S/190/63/005/003/013/024
B101/B186

AUTHORS: ~~Barkalov, I. M.,~~ Berlin, A. A., Gol'danskiy, V. I., Kuo Min-kao

TITLE: Kinetics of phenylacetylene polymerization initiated with benzoyl peroxide

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 3, 1963, 368 -372

TEXT: The decomposition of benzoyl peroxide (BP) in phenylacetylene (PA) was studied in the absence of oxygen at 60 - 80°C by iodometrically determining the remaining BP, by titrating the benzoic acid formed and by cryoscopically determining the molecular weight of tne polymer formed. The concentration of the components dissolved in benzene was 1.72 - 9.11 mole/l PA, 0.0137 - 0.0840 mole/l BP. It has been found that the polymerization stops at a low degree of conversion, that the decomposition of BP in PA takes place more rapidly than in vinyl monomers, and that the reaction is of first order with respect both to PA and to BP. The maximum yield of poly-PA is directly proportional to the BP concentration where 6.8 mole PA are polymerized per mole BP. The molecular weight of the polymer was 730. The activation energy of polymerization is 21 ± 1 kcal/mole. Hence the following reaction order is suggested for the polymerization process:

Kinetics of phenylacetylene...

(0) $M + P \xrightarrow{k_0} R^{\cdot} + B^{\cdot}$; (1) $M + R^{\cdot} \xrightarrow{k_1} R^{\cdot}$; (2) $M + R^{\cdot} \xrightarrow{k_2} RH + M^{\cdot}$;
(3) $M + B^{\cdot} \xrightarrow{k_3} BA + M^{\cdot}$; (4) $R^{\cdot} \xrightarrow{k_4}$ termination; (5) $M^{\cdot} + M^{\cdot} \xrightarrow{k_5}$ termination;
(6) $R^{\cdot} + R^{\cdot} \xrightarrow{k_6}$ termination. M is the monomer, P is benzoyl peroxide, $R^{\cdot}$ is the polymer radical, $B^{\cdot}$ the benzoyl radical, BA benzoic acid. Since $[R^{\cdot}] \ll [M^{\cdot}]$ reaction (6) and reaction (4) can be neglected. $W = (3 + k_1/k_2)k_0[M][P]$ holds for the reaction rate, $\nu = 3 + k_1/k_2$ for the chain length, from which it follows that at $\nu \approx 7$, $k_1/k_2 = 4$. Conclusion: In the radiation polymerization studied earlier (Vysokomolek. soyed., 2, 1103, 1960) as well as in the peroxide-initiated polymerization the same mechanisms are active, which is obviously a characteristic feature of the polymerization of acetylene hydrocarbons. There are 5 figures and 2 tables.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

SUBMITTED: August 18, 1961

Card 2/2

S/190/63/005/003/014/024
B101/B203

AUTHORS: Barkalov, I. M., Gol'danskiy, V. I., Kotova, L. M., Kuz'mina, S. S.

TITLE: Radiation polymerization of acetylene derivatives

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 3, 1963, 373-377

TEXT: The radiation polymerization of hexyne-1, cyclohexyl acetylene, and octyne-1 up to 10-12% degree of conversion was studied by a method described earlier (Vysokomolek. soyed., 2, 1103, 1960). The results were compared with those obtained for phenyl acetylene. The rate of polymerization decreases in the order phenyl acetylene > octyne > hexyne, cyclohexyl acetylene, and is proportional to the first degree of irradiation intensity. The polymer yield between -196 and 0°C is independent of the radiation dose. Admission of oxygen does not inhibit the process. A reaction sequence is suggested which corresponds to the degradational chain transfer:

(0) $M \xrightarrow{k_0} R^{\cdot}$; (1) $M + R^{\cdot} \xrightarrow{k_1} R^{\cdot}$; (2) $M + R^{\cdot} \xrightarrow{k_2} RH + M^{\cdot}$; (3) $R^{\cdot} + M^{\cdot} \xrightarrow{k_3}$ termination; (4) $M^{\cdot} + M^{\cdot} \xrightarrow{k_4}$ termination; (5) $R^{\cdot} + R^{\cdot} \xrightarrow{k_5}$ termination; where

