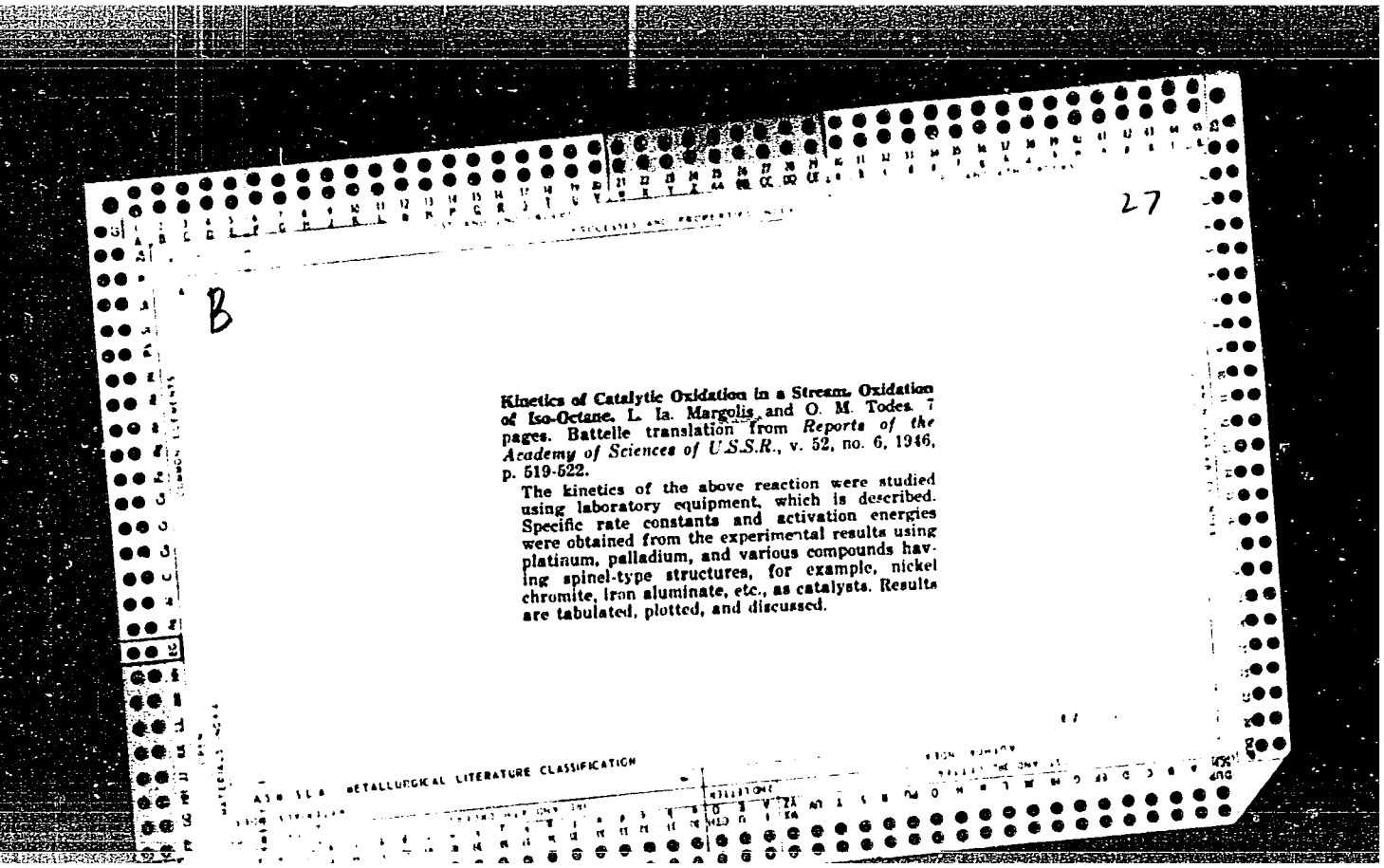
PROCESSES AND PROPERTIES INDEX

Kinetics of exothermal reactions in streaming gas. III. Kinetics of catalytic combustion of isooctane and of cyclohexane. I. Ya. Margolis and O. M. Todes. *Bull. acad. sci. U.R.S.S., Classe sci. chim.* **1947**, 443–52(in Russian); cf. C.A. **41**, 3350d. Combustion of flowing mixts. of 2,2,4-trimethylpentane (I) and of cyclohexane (II) with air were carried out between 250° and 660° over spinel-type catalysts (chromites, aluminates, manganites, etc.) on asbestos, at concns. varying between 0.1% and 07%, so as to ensure a convenient rate of combustion; chromites were prepd. by decompn. of the chromates, aluminates by fusing salts of Al and the desired metal; combustions of I were also carried out over Pt and Pd (0.05–0.1%) on asbestos. In all cases, the combustions led to practically pure CO_2 and H_2O; in no case was a trace of CO detected; the H_2O contained no more than 0.01% aldehydes and 0.02% acids. Without catalysts, oxidation of I began only at 600–650°, that of II somewhat lower. Doubling of the initial concn. c_0 (in vol. %) of I or II in the mixt. doubles the degree of combustion; hence, the reaction is of the 2nd order. With a given catalyst, $k = [(c_0/c) - 1]/b_0 c_0 \tau$, where b_0 = vol. % O_2 (=21), τ = time of contact in min., is const. at const. temp., independently of c_0 and of τ; on the other hand, k is directly proportional to the concn. c' of the catalyst: $k = k'c'$ (k' = sp. rate const.); thus, k' characterizes the activity of the given catalyst at the given temp. As a function of temp., between 250° and 550°, $k' = Ae^{-E/RT}$ as usual, with the numerical values (catalyst, hydrocarbon, E in kcal./mole, log A): Mg chromite + MgO (I) 45, 30, (II) 37.8, 16.4; Fe chromite + Fe_2O_3 (I) 30, 11, 15, 17, (II) 37.8, 16.4; Fe chromite + Fe_2O_3 (I) 30, 11, 15, 17, (II) 37.8, 16.4; Cu (or Fe) aluminate (I) Ag manganite (I) 27.8, 10; Cu (or Fe) aluminate (I) 16.2, 6; Cu chromite + CuO (I) 15.5, 6; (II) 17.6, 6.5; the same Pb-promoted (I) 36.4, 14; (II) 33, 13; Cu chromite (I) 15.16, 7. Pt (I) 13.9, 9; Pd (I) 15, 11. The reaction is evidently wholly detd. by the kinetic region, not by diffusion. The independence of the rate of the concn. of O_2 indicates almost complete coverage of the active surface with O_2, whereas the 2nd order might indicate bimol. activated complexes. With regard to E and A, the catalysts fall into 3 groups, those with E = 45, 30, and 15; it is noteworthy that, owing to a high A, some catalysts of the 1st and 2nd groups are not any less active at a higher temp. than those of the 3rd group. That the very marked variation of A from 10^6 to 10^{17} cannot be ascribed to differences in surface area was shown by electron-microscopic examn.; in particular, the high value of A (for Pt and Pd (as compared with the catalysts of the 3rd group) is unexplained. Promotion with small amts. of Pb strikingly raised E from 15.5 to 40 and A from 10^6 to 10^{16}. N. Thon

A56-11A METALLURGICAL LITERATURE CLASSIFICATION

MARGOLIS, L. YA.

"Laws Underlying the Selection of Catalysts for Complete Oxidation of Organic Compounds," Dok. AN, 52, No. 5, 1946 (with S. Z. Roginskiy, S. Ya. Elovich and G. M. Zhabrova



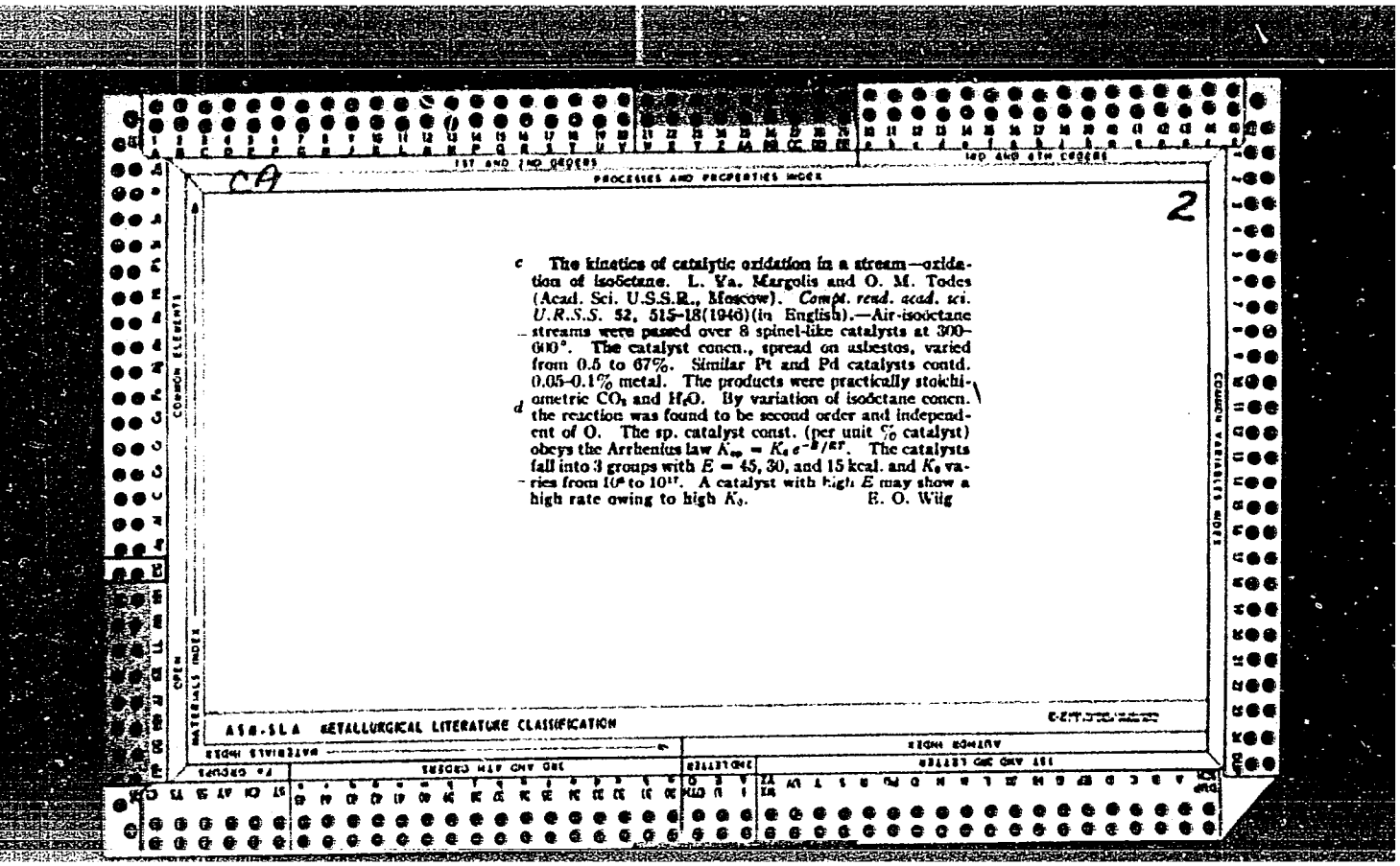
27

B

Kinetics of Catalytic Oxidation in a Stream. Oxidation of Iso-Octane. L. Ia. Margolis and O. M. Todes. 7 pages. Battelle translation from *Reports of the Academy of Sciences of U.S.S.R.*, v. 52, no. 6, 1946, p. 519-522.

The kinetics of the above reaction were studied using laboratory equipment, which is described. Specific rate constants and activation energies were obtained from the experimental results using platinum, palladium, and various compounds having spinel-type structures, for example, nickel chromite, iron aluminate, etc., as catalysts. Results are tabulated, plotted, and discussed.