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$R^{\cdot}$ = polymer radical; $M^{\cdot}$ radical type R-C≡C$^{\cdot}$; M = monomer. Since $[R^{\cdot}] \ll [M^{\cdot}]$, reaction (5) can be neglected. If termination occurs according to (3), $W = (2 + k_1/k_2)k_0 I[M]$ holds for the reaction rate, and $\nu = 2 + k_1/k_2$ for the chain length. If termination occurs according to (4), $W = (3 + 2k_1/k_2)k_0 I[M]$ and $\nu = 3 + 2k_1/k_2$. The latter equation corresponds better to the experimental length. $\nu = 10 - 13$. k_1/k_2 does not depend on the nature of the radical. The free valence of the polymer chain is situated on a link of the structure -CR=CR'. Owing to intense self-inhibition by the monomer, the inhibiting effect of O_2 is not efficient. On the contrary, the yield increases in octyne-1 and phenyl acetylene in the presence of oxygen due to the formation of the more active peroxide radicals. There are 1 figure and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

SUBMITTED: August 18, 1961

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BARKALOV, I.M., GOLDANSKIY, V.I., YENIKOLOPYAN, N.S., TROFIMOVA, G.M., TEREKHOVA, S.F.

Radiation-induced solid-state polymerization.
PartI..Polymerization of acrylonitrile.
PartII..Polymerization of vinyl acetate.
Various kinds of polymerization rate temperatures dependences.

Report submitted for the International Symposium of Macromolecular chemistry, Paris, 1-6 July 63

BARKALOV, I.M.; GOL'DANSKIY, V.I.; GO MIN'-GAO [Kuo Min-kao]

Kinetics of benzoyl peroxide decomposition in acetylenic hydrocarbons. Dokl. AN SSSR 151 no.5:1123-1126 Ag '63. (MIRA 16:9)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent AN SSSR (for Gol'danskiy).
(Benzoyl peroxide) (Hydrocarbons)

L 8873-65 EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T Pc-4/Pr-4/Pa-4 RPL AS(mp)-2/ ASD(m)-3/ESD(t)/ESD/AFETR GG/RM

ACCESSION NR: AP4009152 S/0190/64/006/001/0092/0097

AUTHORS: Barkalov, I. M.; Gol'danskiy, V. I.; Yenikolopyan, N. S.; Terekhova, S. F.; Trofimova, G. M.

TITLE: Radiation polymerization in solid phase. 1. Polymerization of acrylonitrile

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 1, 1964, 92-97

TOPIC TAGS: kinetics, acrylonitrile, polymerization, fast electron, irradiation, diathermal calorimeter, solid phase, energy chain

ABSTRACT: The radiation polymerization in the solid phase of monomers was investigated along with the temperature dependence of the initial polymerization rate, post-polymerization kinetics, and heat absorption rates. The study centered around the kinetics of acrylonitrile (AN) polymerization induced by fast electrons with an energy of 1.6 Mev obtained in an electron accelerator at the Institute of Chemical Physics AN SSSR. The specimen was placed in a special vessel under vacuum and its temperature controlled to within 2C during irradiation. The radiation dose varied from 0.2 to 10 Mrad/min. To determine when effective polymerization reactions occurred, a diathermal calorimeter was also used. The calorimetric determination showed that solid phase polymerization of AN occurs directly in the solid phase and not in the course of the following thawing process. There is practically no

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L 8873-65

ACCESSION NR: AP4009152 2

activation energy of the solid phase polymerization. From -196 to -150C a yield limit is observed at large doses, and there is no noticeable post-effect. Post-polymerization takes place from -140° up to the melting point, the activation energy of this process being 3 kcal/mole. It is presumed that the specific features of solid phase polymerization in the course of irradiation may be due to the effective participation of short-lived excited states in the propagation of the energy chains or due to a change in state of the solid during irradiation. "The authors express their sincere appreciation for the great interest and attention with which N. N. Semenov has followed the work, [as well as] their thanks to V. N. Shamshev [for assisting in] the measurements." Orig. art. has: 4 figures.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 10Aug62 ENCL: 00

SUB CODE: GC, MP NO REF SOV: 011 OTHER: 014

Card 2/2

L 8879-65 EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pu-4 RPL/
AS(mp)-2/AFETR/RAEM(t)/ESD(gs)/BSD/ASD(m)-3 WW/GG/RM

ACCESSION NR: AP4009153 S/0190/64/006/001/0098/0102

AUTHORS: Barkalov, I. M.; Gol'danskiy, V. I.; Yenikolopyan, N. S.; Terekhova, S. F.; Trofimova, G. M.

TITLE: Radiation polymerization in solid phase 2. Polymerization of vinyl acetate. Temperature variation dependence of polymerization rate

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 1, 1964, 98-102

TOPIC TAGS: kinetics, polymerization, vinyl acetate, solid state, irradiation

TRACT: The kinetics of the polymerization of vinyl acetate (VA) induced by Mev electrons in the electron accelerator of the Institute of Chemical Physics (... SSSR) was investigated for the liquid, crystalline, and glassy states in the course of studies which were undertaken with the purpose to clarify the problems of the radiation polymerization of monomers in the solid phase; in particular, the temperature dependence (0 to -196C) of the initial rate of polymerization was investigated in connection with an attempt to establish the radical or ionic type of the mechanism of polymerization. Polymerization in the solid state occurs with practically no temperature dependence, and the absolute rate values are about an order of magnitude higher for glassy VA than for the crystalline product. There is no post-polymerization at any of the temperatures investigated, and direct calori-

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L 8879-65
ACCESSION NR: AP4009153

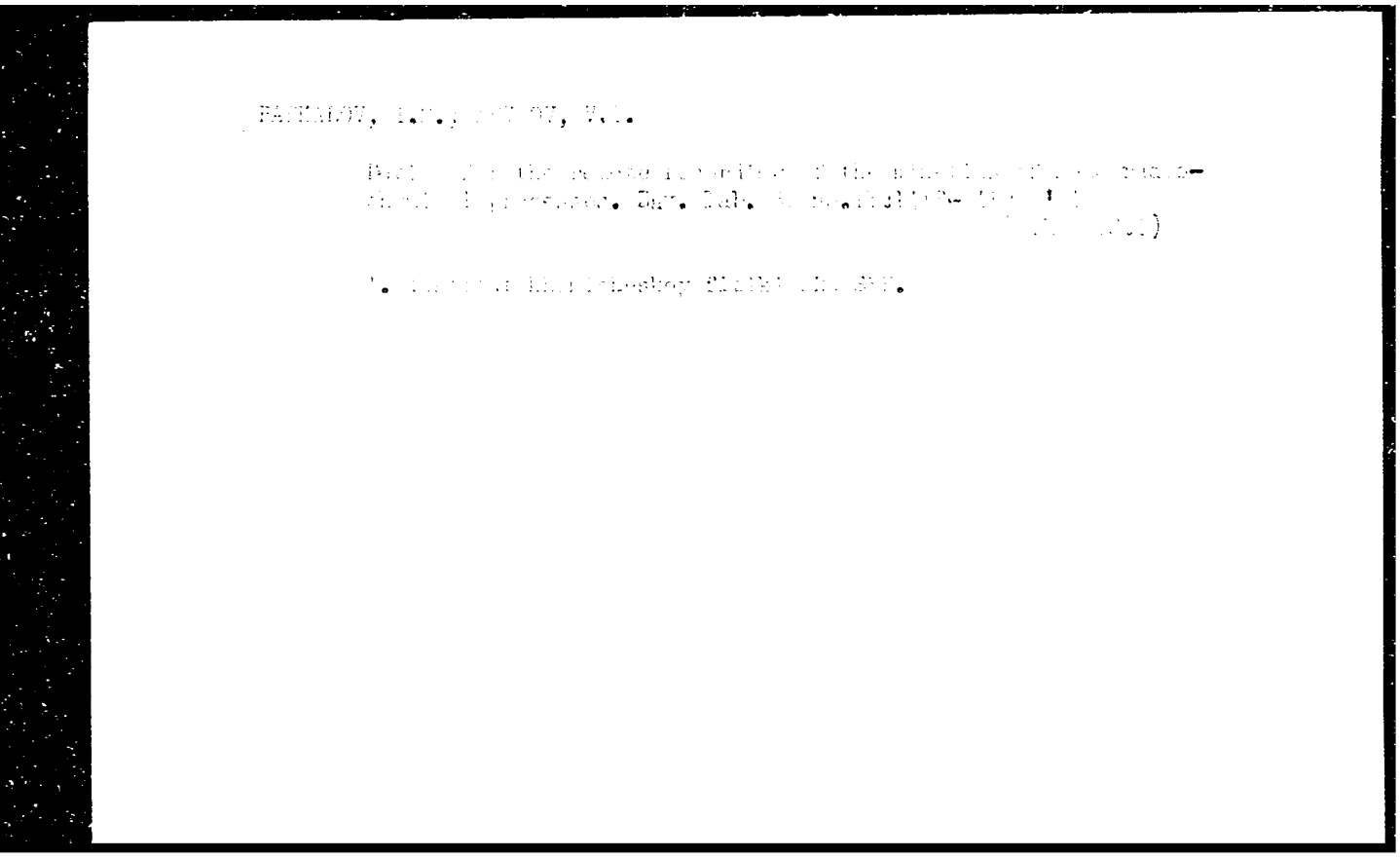
metric measurements have shown that polymerization of VA in the solid phase occurs only in the process of irradiation; by no means is the process purely radical, as the process of polymerization in the liquid phase is. The temperature dependence of the rate of radiation polymerization in both solid and liquid phases has also been investigated in the case of methyl methacrylate (MMA), formaldehyde (FAL), phenylacetylene (PAC), and isobutylene (IB). Two basic types of such dependence have been established: 1) $E>0$ for the liquid and $E\approx 0$ for the solid phases (VA, MMA, FAL, and acrylonitrile); and 2) $E<0$ for the liquid and $E>0$ for the solid phases, with maximum rate at the melting point (IB and other monomers, which polymerize by an ionic mechanism). The specific features of the rapid solid phase polymerization in the course of irradiation may be due either to the effective participation of short-lived, excited states in the propagation of the energy chains or to the change in state of the solid during the course of the irradiation. Orig. art. has: 4 figures.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 10Aug62 ENCL: 00