METALLURGICAL LITERATURE CLASSIFICATION



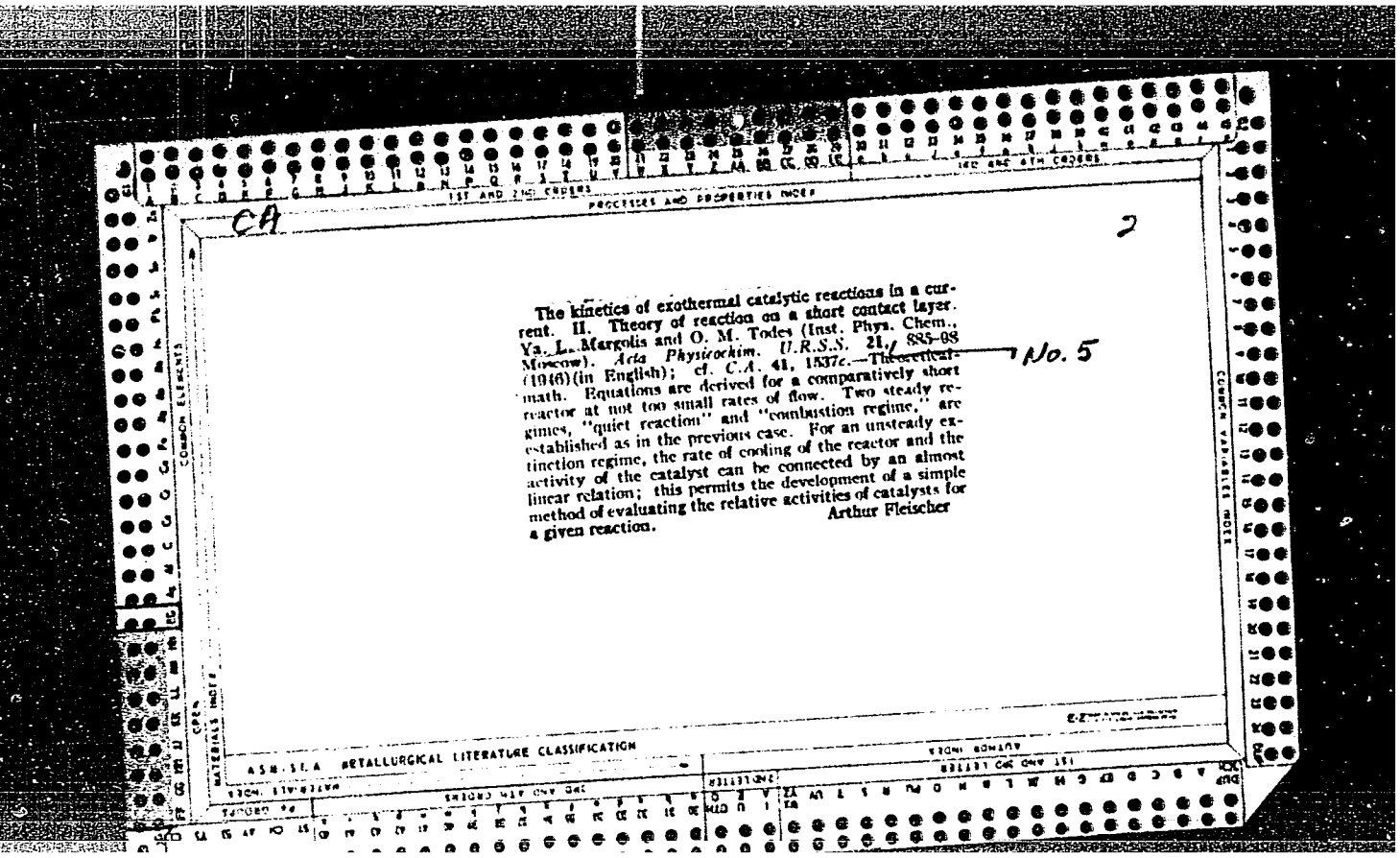
CA

PROCESSES AND PROPERTIES INDEX

2

c The kinetics of catalytic oxidation in a stream—oxidation of isooctane. L. Ya. Margolis and O. M. Todes (Acad. Sci. U.S.S.R., Moscow). *Compt. rend. acad. sci. U.R.S.S.* 52, 515–18(1946)(in English).—Air-isooctane streams were passed over 8 spinel-like catalysts at 300–600°. The catalyst concn., spread on asbestos, varied from 0.5 to 67%. Similar Pt and Pd catalysts contd. 0.05–0.1% metal. The products were practically stoichiometric CO_2 and H_2O. By variation of isooctane concn. d the reaction was found to be second order and independent of O. The sp. catalyst const. (per unit % catalyst) obeys the Arrhenius law $K_{sp} = K_0 e^{-E/RT}$. The catalysts fall into 3 groups with E = 45, 30, and 15 kcal. and K_0 varies from 10^6 to 10^{17}. A catalyst with high E may show a high rate owing to high K_0. E. O. Wiig

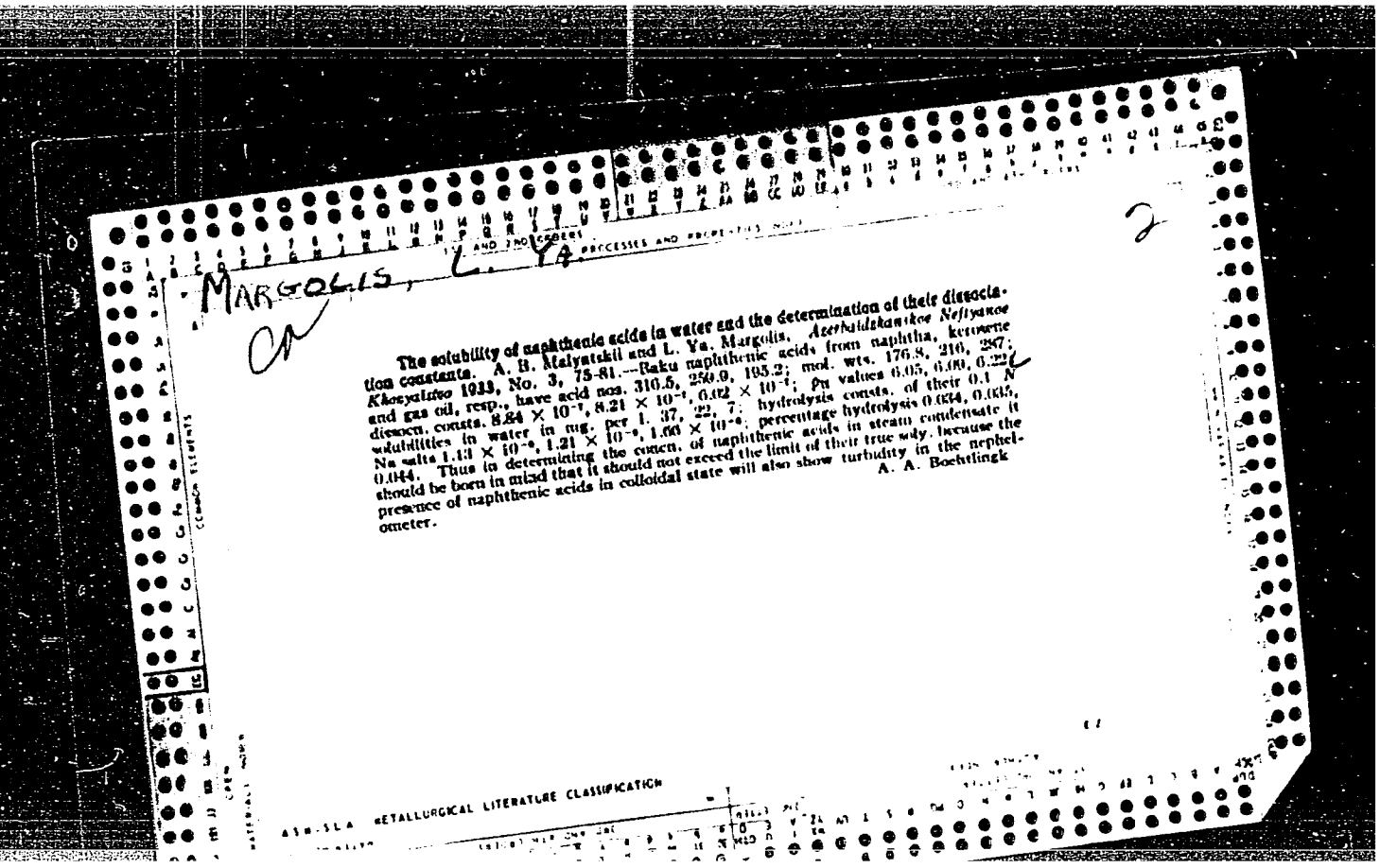
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA 2

The kinetics of exothermal catalytic reactions in a current. II. Theory of reaction on a short contact layer. Ya. L. Margolis and O. M. Todes (Inst. Phys. Chem., Moscow). *Acta Physicochim. U.R.S.S.* 21, 885–98 (1946)(in English); cf. *C.A.* 41, 1537c.—Theoretical math. Equations are derived for a comparatively short reactor at not too small rates of flow. Two steady regimes, "quiet reaction" and "combustion regime," are established as in the previous case. For an unsteady extinction regime, the rate of cooling of the reactor and the activity of the catalyst can be connected by an almost linear relation; this permits the development of a simple method of evaluating the relative activities of catalysts for a given reaction. Arthur Fleischer

No. 5



MARGOLIS, L. Ya

The solubility of naphthenic acids in water and the determination of their dissociation constants. A. B. Malyutskii and L. Ya. Margolis. *Azerbaidzhanskoe Neftyanoe Khozyaistvo* 1933, No. 3, 75-81.—Baku naphthenic acids from naphtha, kerosene and gas oil, resp., have acid nos. 316.5, 259.9, 193.2; mol. wts. 176.8, 216, 287; dissocn. consts. 8.84×10^{-7}, 8.21×10^{-7}, 6.02×10^{-7}; p_H values 6.05, 6.09, 6.22; solubilities in water in mg. per l. 37, 22, 7; hydrolysis consts. of their 0.1 *N* Na salts 1.13×10^{-6}, 1.21×10^{-6}, 1.60×10^{-6}; percentage hydrolysis 0.034, 0.035, 0.044. Thus in determining the concn. of naphthenic acids in steam condensate it should be born in mind that it should not exceed the limit of their true sdty. because the presence of naphthenic acids in colloidal state will also show turbidity in the nephelometer.

A. A. Boehtlingk

ROGINSKIY, S. Z.; MARGOLIS, L. N.

Carbon - Isotopes

Application of a tagged carbon in the study of the mechanism of catalytic oxidation of ethylene over silver. Dokl. AN SSSR 89, No. 3, 1953.

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

MARGOLIS, L.D.; YEL'TSOVA, Z.V.; ZHEREBNOY, I.A.

Sodium content in aluminum. TSvet. met. 37 no.6:42-43 Je '64.
(MIRA 17:9)

MARGOLIS, L.D.; KRAVCHENKO, A.P.; MUZYCHENKO, V.V.

Flame photometry determination of sodium oxide in slimes of alumina production. Zav. lab. 28 no.9:1072-1075 '62. (MIRA 16:6)

1. Dneprovskiy alyuminiyevyy zavod im. S.M. Kirova.
(Sodium oxide) (Flame photometry)

ZAKHVATKIN, M.O.; SAPIR, A.D.; SPIVAKOVSKIY, V.B.; ZIMINA, V.A.; MARGOLIS, L.D.

Exchange of experience. Zav.lab. 28 no.3:290 '62. (MIRA 15:4)

1. Chelyabinskiy metallurgicheskiy zavod (for Zakhvatkin, Sapir).
2. Kiyevskiy gosudarstvennyy universitet (for Spivakovskiy, Zimina).
3. Dneprovskiy alyuminiyevyy zavod imeni S.M.Kirova (for Margolis).
(Metallurgical analysis)

MARGOLIS, L.D.

Portable gas-analysis apparatus for determination of carbon dioxide and oxygen in air. L. D. Margolis and V. A. Voronchikov. *Zavodskaya Lab.* 21, 1135-6(1955).—A brief description of construction and operation of a 2-bulb app. with KOH soln. and pyrogallol or $CrCl_2$, for detns. of CO_2 and O_2. G. M. Kosolapoff

MARGOLIS, Kh.Sh.

Mechanism of disturbance of the function of the stump and anastomosis of the resected stomach. Vest.rent. i rad. 33 no.3:84-86 My-Je '58 (MIRA 11:8)

1. Iz rentgenovskogo otdeleniya (zav. Kh.Sh. Margolis) gorodskoy klinicheskoy bol'nitsy No.12 (glavnyy vrach A.M. Krichevskiy), Moskva.
(GASTRECTOMY, compl.
dysfunct. of stump & anastomosis, mechanism (Rus))

MARGOLIS I.M.

SHTEYNTSAYG, A.I.; MARGOLIS, I.M. (g.Sovetskaya Gavan', Khabarovskogo kraya)

Curing a pulmonary abscess by intrapulmonary administration of antibiotics in a two-year-seven-months-old child. Pediatriia no.9: 88-89 S '57. (MIRA 10:12)
(LUNGS--ABSCESS) (ANTIBIOTICS)

MARGOLIS, G.I.

Automatic thickness gauge. Kauch.i rez. 21 no.4:36-39 Ap '62. (MIRA 15:4)

1. Tomskiy kabel'nyy zavod.
(Rubber--Testing) (Thickness measurement)

TUDOROVSKAYA, G.L.; MARGOLIS, F.G.

Kinetics of urea decomposition in the presence of monoammonium phosphate. Trudy NIUIF no.208:3-7 '65.

Quaternary system of urea, ammonium nitrate, monoammonium phosphate at 25°C. Ibid.:7-16 (MIRA 18:11)

MARGOLIS, F. G., kand. tekhn. nauk; GLAZOVA, T. V.; SVERDLOVA, A. I.