SUB CODE: GC, NP NO REF SOV: 006 OTHER: 007

Card 2/2



BARKALOV, I.M.; GOL'DANSKIY, V.I.; GO MIN'-GAO [Kuo Min-kao]

Kinetics of acetylenic hydrocarbon polymerization initiated by azoisobutyric acid dinitrile. Dokl. AN SSSR 155 no. 4:883-885 Ap '64. (MIRA 17:5)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent AN SSSR (for Gol'danskiy).

ADADUROV, G.A.; BARKALOV, I.M.; GOL'DANSKIY, V.I.; DREMIN, A.N.; IGNATOVICH, T.N.; MIKHAYLOV, A.M.; TAL'ROZE, V.L.; YAMPOL'SKIY, P.A.

Polymerization in a shock wave. Vysokom.soed. 7 no.1:180 Ja '65. (MIRA 18:5)

L 26924-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(l) Pc-4/Pr-4/Peb/
Pu-4 GG/RM

ACCESSION NR: AP5005257 S/0026/65/000/002/0013/0017

AUTHOR: Barkalov, I. M. (Candidate of chemical sciences)

TITLE: Radiation and polymers

SOURCE: Priroda, no. 2, 1965, 13-17

TOPIC TAGS: radiation induced polymerization, solid state polymerization, radiation induced graft polymerization, radiation induced vulcanization

ABSTRACT: The development and major achievements in the radiation chemistry of polymers are reviewed by I. M. Barkalov of the Institute of Chemical Physics, Academy of Sciences SSSR, under the following headings: 1) radiation-induced polymerization; 2) polymerization in the solid state; 3) radiation-induced graft polymerization; and 4) radiation-induced vulcanization.

Polymerization in the solid state has been explained by Academician N. N. Semenov as follows. The mutual orientation of molecules in a solid monomer crystal may be similar to that in the macromolecule. Formation of an active particle in such a "preform" causes instantaneous polymeri-

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zation. The energy generated in this elementary act is not dissipated as in the liquid phase, but activates the next molecule. Continuation of this process results in an energy wave which moves with tremendous speed and the polymer chain grows in 10^{-5}—10^{-6} sec. The three-dimensional ordering of monomer units in the "preform" is retained in the macromolecule.