Recent developments in the technology of complex fertilizers using the nitric acid treatment of phosphates. Zhur. VKHO 7 no.5:507-512 '62. (MIRA 15:10)

(Phosphates) (Nitric acid)
(Fertilizers and manures)

MARGOLIS, F.G.; GLAZOVA, T.V.; SIMONOVA, O.N.

Ammoniation of nitrate solutions in the production of carbonate nitrophoska. Khim. prom. no.2:85-89 F '61. (MIRA 14:4)
(Fertilizers and manures) (Phosphates) (Ammonium nitrate)

VOLFKOVICI, S.I. [Volfkovich, S.I.]; MARGOLIS, F.G.; POLEAKOV, N.N. [Polyakov, N.N.]

Complex fertilizers obtained through the decomposition of phosphates with nitric acid. Analele chimie 15 no.4:136-150 O-D '60. (EEAI 10:3)
(Fertilizers and manures) (Phosphates)
(Nitric acid)

Complex Fertilizers on the Basis of Phosphates Decomposed With Nitric Acid

S/064/60/000/01/07/024
B022/B008

various processes is discussed and the most important of them are described in detail. The composition of the products obtained by these various processes is given under special consideration of the individual forms of the P_2O_5 (Tables 2,3). A. I. Loginova, A. V. Rusadze, S. Ya. Shpunt, T. V. Glazova, and O. N. Simonova (NIUIF), A. G. Bergman, I. F. Bochkarev, A. P. Belopol'skiy, M. N. Shul'gina, A. I. Sverdlova, and M. I. Bogdanov as well as papers by the GIAP (State Institute of the Nitrogen Industry) are mentioned. There are 3 tables and 37 references, 21 of which are Soviet.

Card 2/2

S/064/60/000/01/07/024
B022/B008

AUTHORS: Vol'fkovich, S. I., Margolis, F. G., Polyakov, N. N.

TITLE: Complex Fertilizers on the Basis of Phosphates Decomposed With Nitric Acid

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 1, pp. 34 - 41

TEXT: The authors describe fertilizers containing several nutrients as "complex" ones, that is without considering whether the fertilizers were manufactured by mechanical or chemical means. Six methods of decomposition of phosphates with nitric acid are mainly used in practice in the USSR and abroad, i.e.: 1) with HNO_3 and H_2SO_4; 2) with HNO_3 and H_3PO_4; 3) with HNO_3 and $(NH_4)_2SO_4$ or other sulfates; 4) with HNO_3 and CO_2; 5) with HNO_3 only, with freezing out of $Ca(NO_3)_2$; 6) with HNO_3 only, a solid product - nitrophosphate - being produced at once. A list of foreign firms manufacturing complex fertilizers according to phosphate decomposition with nitric acid is given in Table 1. The chemism of the

MARGOLIS, F. G.

Ammonium nitrate production in the phosphate decomposition with nitric acid. F. G. Margolis, A. M. Dubovitskii, and T. V. Glazova. *Khim. Prom.* 1957, 219-23; cf. *C.A.* 50, 17349e.—Readily filterable Ca-Mg carbonate sludge in the $CaHPO_4.2H_2O$ production from Kara-Tau phosphorites was assured by using a 10–15% excess of a 25–30% $(NH_4)_2CO_3$ soln. at 40–5°. After the precipitant addn. the crystal aggregates are permitted to grow quietly in soln. When pptg. $CaCO_3$ and $MgCO_3$ with gaseous NH_3 and CO_2, the pptn. rate depends on the hydrolysis rate of $(NH_4)_2$-$(NH_2)_2CO_3$. The filtrate from the carbonates contained 20–6% NH_4NO_3 and was evapd. for crystn. The final product contained 0.1–0.7% $Ca(NO_3)_2$, 0.65–1.24% $Mg(NO_3)_2$, and up to 3% $NaNO_3$ from the defluoridation with an excess of $NaNO_3$ added for the formation of Na_2SiF_6.

W. M. Sternberg

MT

6

1-4E4d

1-4E5d

MARGOLIS, F.G.; DUBOVITSKIY, A.M.; GL[illegible], T.V.

Obtaining ammonium nitrate from nitric acid decomposition of phosphates. Khim.prom. no.4:219-223 Je '57. (MLRA 10:9)

1. Nauchnyy institut po udobreniyam i insektofungitsidam imeni Ya.V.Samoylova.
(Phosphates) (Ammonium nitrate)

USSR/Chemical Technology - Chemical Products and Their Application. Fertilizers, I-6

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62120

Author: Dubovitskiy, A. M., Margolis, F. G.

Institution: None

Title: State and Trends of Production of Fertilizers by Treatment of Phosphates with Nitric Acid in Capitalistic Countries

Original Periodical: Zh. prikl. khimii, 1956, 29, No 3, 321-330

Abstract: Review. Bibliography, 19 titles.

Sci Res Inst for Fertilizers + Insectofungicides

Card 1/1

MARGOLIS, F.G

AID P - 3416

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 1/18

Authors : Margolis, F. G., Z. N. Lunskaya and S. I. Vol'fkovich

Title : Reaction of potassium chloride with mixtures of sulfur dioxide, air, and steam

Periodical : Zhur. prikl. khim., 28, 5, 453-458, 1955

Abstract : Experiments were carried out with a gas mixture containing 5-7% SO_2 (gas velocity, 300 ml/min.) in the presence of 1% Fe_2O_3 (catalyst) at 500-550°C for 1.5-2 hours. The conversion of KCl to K_2SO_4 amounted to 94-96%; 40% of SO_2 reacted. Kaolin (3%) added to KCl prevented the latter from caking and exerted a mild catalytic effect. Four tables, 3 diagrams, 1 drawing, 2 references, 1 Russian (1942).

Institution : None

Submitted : O 29, 1954

MARGOLIS, F. G.

AID - P-88

Subject : USSR/Chemistry

Card : 1/1

Authors : Dubovitskiy, A. M., Margolis, F. G., and Glazova, T. V.

Title : Dendrite structure of ammonium nitrate and its effect on caking of the salt

Periodical : Zhur. Prikl. Khim. 27, no. 4, 368-375, 1954

Abstract : Under certain conditions, formation of dendritic crystals of ammonium nitrate takes place from both solutions and fusions. Dendritization of ammonium nitrate eliminates caking of the salt. Ten references (six U.S.S.R.): 1891-1952. One table; four photos.

Institution : Scientific Institute for Fertilizers, Insecticides and Fungicides.

Submitted : August 17, 1953

MARGOLIS, F.G.

Dendritic structure of ammonium nitrate and its effect on caking. A. M. Dubovitskiĭ, F. G. Margolis, and T. G. Glazova. *J. Appl. Chem. U.S.S.R.* 21, 349-51(1954)(Engl. translation).—See *C.A.* 48, 14133*i*. H. L. H.

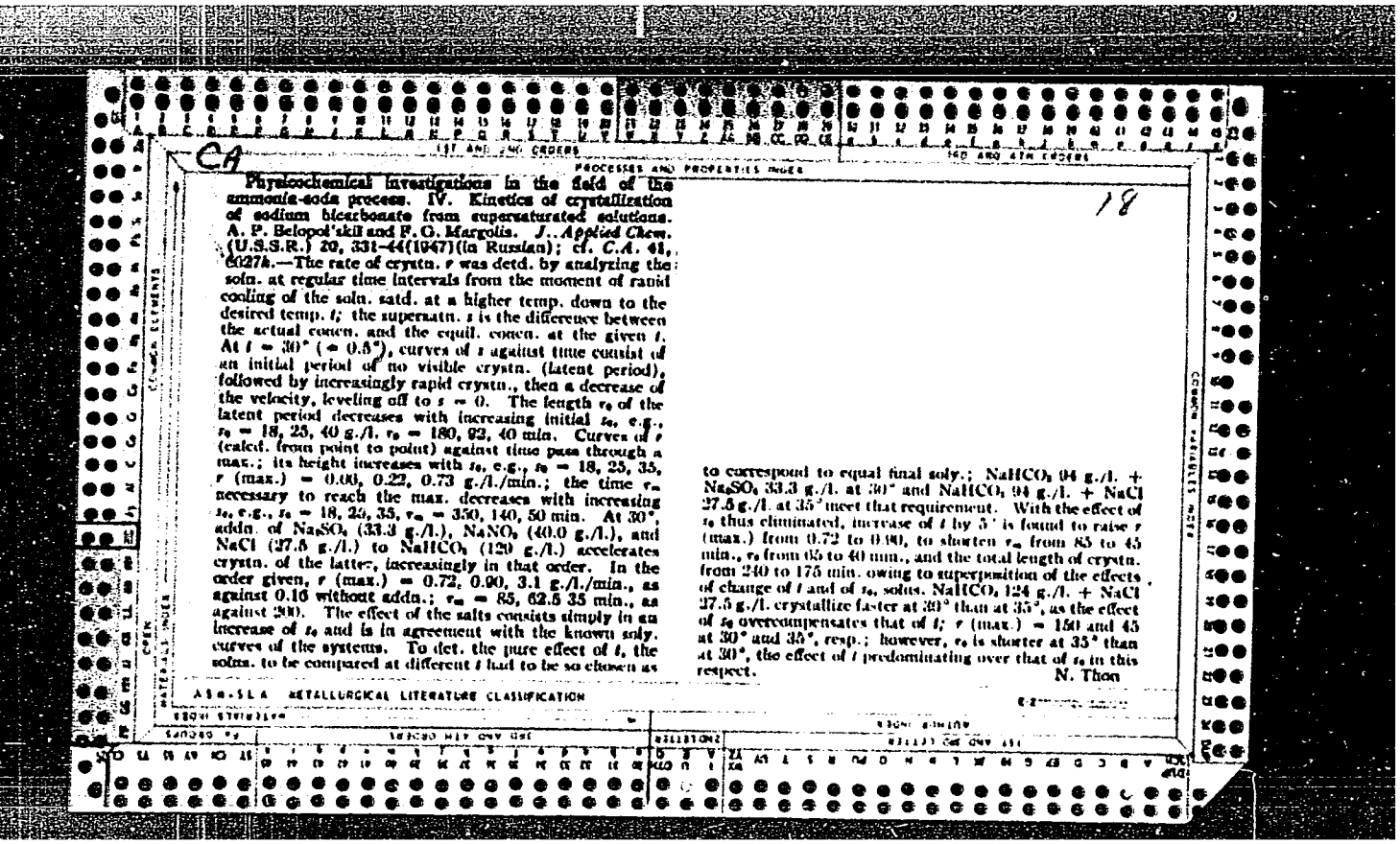
MARGOLIS F.G.

DUBOVITSKIY, A.M.; MARGOLIS, F.G.; GLAZOVA, T.V.

Improving the properties of ammonium nitrate by the addition of inorganic substances. Khim.prom. no.2:93-94 Mr '54. (MLRA 7:6)
(Ammonium nitrate)

MARGOLIS, F.G.

Potassium nitrate and ammonium chloride from a solution of ammonium nitrate and potassium chloride. Patent U.S.S.R. 77,419, Dec.31, 1949.
(CA 47 no.20:10816 '53)



CA

18

Physicochemical investigations in the field of the ammonia-soda process. IV. Kinetics of crystallization of sodium bicarbonate from supersaturated solutions. A. P. Belopol'skii and F. G. Margolis. *J. Applied Chem. (U.S.S.R.)* 20, 331–44(1947)(in Russian); *cf. C.A.* 41, 6027h.—The rate of crystn. r was detd. by analyzing the soln. at regular time intervals from the moment of rapid cooling of the soln. satd. at a higher temp. down to the desired temp. t; the supersatn. s is the difference between the actual concn. and the equil. concn. at the given t. At $t = 30°$ (± 0.5°), curves of s against time consist of an initial period of no visible crystn. (latent period), followed by increasingly rapid crystn., then a decrease of the velocity, leveling off to $s = 0$. The length τ_0 of the latent period decreases with increasing initial s_0, e.g., s_0 = 18, 25, 40 g./l. τ_0 = 180, 92, 40 min. Curves of r (calcd. from point to point) against time pass through a max.; its height increases with s_0, e.g., s_0 = 18, 25, 35, r (max.) = 0.00, 0.22, 0.73 g./l./min.; the time τ_m necessary to reach the max. decreases with increasing s_0, e.g., s_0 = 18, 25, 35, τ_m = 350, 140, 50 min. At 30°, addn. of Na_2SO_4 (33.3 g./l.), $NaNO_3$ (40.0 g./l.), and NaCl (27.5 g./l.) to $NaHCO_3$ (120 g./l.) accelerates crystn. of the latter, increasingly in that order. In the order given, r (max.) = 0.72, 0.90, 3.1 g./l./min., as against 0.16 without addn.; τ_m = 85, 62.5 35 min., as against 300. The effect of the salts consists simply in an increase of s_0 and is in agreement with the known soly. curves of the systems. To det. the pure effect of t, the solns. to be compared at different t had to be so chosen as to correspond to equal final soly.; $NaHCO_3$ 94 g./l. + Na_2SO_4 33.3 g./l. at 30° and $NaHCO_3$ 94 g./l. + NaCl 27.5 g./l. at 35° meet that requirement. With the effect of s_0 thus eliminated, increase of t by 5° is found to raise r (max.) from 0.72 to 0.90, to shorten τ_m from 85 to 45 min., τ_0 from 65 to 40 min., and the total length of crystn. from 240 to 175 min. owing to superposition of the effects of change of t and of s_0, solns. $NaHCO_3$ 124 g./l. + NaCl 27.5 g./l. crystallize faster at 30° than at 35°, as the effect of s_0 overcompensates that of t; r (max.) = 150 and 45 at 30° and 35°, resp.; however, τ_0 is shorter at 35° than at 30°, the effect of t predominating over that of s_0 in this respect.

N. Thon

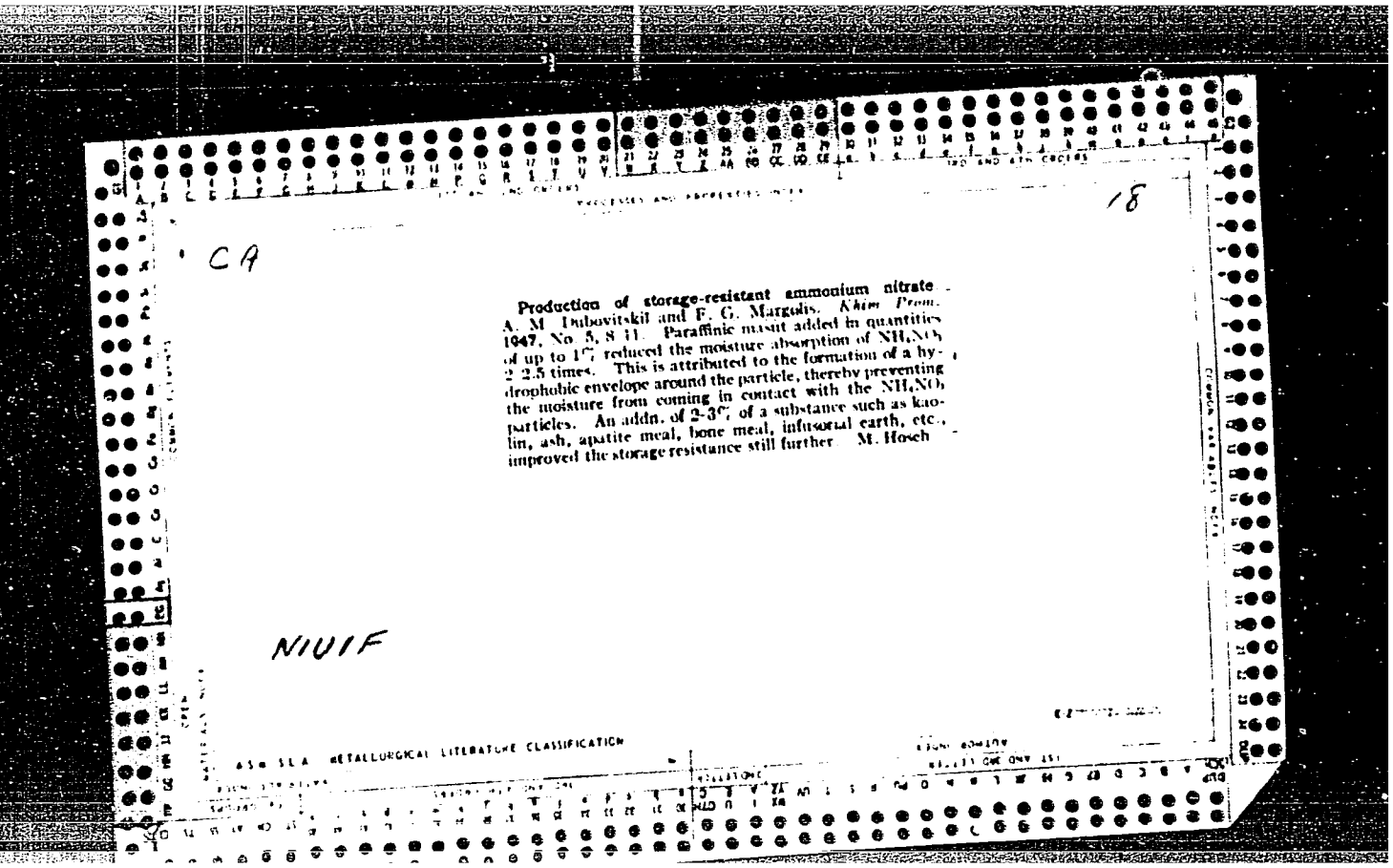
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

Margolis, F. G.

DUBOVITSKIY,A.M., kandidat tekhnicheskikh nauk; MARGOLIS,F.G., kandidat tekhnicheskikh nauk

Production of non-caking ammonium nitrate. Khim.prom.no.5:136-139 My '47. (MLRA 8:12)

1. Nauchnyy Institut po udobreniyam i insektofungisidam
(Ammonium nitrate)



18

CA

Production of storage-resistant ammonium nitrate. A. M. Dubovitskii and F. G. Margolis. *Khim. Prom.* 1947, No. 5, 8-11. Paraffinic mixt. added in quantities of up to 1% reduced the moisture absorption of NH_4NO_3 2-2.5 times. This is attributed to the formation of a hydrophobic envelope around the particle, thereby preventing the moisture from coming in contact with the NH_4NO_3 particles. An addn. of 2-3% of a substance such as kaolin, ash, apatite meal, bone meal, infusorial earth, etc., improved the storage resistance still further. M. Hosch

NIUIF

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

MARGOLIS, F. G.

"Catalysts for the Production of K_2SO_4 or Na_2SO_4 from KCl or NaCl by Reaction with SO_2," S. I. Vol'fkovich, and F. G. Margolis, Doklady Akad Nauk SSSR, XLI, pp 23-5 (1943) (SEE: Inst. Insect/Fungi. in Ya. V. Samoylov)

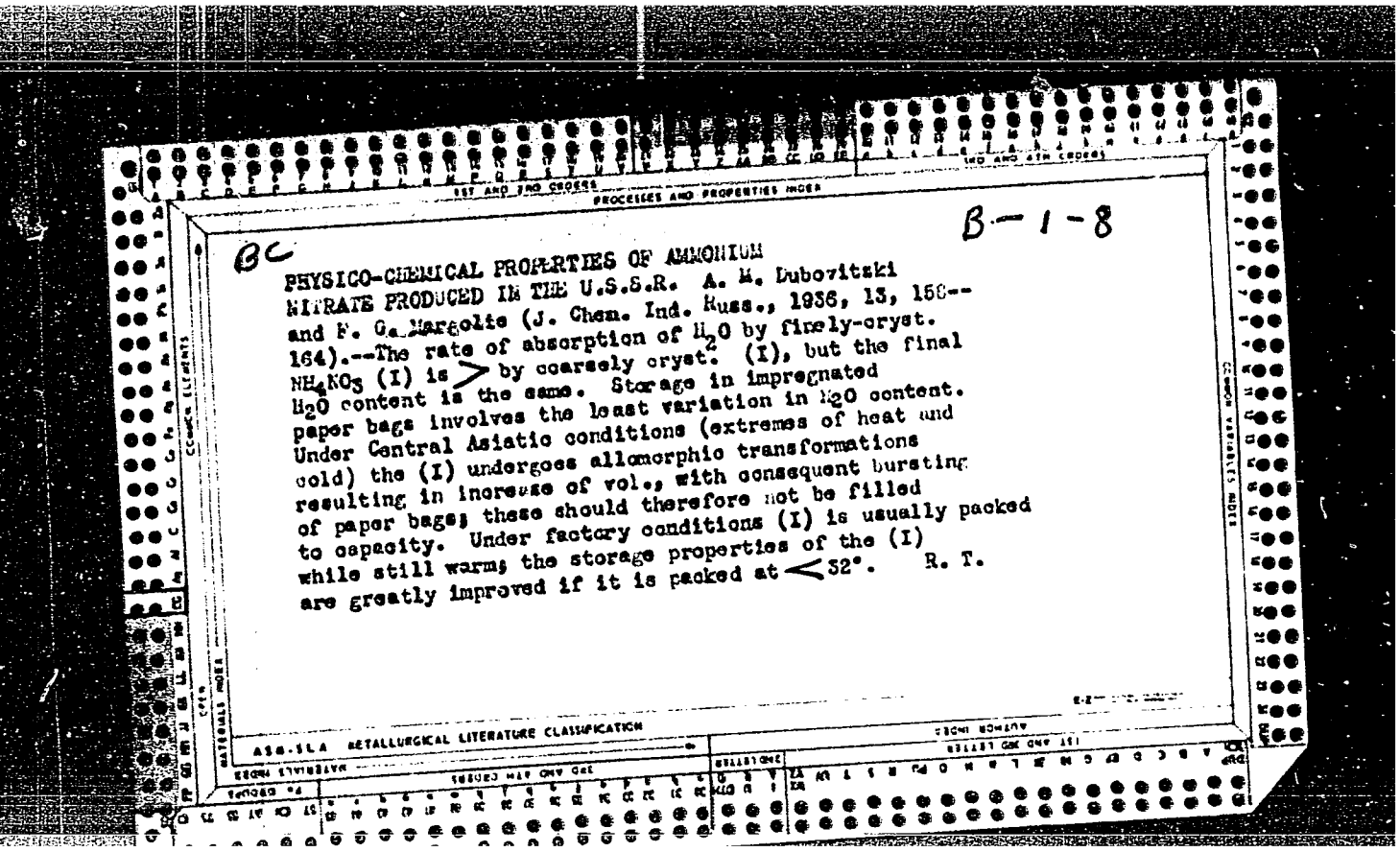
SO: U-237/49, 8 April 1949

MARGOLIS, F. G.

"Catalysis in Reducing Potassium and Sodium Sulphates from Chlorides Decomposed with Sulphur Dioxide in the Presence of Oxygen,"

SO: Dok. AN, 41, No. 1, 1943. p. 21-23

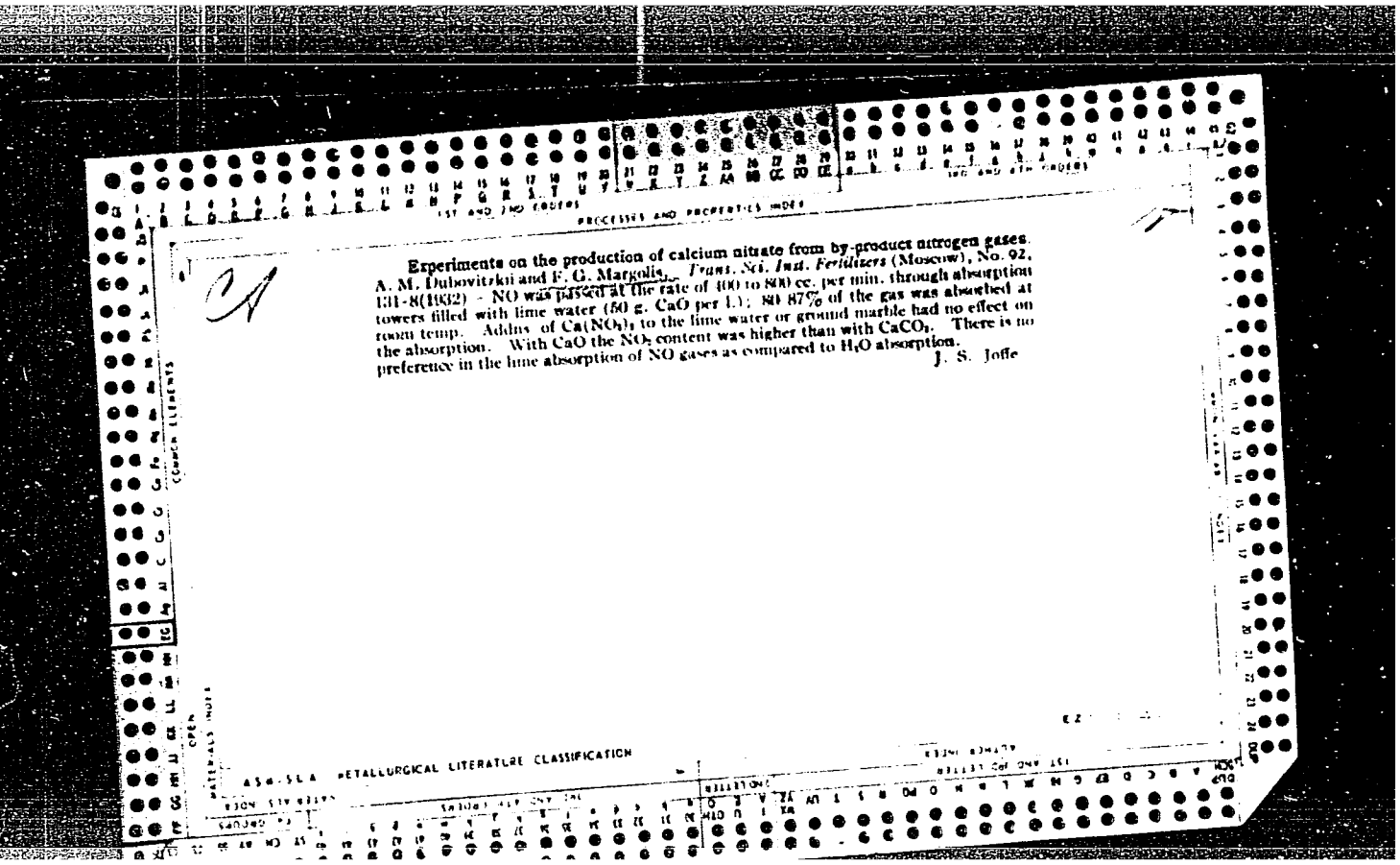
Mbr., Inst. Fertilizers & Insectofungicides, -1943-.