Polymerization of monomer crystals may yield highly crystalline oriented polymers with excellent properties. The crystalline lattice can play the role of a peculiar "matrix" in which macromolecules of a strictly defined shape are formed. Crystalline lattices of substances other than those to be polymerized can play the role of such "matrixes," e.g., butadiene crystallizes in the long, hollow, crystal channels of urea or thiourea to form clathrate complexes. In conclusion, it is stated that numerous radiation chemical processes are being tested on a semi-industrial scale and that important achievements in the use of high-energy irradiation are to be expected. Orig. art. has: 1 graph, 2 figures.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000203620012-5"

L 26924-65
ACCESSION NR: AP5005257

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, Moscow (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: GC, OC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3185-F

Card 3/3

BERLIN, Al.Al.; BAKKALOV, I.M.; GOL'DANSKIY, V.I.; YENIKOLOPYAN, N.S.

Kinetic of solid-phase polymerization. Dok. AN SSSR 160 no.2: 1104-1107 F '65. (MIRA 18:2)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent AN SSSR (for Gol'danskiy).

L 3174-66 EWT(m)/EPF(c)/EWP(j)/T RM

ACCESSION NR: AP5010166 UR/0020/65/161/002/0373/0376

AUTHORS: Berlin, Al. Al.; Barkalov, I. M.; Yenikolopyan, N. S.; Gol'danskiy, V. I. (Corresponding member AN SSSR)

TITLE: Kinetic features of nonisotropic polymerization in the solid phase

SOURCE: AN SSSR. Doklady, v. 161, no. 2, 1965, 373-376

TOPIC TAGS: polymerization, kinetics, defect healing

ABSTRACT: The kinetic features of solid phase polymerization were examined, considering the nonisotropic growth of the polymer chain. The post-polymerization process, during which the formation of active centers and the growth of chains are separated in time, was investigated. The authors consider three cases. The first relates to the growth of the polymer chain from an active center to a defect in a crystal lattice. Starting with equations for concentration of active centers along coordinate directions, an equation is derived to express the kinetic curve:

$$\Pi \simeq \frac{R_0}{\alpha}(1-e^{-k_1\alpha t}) + \frac{R_0}{\delta}(1-e^{-[k_2\delta/\alpha]t}),$$

where R_0 is the initial concentration of radicals per unit volume, α the

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probability of encountering a defect, δ the probability of complete destruction of an active center, k_1 and k_2 growth constants for two directions of growth, and t time. This equation is valid only when the prepared active centers quickly change to growing polymers. The second case considered relates to the situation when this change is slow. The kinetic curve then has the form

$$\Pi = \frac{k_2 A_0}{\alpha} t + \frac{k_1 - k_2}{k_1 \alpha} A_0 (1 - e^{-k_1 t}) ,$$

where k_i is the initiation constant and A_0 is the initial concentration. When $k_i > k_2$, the curve is similar to that above. When $k_i = k_2$, the curve is straight, and when $k_i < k_2$, the curve has an induction period. When the defects are annealed by monomolecular mechanism, the relations are different again, and the kinetic curve is expressed by

$$\Pi \simeq \frac{k_2 R_0 t + R_0 (1 - e^{-k_{OT} t})}{\alpha + \delta_0 e^{-k_{OT} t}} ,$$

where k_{OT} is the constant for the annealing rate. The curve is somewhat S-shaped, and this is in agreement with experimental work. The authors point out that the kinetic pattern is not substantially changed if k_2 is considered to be the growth constant of any elemental act, such as growth of the chain, transfer of the chain,

L 3174-66

ACCESSION NR: AP5010166

copolymerization, migration of defects, and the like. Orig. art. has: 3 figures and 10 formulas.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 22Sep64	ENCL: 00	SUB CODE: GC, SS
NO REF SOV: 003	OTHER: 002	

Card 3/3

L 52265-65 EPF(c)/EPF(n)-2/EWG(j)/EWT(m)/EWP(j)/EWA(h)/T/EWA(1) Pc-4/Pr-4/Peb/
Pu-4 AFFTC/SSD CG/RM

ACCESSION NR: AP5010838 UR/0020/65/161/004/0882/0885

AUTHOR: Trofimova, G. M.; Barkalov, I. M.; Kuz'mina, S. S.; Yenikolopyan, N. S.; Gol'danskiy, V. I. (Corresponding member AN SSSR)

TITLE: Radiation polymerization of hexamethylcyclotrisiloxane in the solid phase

SOURCE: AN SSSR. Doklady, v. 161, no. 4, 1965, 882-885

TOPIC TAGS: radiation, radiation polymerization, solid phase polymerization, polymerization, hexamethylcyclotrisiloxane, cyclic hydrocarbon

ABSTRACT: Kinetics of hexamethylcyclotrisiloxane (I) polymerization in the solid phase and under X-ray irradiation was studied in detail. Thermographic analysis of the reacting system indicated a phase change around -10°C. From -196° to -10°C the initial rate of polymerization is independent of temperature, and the size of the monomer crystals, and the energy of activation is equal to zero for coarse crystals and 3.9 kcal/mol for fine crystals. From 0°C to the boiling point of (I) the initial rate of polymerization is dependent upon temperature, monomer crystallinity and size, and the activation energy of the polymerization reaction is equal to 8.5 kcal/mol. In both temperature ranges the rate of polymerization is propor-

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L 52265-65

ACCESSION NR: AP5010838

tional to the radiation intensity. Orig. art. has: 2 figures and 2 formulas.

ASSOCIATION: Institut khimicheskoy fiziki akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 15Dec64 ENCL: 00 SUB CODE: GC, OC

NO REF SOV: 006 OTHER: 003

Card 2/2

L 60458-65 EPF(c)/EPF(n)-2/EWG(j)/EWA(h)/EWP(j)/EWT(m)/T/EWA(1) Pc-4/
Pr-4/Pu-4/Peb GG/JAJ/RM
ACCESSION NR: AP5007569 S/0020/65/160/005/1104/1107

AUTHOR: Berlin, Al. Al.; Barkalov, I. M.; Gol'danskiy, V. I. (Corresponding member AN SSSR); Yenikolopyan, N. S.

TITLE: Kinetics of solid-phase polymerization

SOURCE: AN SSSR. Doklady, v. 160, no. 5, 1965, 1104-1107

TOPIC TAGS: solid state polymerization, radiation polymerization, kinetic theory, chain initiation, chain propagation

ABSTRACT: The article presents some kinetic principles of catalytic and radiation post-polymerization in the solid phase. The treatment is confined to the case involving the propagation of the polymer chain in only one of the possible directions in a crystal. Chain initiation is discussed in terms of formation of active centers under the influence of radiation; this formation may occur in a primary or secondary reaction. Chain growth is discussed in terms of four cases: (1) Fast initiation and slow chain growth; (2) Slow initiation and fast chain growth; (3) The growth of the polymer chain in the crystal of the monomer is not associated with breaking of the crystal; (4) Defects caused by the radiation are healed at an elevated temperature. Although the treatment pertains to one preferred direction

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L 60458-65

ACCESSION NR: AP5007569

of chain propagation, the form of the basic equations derived does not change appreciably when an isotropic growth of the polymer chain is considered. The next report will examine the kinetic relationships involved in post-polymerization in the presence of two or several preferred directions of propagation of the polymer chain. Orig. art. has: 1 figure and 16 equations.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 22Sep64 ENCL: 00 SUB CODE: GC, SS

NO REF SOV: 007 OTHER: 000

Card 2/2

L 53979-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(j)/T/EWA(h)/EWA(l) Pc-4/Pr-4/Pg-4/Peb/P1-4/Pu-4 RPL WW/JW/GG/RM

ACCESSION NR: AP5012769 UR/0020/65/161/006/1368/1370

55
52
B

AUTHOR: Barkalov, I. M.; Gol'danskiy, V. I. (Corresponding member AN SSSR); Rapoport, V. B.