B-1-8

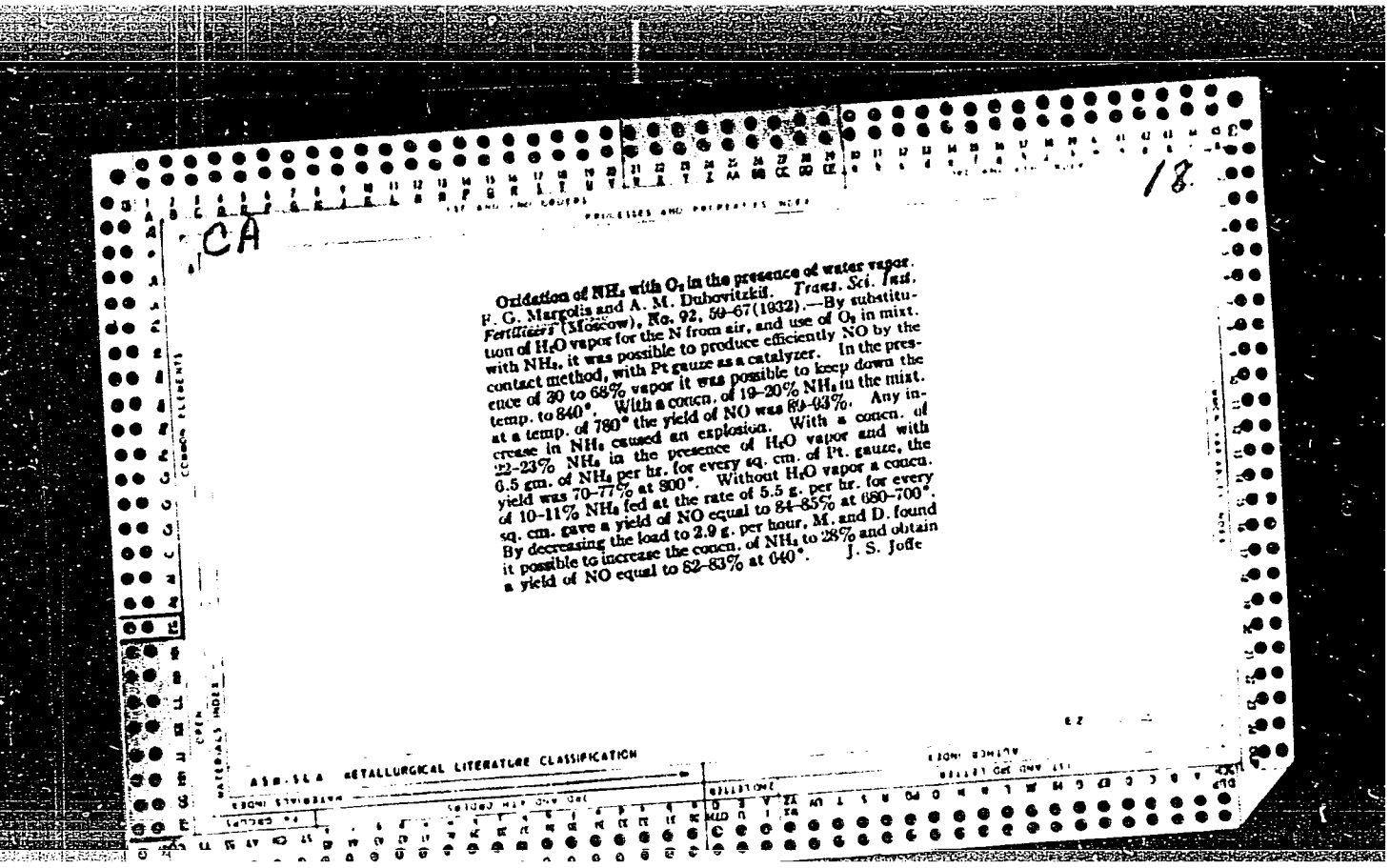
BC

PHYSICO-CHEMICAL PROPERTIES OF AMMONIUM NITRATE PRODUCED IN THE U.S.S.R. A. M. Dubovitski and F. G. Margolis (J. Chem. Ind. Russ., 1936, 13, 156--164).--The rate of absorption of H_2O by finely-cryst. NH_4NO_3 (I) is > by coarsely cryst. (I), but the final H_2O content is the same. Storage in impregnated paper bags involves the least variation in H_2O content. Under Central Asiatic conditions (extremes of heat and cold) the (I) undergoes allomorphic transformations resulting in increase of vol., with consequent bursting of paper bags; these should therefore not be filled to capacity. Under factory conditions (I) is usually packed while still warm; the storage properties of the (I) are greatly improved if it is packed at < 32°. R. T.



Experiments on the production of calcium nitrate from by-product nitrogen gases. A. M. Dubovitzkii and F. G. Margolis. *Trans. Sci. Inst. Fertilizers* (Moscow), No. 92, 131-8(1932). – NO was passed at the rate of 400 to 800 cc. per min. through absorption towers filled with lime water (50 g. CaO per l.); 80-87% of the gas was absorbed at room temp. Addns. of $Ca(NO_3)_2$ to the lime water or ground marble had no effect on the absorption. With CaO the NO_2 content was higher than with $CaCO_3$. There is no preference in the lime absorption of NO gases as compared to H_2O absorption.

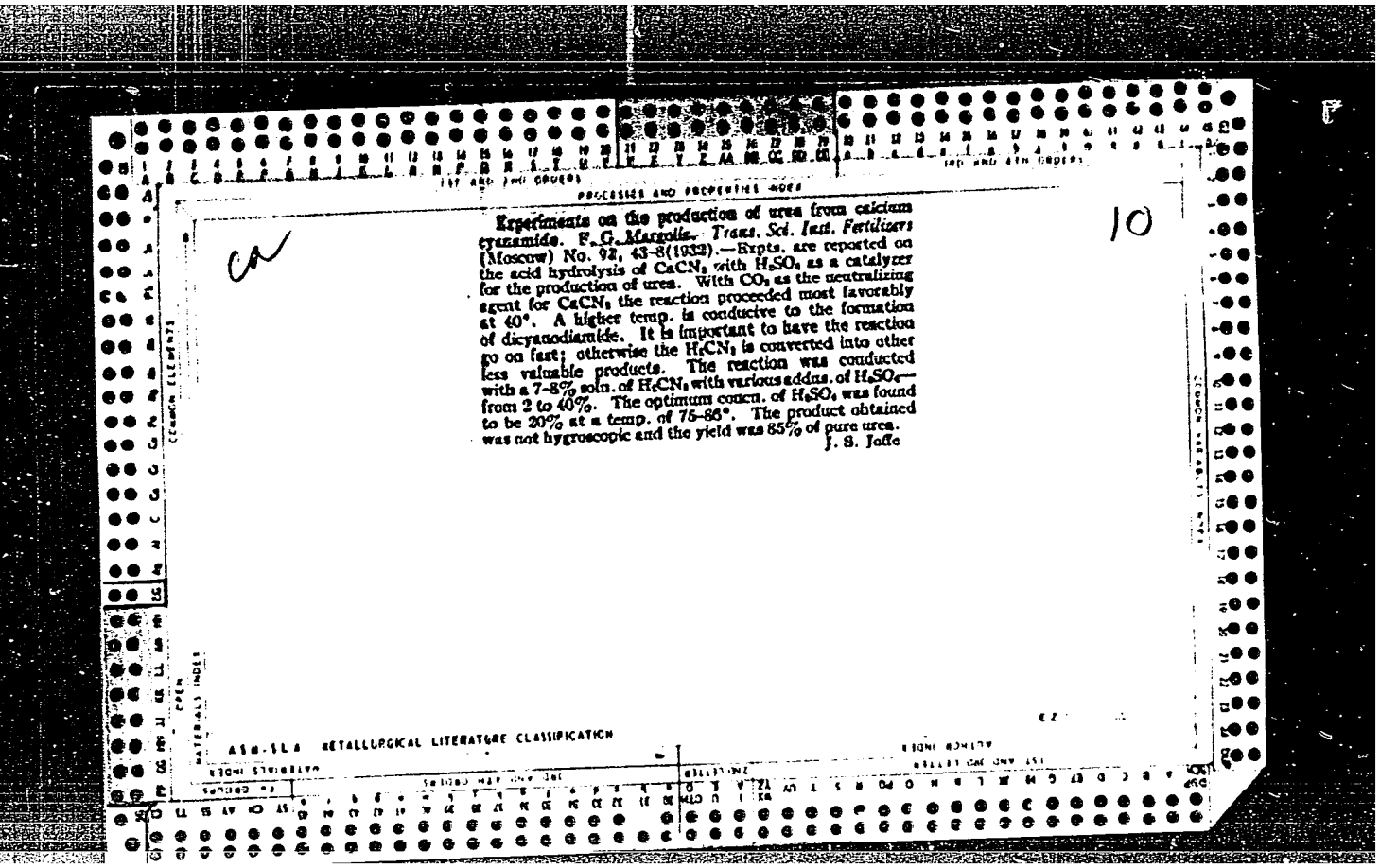
J. S. Joffe



18.

CA

Oxidation of NH_3 with O_2 in the presence of water vapor. F. G. Margolis and A. M. Dubovitzkii. *Trans. Sci. Inst. Fertilizers* (Moscow), No. 92, 59–67(1932).—By substitution of H_2O vapor for the N from air, and use of O_2 in mixt. with NH_3, it was possible to produce efficiently NO by the contact method, with Pt gauze as a catalyzer. In the presence of 30 to 68% vapor it was possible to keep down the temp. to 840°. With a concn. of 19–20% NH_3 in the mixt. at a temp. of 780° the yield of NO was 89–93%. Any increase in NH_3 caused an explosion. With a concn. of 22–23% NH_3 in the presence of H_2O vapor and with 0.5 gm. of NH_3 per hr. for every sq. cm. of Pt. gauze, the yield was 70–77% at 800°. Without H_2O vapor a concn. of 10–11% NH_3 fed at the rate of 5.5 g. per hr. for every sq. cm. gave a yield of NO equal to 84–85% at 680–700°. By decreasing the load to 2.9 g. per hour, M. and D. found it possible to increase the concn. of NH_3 to 28% and obtain a yield of NO equal to 82–83% at 640°. J. S. Joffe



Experiments on the production of urea from calcium cyanamide. F. G. Margolis. *Trans. Sci. Inst. Fertilizers* (Moscow) No. 92, 43–8(1932).—Expts. are reported on the acid hydrolysis of $CaCN_2$ with H_2SO_4 as a catalyzer for the production of urea. With CO_2 as the neutralizing agent for $CaCN_2$ the reaction proceeded most favorably at 40°. A higher temp. is conducive to the formation of dicyanodiamide. It is important to have the reaction go on fast; otherwise the H_2CN_2 is converted into other less valuable products. The reaction was conducted with a 7–8% soln. of H_2CN_2 with various additions of H_2SO_4 from 2 to 40%. The optimum concn. of H_2SO_4 was found to be 20% at a temp. of 75–86°. The product obtained was not hygroscopic and the yield was 85% of pure urea.
J. S. Joffe

MARGOLIS, E.M., mayor med.sluzhby.

Studying night vision in specialist aboard ship. Voen.-med.zhur. no.12:61-65 D '55 (MIRA 12:1)
(NIGHT VISION)

MARGOLIS, E.G.; DUBOVITSKIY, A.M.; GLAZOVA, T.V.

Obtaining dicalcium phosphate dihydrate and ammonium nitrate by nitric acid decomposition of phosphates. Khim.prom.no.1: 26-31 Ja-F '56. (MIRA 9:7)

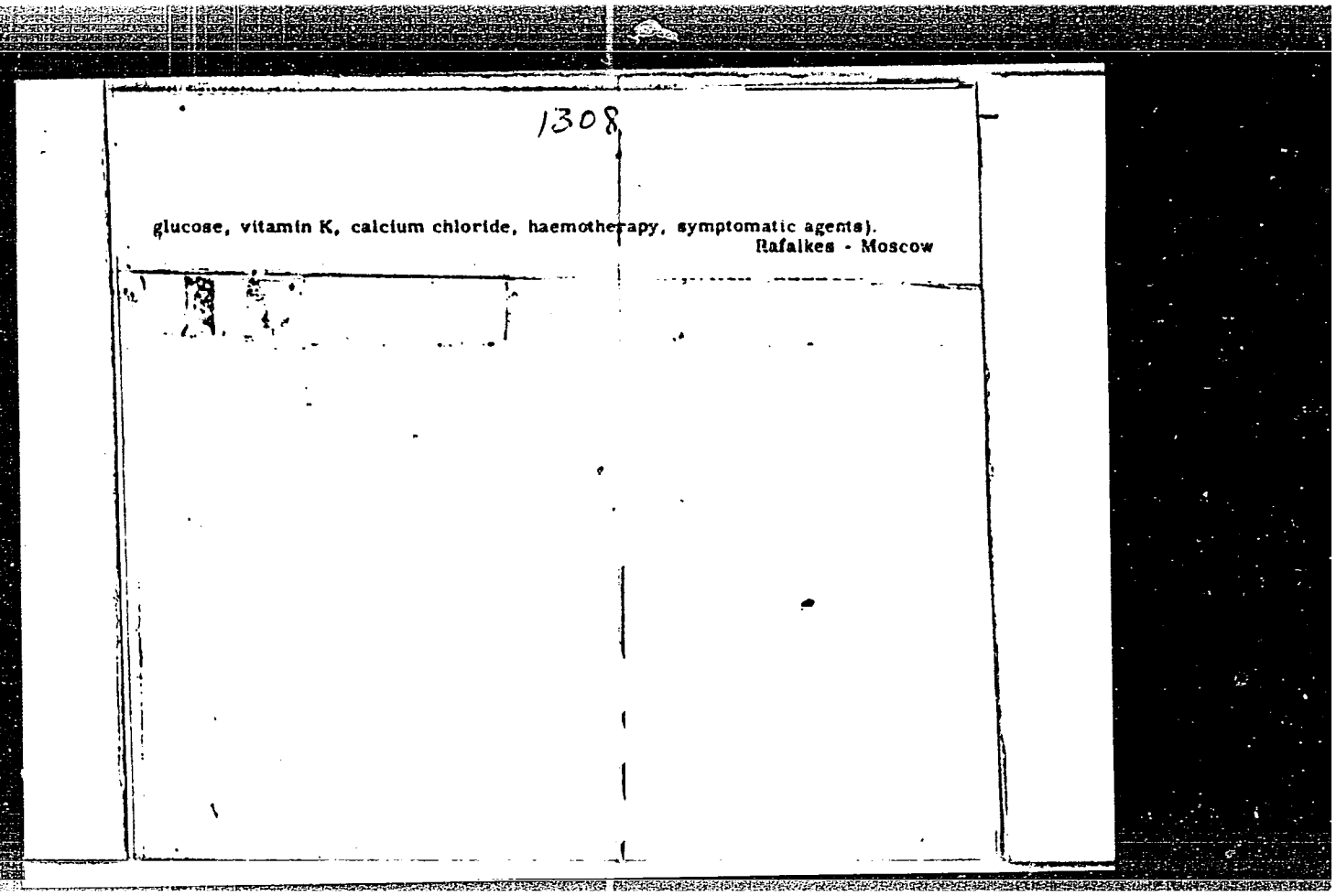
1.Nauchnyy institut po udobreniyam i insektofungitsidam imeni Ya.V.Samoylova.
(Phosphates)

P'YANKOV, V. A., MARGOLIS, E. G.

Silicates

Determination of small quantities of silicates and phosphates jointly contained in organic method. Biokhimia, 17, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.



1308

glucose, vitamin K, calcium chloride, haemotherapy, symptomatic agents).
Rafalkes - Moscow

1308. ACUTE PARENCHYMATOUS HEPATITIS IN WOMEN DURING PREGNANCY AND PARTURITION (Russian text) - Margolis D. L. Obstet. Clin., Arkhangelsk - SBORN. NAUCH. TRUD. KAF. AKUSH. I GINEK. ARKHANGELSK. MED. INST. 1957 (119-123)

Parenchymatous hepatitis was diagnosed in 30 of 12,500 pregnant women seen in the course of 8 yr. One patient died from acute yellow atrophy of the liver, 15 recovered with no ill-effect on the pregnancy, 3 had late miscarriages, 7 delivered prematurely and 5 were full-term. When parenchymatous hepatitis is associated with increasing blood bilirubin levels, increasing leucocytosis and shift of the leucocyte formula to the left, as well as with increased urobilin content of the urine and urinary acetone, especially in combination with renal changes, pregnancy should be terminated. Therapy: massive doses of glucose (200 ml. 40% solution) with ascorbic acid (0.3-0.5 g.) intravenously, insulin 20 units; by mouth: nicotinic acid 150-300 mg., high carbohydrate, low protein and fat diet. Drip blood transfusion is permissible even in moderate losses of blood. Of 12 children born to mothers who had had jaundice, one was still-born, 11 were alive, of which 6 were premature. Jaundice (infectious) was observed in 4 children. All the children were discharged in good condition as the result of controlled use of dilute Ringer's solution with gradual addition of breast milk with simultaneous use of complex treatment (campolon,

MARGOLIS, D.A.

Fulfill the seven-year plan ahead of time. Med.prom. 13 no.7:6-8 Jl '59. (MIRA 12:10)

1. Mediko-instrumental'nyy zavod "Krasnogvardeyets". (MEDICAL INSTRUMENTS AND APPARATUS)

MARGOLIS, D.A.

In celebration of the Twenty-first Congress of the CPSU. (MIRA 11:12)
Med.prom. 12 no.11:3-6 N '58
(MEDICAL INSTRUMENTS AND APPARATUS)

MARGOLIS, D.A.

Campaign to increase labor productivity at the "Krasnogvardeets" Plant. Med.prom. 12 no.10:6-9 O '58 (MIRA 11:11)
(MEDICAL INSTRUMENTS AND APPARATUS)

MARGOLIS, D.A.

How we got ready for the shift to the new rate schedule. Med.prom. 12 no.3:48-50 Mr '58. (MIRA 11:4)

1. Dediko-instrumental'nyy ordena Lenina zavod "Krasnogvardeyets" (MEDICAL INSTRUMENTS AND APPARATUS) (WAGES)

KARPIN, V. K.; MARGOLIS, D. A.

Medical Instruments and Apparatus

Results of work of "excellent quality" teams at the "Krasnogvardeyets" plant. Med. prom., No. 4, 1952.

Monthly List of Russian Accessions. Library of Congress. November 1952. UNCLASSIFIED.

MARGOLIS, A.M.

Study of the effect of vitamin C on the working efficiency of workers in an electroplating shop. Vop. pit. 23 no.2:13-17 Mr-Ap '64. (MIRA 17:10)

1. Otdel vitaminov C i P (zav. - prof. N.S. Yarusova) Nauchno-issledovatel'skogo instituta vitaminologii Ministerstva zdravookhraneniya SSSR, Moskva.

MARGOLIS, A.M., promyshlenno-sanitarnyy vrach, YUVZHENKO, F.I.; GUSLITS, I.G., zasluzhennyy vrach RSFSR; ISAVNIN, L.S., inzh.; KOVRIGIN, S.D., SHISHKIN, I.A., kand.tekhn.nauk; KOLKER, R.M., inzh. (Leningrad)

Noise is our enemy. Zdorov'e 8 no.10:22-24 O '62. (MIRA 15:10)

1. Glavnyy sanitarnyy vrach Kiyeva (for Yuvzhenko). 2. Nachal'nik Moskovskoy shumometricheskoy stantsii (for Isavnin).
(NOISE CONTROL)

L 34032-66

ACC NR: AR6017168

than is possessed by students in the 7th classes. Work compilation of the program has shown that realization of the principle of individualization of the teaching process calls for appreciable increase in the number of short-duration laboratory projects at the expense of reducing the number of demonstrations. This is due to the fact that a demonstration by the teacher is difficult to reconcile in time with the student's individual rate of work as he learns from the textbook. The course topics and sections of greatest educational significance should not be studied by the program method, for educationally the efficiency of a live communication and discussion between the instructor and the entire groups is much higher. The program method cannot be regarded as universal or called upon to replace all existing methods, but should be combined reasonably with other methods. S. Goncharenko. [Translation of abstract]

SUB CODE: 05, 09

Card 2/2

L 34032-66 EWT(d)/EWP(1) LIP(c) BB/GG
ACC NR: AR6017168 SOURCE CODE: UR/0058/65/000/012/A005/A005

30
B

AUTHOR: Margolis, A. A.

TITLE: On the programming of physics instruction 16

SOURCE: Ref. zh. Fizika, Abs. 12A39

REF SOURCE: Uch. zap. Mosk. gos. ped. in-ta im. V. I. Lenina, no. 288, 1964, 78-93

TOPIC TAGS: programmed teaching, physics, education

ABSTRACT: The introduction of programmed teaching is one of the ways of improving the teaching process, making it possible to realize operative feedback during the course of teaching and to individualize the teaching process. In order to determine the efficiency of the programmed method, special programmed teaching materials were prepared for the students of the present classes, to take the place of textbooks. In compiling the programmed materials, the following guiding principles were used: 1) the principle of program construction; 2) the principle ensuring successful learning of the information during the course of the study; 3) the psychological principle of "reinforcement" of correct and correction of erroneous procedures by the students during the time of the teaching process; 4) principle of individualization of the teaching; 5) principle of activation of the teaching process. Starting from the features peculiar to the ages of the students of the 7th classes, a linear system of program construction was used, since work with a textbook constructed on the branched system calls for more critical judgement and a more conscientious approach to study

Card 1/2

MARGOLIS, Aron Abramovich; PARFENT'YEVA, Natal'ya Yefimovna; SOKOLOV, Ivan Ivanovich. Prinimali uchastiye: MUR, D.M.; IVANOVA, L.A.; YEGOROV, A.L. ALEKSEYEVA, N.V., red.; SVITKOV, L.P., red.; KOVALENKO, V.L., tekhn.red.

[Laboratory manual for experiments in physics; for students in pedagogical institutes] Praktikum po metodike fiziki; posobie dlia studentov pedagogicheskikh institutov. Moskva, Gos. uchebno-pedagog.izd-vo M-va prosv.RSFSR, 1960. 341 p. (MIRA 14:2)

(Physics--Laboratory manuals)

MARKELL, A. A.

"Electromagnetic Oscillations [illegible] in the Physics Course [illegible] the Intermediate School." [illegible], Moscow [illegible], Moscow, 1954. (RZhFiz, Sep 54)

SO: Sum 432, 29 Mar 55

MARGOLIS, Alina

Preventive vaccination in diabetic children. Ped. Pol. 40 no.1 65-68 Ja '65

1. Z II Kliniki Chorob Dzieci Akademii Medycznej i Poradni Przeciwcukrzycowej w Łodzi (Kierownika prof. dr. med. F.Redlich [deceased]) i z Sanatorium PPU dla Dzieci Chorych na Cukrzyce w Rabce (Lekarz Naczelny: dr. med. L. Koparzowa).

DEBIEC, Barbara; KWIATKOWSKA, Maria; LORENC, Jadwiga; MARGOLIS, Alina

Studies on the excretion of uropepsin in diabetic children. Pediat. pol. 38 no.3:249-260 '63.

1. Z II Kliniki Chorob Dzieci AM w Lodzi Kierownik: prof. dr med. Fr. Redlich i z Zakladu Chemii Fizjologicznej AM w Lodzi Kierownik: prof. dr med. B. Filipowicz.
(DIABETES MELLITUS, JUVENILE)
(UROPEPSIN) (URINE)

DEBIEC, Barbara; KWIATKOWSKA, Maria; MARGOLIS, Alina

Mental peculiarities of a diabetic child. Pediat. pol. 37 no.12: 1287-1302 D '62.

1. Z II Kliniki Chorob Dzieci AM w Lodzi Kierownik: prof. dr med. F. Redlich.
(DIABETES MELLITUS JUVENILE) (CHILD PSYCHOLOGY)

JUDKIEWICZ, Luba; KOLODZIEJSKA, Helena; MARGOLIS, Alina

A case of intracranial complications in leukemia. Pediat. pol. 37 no.11:1215-1219 '62.

1. Z II Kliniki Chorob Dzieci AM w Lodzi Kierownik: prof. dr med. F. Redlich i z Laboratorium PSK nr 4 Kierownik: dr med. H. Kolodziejska.
(LEUKEMIA) (BRAIN NEOPLASMS)

MARGOLIS, Alina

A case of steroid diabetes in a 6-year-old girl. Pediat.pol. 37 no.11:1203-1207 '62.

1. Z II Kliniki Chorob Dzieci AM w Lodzi Kierownik: prof. dr med. F. Redlich.
(DIABETES MELLITUS JUVENILE) (CORTICOTROPIN)

DEBIEC, Barbara; KWIATKOWSKA, Maria; MARGOLIS, Alina

Trials with oral therapy of juvenile diabetes with biguanide derivatives. Pediat. pol. 37 no.4:359-370 Ap '62.

1. Z II Kliniki Chorob Dzieci AM w Lodzi Kierownik: prof. dr med. F. Redlich.

(ANTIDIABETICS ther)

BODALSKI, Jerzy; MARGOLIS, Alina

Clinical evaluation of guided therapy in chronic dehydration states in infants. Pediat. pol. 36 no.7:713-733 '61.

1. Z II Kliniki Chorob Dzieci AM w Lodzi Kierownik: prof. dr med. F. Redlich.

(DEHYDRATION in inf & child)

BODALSKI, Jerzy; MARGOLIS, Alina

Management of dehydration in infants. Pediat. pol. 36 no.7:705-712 '61.

1. Z II Kliniki Chorob Dzieci AM w Lodzi Kierownik: prof. dr med. F. Redlich.

(DEHYDRATION in inf & child)

DEBIEC, Barbara; MARGOLIS, Alina

Controlled dosage of insulin in diabetes in children. Pediat. polska 35 no.2:165-177 F '60.

1. Z II Kliniki Chorob Dzieci A.M. w Lodzi. Kierownik kliniki: prof.dr.med. F.Redlich.
(INSULIN ther.)

DEBIEC, Barbara; MARGOLIS, Alina

Kolobierz vacation center for diabetic children. Pediat.polska 34 no.10: 1345-1350 O '59.

1. Z II Kliniki Chorob Dzieci A.M. w Lodzi. Kierownik Kliniki: prof.dr.med. F. Redlich i z Sanatorium CZU w Kolobrzegu. Lekarz Naczelny: J. Ziomber.
(DIABETES MELLITUS in inf. & child.)

MARGOLIS, A

Poland/Pharmacology. Toxicology. Drugs of Enzyme Nature. V-7

Abs Jour : Ref Zhur-Biol., No 6, 1958, 28138

Author : Zarzycka N., Margolis A., Pacanowska M.

Inst : Not given

Title : On the Problem of Therapy of Empyema with Streptokinase and Streptodornase.

Orig Pub : Pediatr. polska, 1955, 30, No 12, 1145-1152.

Abstract : Streptokinase (1) and streptodornase (11) obtained from the filtrate of a colony of hemolytic streptococci of group A in combination with antibiotics were applied in 5 cases of empyema in children 6 months to 7 years old. As indicators for the administration of 1 and 11 were the inability to clear the pleural cavity by drainage or puncture and a

Card 1/2

MARGOLIS, Alina

Clinical aspects of acute latent leukemias in children. Pediat. polska 30 no.8:653-666 Aug '55.

1. Z II Kliniki Chorob Dzieci A.M. w Lodzi. Kierownik: prof.dr. med.Fr.Redlich, Lodz, Armii Czerwonej 15.
(LEUKEMIA, in infant and child,
acute latent)

REDLICH, Franciszek; MARGOLIS, Alina

Clinic of reticuloendotheliosis; a case of Hand-Schuler-Christian disease. Pediat.polska 30 no.1:53-56 Jan 55.

1. Z II Kliniki Chorob Dzieci A. M. w Lodzi Kierownik: prof. dr med. Fr. Redlich. Adres: Lodz, Armii Czerwonej 15.
(LIPOIDOSIS,
Hand-Schuler-Christian synd. in inf. and child.)

MARGOLIS A.

KAPUSCINSKA, W.; MARGOLIS, A.; ZARZYCKA, H.

Thoracic cyst with intestinal texture in a 3-month-old infant.
Pediat. polska 29 no.8:810-818 Aug 54.

1. Z II Kliniki Chorob Dzieci Akademii Medycznej w Lodzi. Kierownik: prof. dr med. Fr.Redlich i z Zakladu Anatomii Patologicznej Akademii Medycznej w Lodzi. Kierownik: prof. dr med. A.Pruszczynski.

(THORAX, cysts,
in inf., intestinal texture of cystic tissue)
(CYSTS,
thorax, in inf., intestinal texture of cystic tissue)

Ionic Deposition From Carboxylic Divinylstyrene Latexes

position. The increase of the pH also decreases the relative elongation and the ultimate swelling of the latex, but the tensile strength and the equilibrium modus increase. In the process of ion deposition and the subsequent treatment of the films obtained, calcium chloride interacts not only with the protective substances of the latex globules but also with the carboxyl groups of the polymer molecules, which is the cause of the structurization. The calcium atoms may combine with two carboxyls in two different polymer molecules connecting them by stable chemical cross bonds.
There are 5 graphs, 2 tables, and 4 references, 2 of which are Soviet and 2 English.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova (Moscow Institute of Fine Chemical Technology imeni Lomonosov). Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy, Moskva (Scientific Research Institute of Rubber and Latex Products, Moscow)

SUBMITTED: March 1, 1958

Card 2/2

1. Rubber products--Production 2. Latex--Applications 3. Ion --Deposits--Processes

69-20-3-6/24

AUTHORS: Sandomirskiy, D.M.; Margolina, Yu.L.; Dogadkin, B.A.; Krokhina, L.S.

TITLE: Ionic Deposition From Carboxylic Divinylstyrene Latexes (Ionnoye otlozheniye iz karboksilsoderzhashchikh divinilstirol'nykh lateksov)

PERIODICAL: Kolloidnyy zhurnal, 1958, vol XX, Nr 3, pp 293-297 (USSR)

ABSTRACT: The manufacture of rubber products immediately from latex by means of ion deposition is based on the interaction of the cations of the electrolyte diffused in the latex and the protective shell of the globules. The result of this interaction is the astabilization of the globules and the formation of a gel. Synthetic rubbers containing carboxyl groups in the molecule form very resistant vulcanizates. In the article, two carboxyl-containing divinylstyrene latexes are investigated with regard to ion deposition. It is shown that at an increase of the pH of the latexes from 4 - 10.1 the surface tension decreases from 54.2 - 40.1 dyn/cm. The change in viscosity is negligible in latexes containing 4 - 10% metacrylic acid. Graph 1 shows that an increase in the pH value causes a decrease in the speed of ion de-

Card 1/2

MARGOLINA, Yu.; GENEL', M.

Ion deposition from bivinyl nitrile latices. Kauch. i rez. 17 no.10:15-17 O '58. (MIRA 11:10)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Ion exchange) (Latex)

MARGOLINA, Yu. L.

(27)

The nature of autohesion of high-molecular materials. S. S. Voyutskii and Yu. L. Margolina. *Uspekhi Khim.* 18, 449-61(1949).—Autohesion is the property of two surfaces of a material forming a strong bond when brought in contact with each other. For high autohesion high cohesive strength is required as well as satisfactory coalescence. Solids have high cohesive strength, liquids satisfactory coalescence, high polymeric materials of specific structure and mol. wt. have both. Bonds between two polymer surfaces are established by diffusion of chain ends and segments into each other; thus a strong bond is obtained. Experimentally the optimum viscosity for high autohesion is found to be in the range from 100 to 10,000 poises. This corresponds to a degree of polymerization of about 50-300 and a relaxation time of 10^{-7} to 10^{-6} sec. Autohesion is increased by all factors giving better thermal motion: temp. increase, addn. of plasticizers, and solvents. It is decreased by decreasing temps., orientation of chain polymers, introduction of polar groups, and cross-linking vulcanization. Autohesive strength depends on contact time; the time dependence curve of autohesion is characteristic for each material. It is given for buna rubber, synthetic rubber, polyisobutylene, natural rubber, and natural rubber after mech. treatment. The dependence on pressure and temp. is illustrated. Only amorphous, nonpolar or weakly polar materials show good autohesion, unless polar forces as in proteins and nitrocellulose are suppressed by solvents. The effect of polymer structure, branching, and configuration is qualitatively discussed.

H. D. Noether

MARGOLINA, YU. L.

USSR/Chemistry - Colloids
Chemistry - Terminology Mar/Apr 49

"Terminology Used in the Viscosimetry of Dilute Solutions of Highly Polymeric Substances," G. L. Slonimskiy, S. S. Voyutskiy, Yu. L. Margolina, Physicochem Inst imeni L. Ya. Karpov, Moscow Inst of Fine Chem Tech imeni M. V. Lomonosov, Cen NII of Leather Substitutes, MLI USSR, 3½ pp

"Kolloid Zhur" Vol XI, No 2

Tabulates English and Russian terms, giving references and explanations. Submitted 25 Jun 48.

PA 45/49T26

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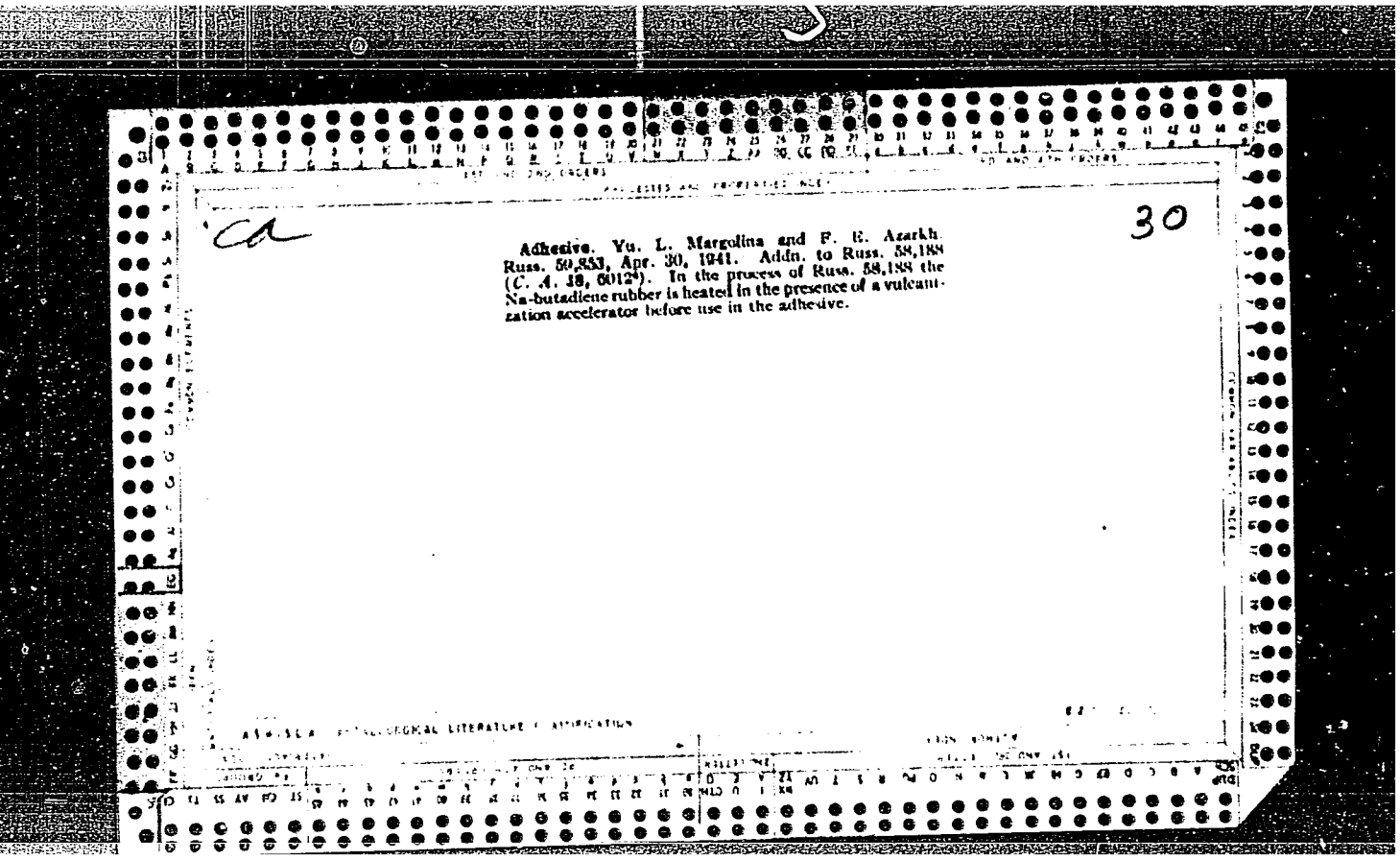
Apparatus for the determination of stickiness. Yu. L. Margulina and S. N. Voyutskii. *Zavodskaya Lab.* 14, 331-5(1948).—A thin layer of liquid, of thickness D, is contained between the flat bottom of a shallow dish and a plate, of radius R, connected with one arm of a balance. A load P will lift the plate after a time τ, counted from the application of the load. The stickiness of the liquid, s, is defined, according to Green (*C.A.* **15**, 7734[4]), as the cotangent of the slope of P plotted as a function of the velocity $1/\tau$. In agreement with G., τ is proportional to R^4. The proportionality of P and $1/\tau$ holds at any D (0.1–2.0 mm.); at any given P, the rate $1/\tau$ increases with D. The dependence of $1/\tau$ on D^3 is nonlinear, and the curve of D^3 as a function of $1/\tau$ does not pass through the origin. The relation becomes linear, and the straight line will pass through the origin, if $1/\tau$ is plotted not against D^3 but against $(D + d)^3$ where d is an empirical corrective term. Contrary to the point of view of Green, s is not identical with the viscosity η. This was demonstrated by detns. of s for a series of normal Newtonian liquids of equal η, aq. solns. of sucrose or glycerol, paraffin oil, and solns. of castor oil. Eight such liquids of equal η gave $1/\tau$ (P) lines of very different slopes. A 14.5% soln. of chloroprene, less viscous than a 9.27% soln. of butadiene rubber, had the higher s. The "stickiness" is an independent property, and is not directly related to viscosity. N. Thon

Central Sci Res Inst Leather Substitutes, Min. of Leather Industries
Moscow Inst Fine Chem. Tech. im. Lomonosov
Karpov Phys Chem Inst, Moscow



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Adhesive. Yu. L. Margolina and F. E. Azarkh. Russ. 59,853, Apr. 30, 1941. Addn. to Russ. 58,188 (*C. A.* 38, 6012[9]). In the process of Russ. 58,188 the Na-butadiene rubber is heated in the presence of a vulcanization accelerator before use in the adhesive.

MARGOLINA, YU. L.

"Adhesive," Yu. L. Margolina, P. A. Rebinder, Pat 58,188(USSR), 31 Oct. 1940. (SEE: Inst. Insect/Fungi. in Ya. V. Samoylov)

SO: U-237/49, 8 April 1949

MARGOLINA, Yu

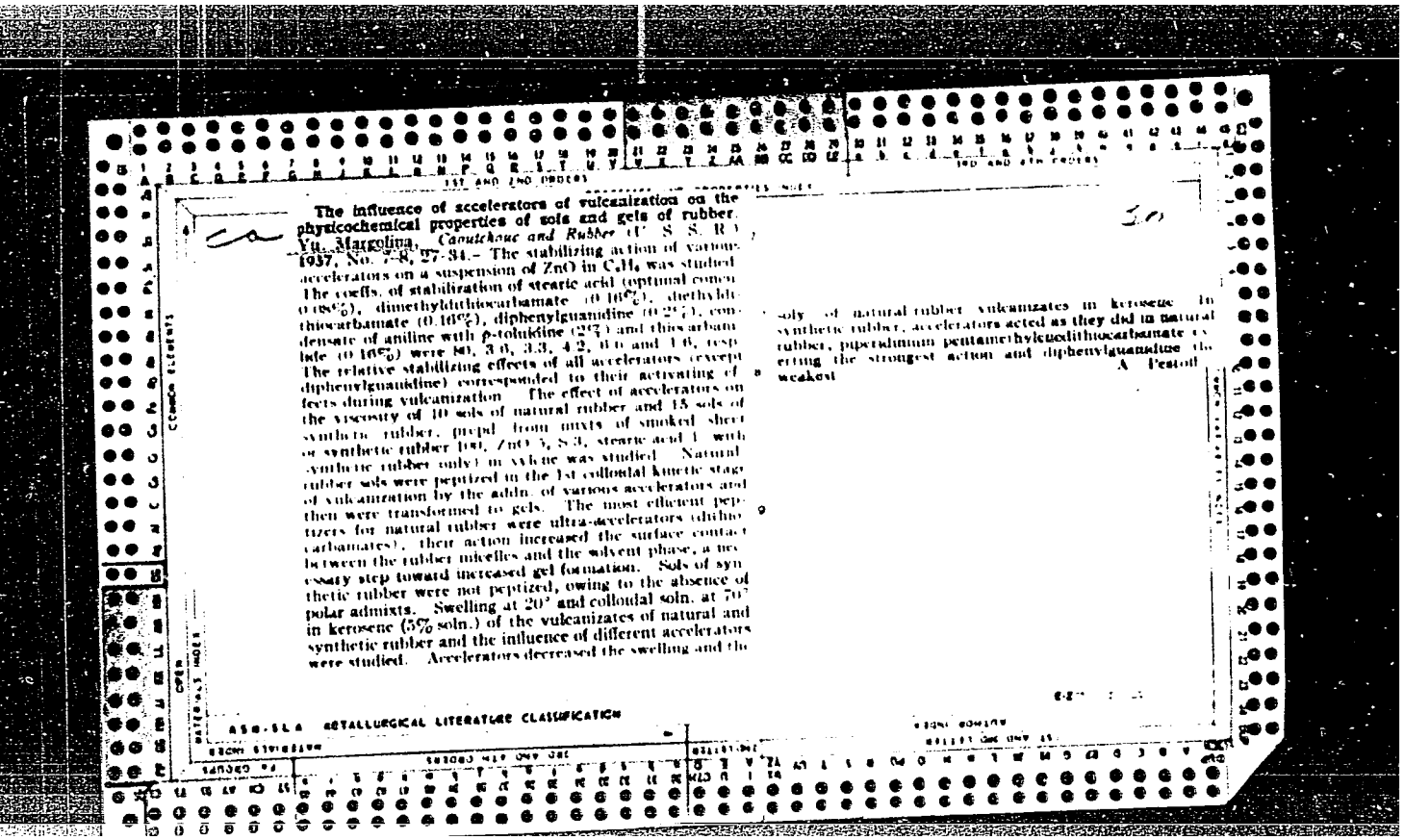
Margolina, Yu.

Physicochemistry of Surface Phenomena in the Technology of Rubber. XI. The action of Phenylhydrazine on the Structural Properties of Sodium-Butadiene Synthetic Rubber.

Caoutchouc and Rubber (USSR), 1937, No. 10, pp. 27-32.

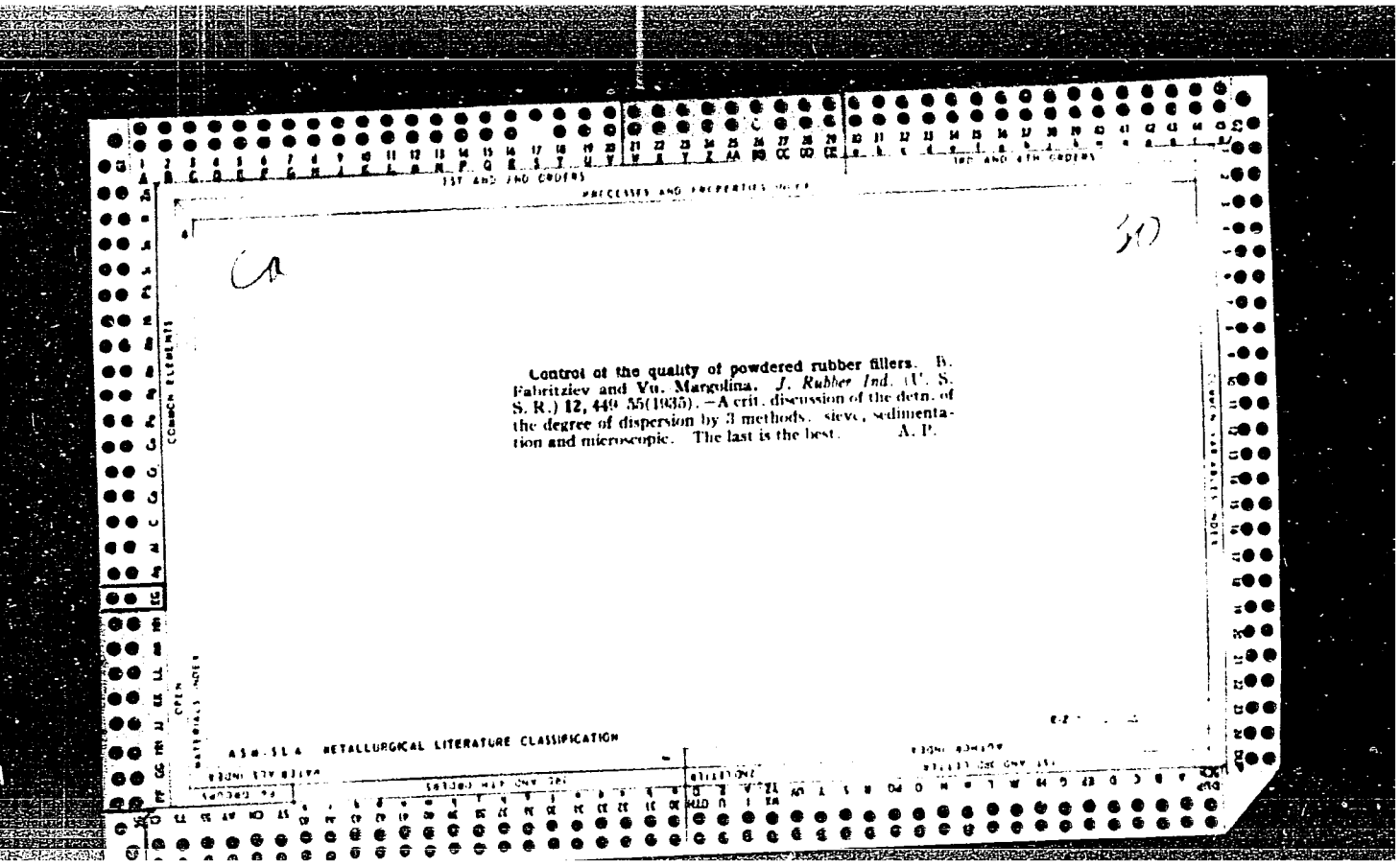
Chem. Abst., V. 32, p. 2777-8, 1938.

Na-butadiene synthetic rubber of different plasticities to which had been added phenylhydrazine (I) (0.5 to 10 parts by wt. per 100 parts of synthetic rubber) was heated at 110° for 2.5 hrs. The plasticity increased in direct proportion to the concn. of I, and the intensity of thermal treatment; very high plasticity was obtained after heating for 6.5 hrs., even with low conons. of I. Addn. of I to a 10% soln. of synthetic rubber in xylene and heating at 110° for 2.5 hrs. diminished the viscosity in direct proportion to the concn. of I, as a result of poptization of the sols by I. Heating synthetic rubber, with I at 110° for 2.5 hrs., milling for 15 min. and then dissolving in C_6H_6 gave different results: the viscosity of 5% sols increased with increase in concn. of I, and attained its max. at 2 parts of I per 100 parts of synthetic rubber; this corresponded to the optimum colloidaility of the system. A further increase in the concn. of I produced larger micelles and these greater aggregates dropped out of the system, producing desolvation with a corresponding decrease in viscosity and structure. The films obtained from the evapn. of the solns. of snythetic rubber with I were much stronger than from synthetic rubber alone. Addn. of hydrazobenzene to synthetic rubber had no effect on its physical properties.



The influence of accelerators of vulcanization on the physicochemical properties of sols and gels of rubber. Yu. Margolina. *Caoutchouc and Rubber* (U. S. S. R.), 1937, No. 7-8, 27-34.— The stabilizing action of various accelerators on a suspension of ZnO in C_6H_6 was studied. The coeffs. of stabilization of stearic acid (optimal concn. 0.08%), dimethyldithiocarbamate (0.16%), diethyldithiocarbamate (0.16%), diphenylguanidine (0.2%), condensate of aniline with *p*-toluidine (2%) and thiocarbanilide (0.16%) were 80, 3.0, 3.3, 4.2, 0.0 and 1.0, resp. The relative stabilizing effects of all accelerators (except diphenylguanidine) corresponded to their activating effects during vulcanization. The effect of accelerators on the viscosity of 10 sols of natural rubber and 15 sols of synthetic rubber, prepd. from mixts. of smoked sheet or synthetic rubber (1%), ZnO 5, S 3, stearic acid 1 with (synthetic rubber only) in xylene was studied. Natural rubber sols were peptized in the 1st colloidal kinetic stage of vulcanization by the addn. of various accelerators and then were transformed to gels. The most efficient peptizers for natural rubber were ultra-accelerators (thiocarbamates), their action increased the surface contact between the rubber micelles and the solvent phase, a necessary step toward increased gel formation. Sols of synthetic rubber were not peptized, owing to the absence of polar admixts. Swelling at 20° and colloidal soln. at 70° in kerosene (5% soln.) of the vulcanizates of natural and synthetic rubber and the influence of different accelerators were studied. Accelerators decreased the swelling and the soly. of natural rubber vulcanizates in kerosene. In synthetic rubber, accelerators acted as they did in natural rubber, piperidinium pentamethylenedithiocarbamate exerting the strongest action and diphenylguanidine the weakest. A. Testoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Control of the quality of powdered rubber fillers. B. Fabritziev and Vu. Margolina. *J. Rubber Ind.* (U. S. S. R.) **12**, 449–55(1935).—A crit. discussion of the detn. of the degree of dispersion by 3 methods, sieve, sedimentation and microscopic. The last is the best. A. P.