TITLE: Calorimetric analysis of the kinetics of radiation polymerization

SOURCE: AN SSSR. Doklady, v. 161, no. 6, 1965, 1368-1370

TOPIC TAGS: calorimetry, radiation polymerization, kinetics, polymerization, solid phase

19

ABSTRACT: A special heat-conducting calorimeter was built according to the principle of Calvier's microcalorimeter for making measurements directly in a radiation field. A diagram of the calorimeter is shown in fig. 1 of the Enclosure. Two identical vessels of pure copper with the test sample (1) and a calibrating device (2) are surrounded by casings (3 and 4) which are identical in their thermophysical properties and through which flows practically all the heat given off in the sample and calibrating device. The termal flows which pass between casings 3 and 4 create between their inner and outer surfaces temperature drops which are controlled by a battery of thermocouples (5 and 6) connected differentially to a galvanometer (7).

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L 53979-65
ACCESSION NR: AP5012769

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The measuring vessels with their casings are placed in a massive copper block which provides an even temperature field around the batteries of thermocouples. The block (8) is placed in a thermostatic copper casing (9) in which the liquid of the thermostat circulates. Between the thermostatic casing (9) and the block (8) are 4 copper screens (10) each 0.2 mm thick. The radiation of the operating vessel of the calorimeter can be conducted both from the end of the calorimeter through channel (11) and also radially through the walls of the thermostatic chamber. A calorimeter of this design was used in working on the following three problems: (1) investigation of the kinetics of radiation polymerization of polyesteracrylates; (2) measurement of the heats of fusion and phase transitions in certain monomers; and (3) investigation of the kinetics of solid phase polymerization directly during radiation. Orig. art. has: 4 figures

ASSOCIATION: Institut khimicheskey fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 21Dec64 ENCL: 01 SUB CODE: TD, GC

NO REF SOV: 004 OTHER: 000

Card 2/3

L 53979-65
ACCESSION NR: AP5012769

ENCLOSURE: 01

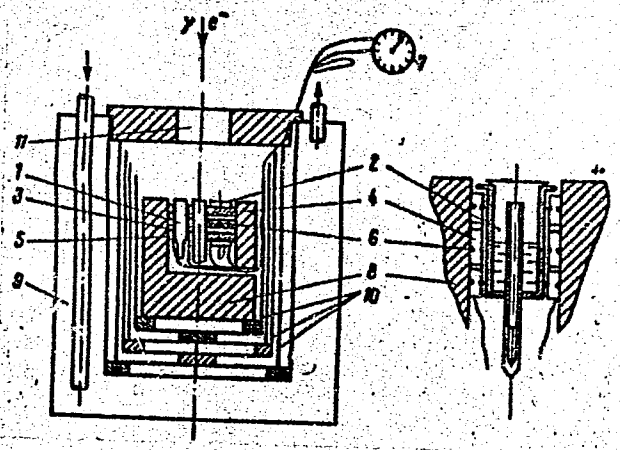

Fig. 1. Diagram of the calorimeter

Card 3/3

L 17629-66 EWT(m)/EWP(j)/T/EWP(k) RM

ACC NR: AP6001732 SOURCE CODE: UR/0020/65/165/004/0851/0854

AUTHORS: Adadurov, G. A.; Barkalov, I. M.; Dremin, A. N.; Ignatovich, T. N.; Mikhaylov, A. N.; Tal'roze, V. L.; Yampol'skiy, P. A.; Gol'danskiy, V. I. (Corresponding member AN SSSR)

ORG: Institute for Chemical Physics, Academy of Sciences,SSSR (Institute khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Polymerization of condensed monomers in shock waves

SOURCE: AN SSSR. Doklady, v. 165, no. 4, 1965, 851-854

TOPIC TAGS: polymerization, shock wave, monomer

ABSTRACT: The shock wave polymerization of condensed monomers (trioxane, acrylamide, potassium acrylate, methacrylamide, tolane, salicilic aldehyde, stilbene, and diphenylbutadiene) was studied. The experimental technique followed that described by G. A. Adadurov i dr. (Vysokomolek. soyed., 7 No. 1, 180, 1965). The experimental results are tabulated. It is concluded that observed polymer-

Card 1/2

UDC: 541.64; 678.744; 534.222.1

L 17629-66

ACC NR: AP6001732

ization occurs directly in the shock wave and is not due to secondary effects. Orig. art. has: 1 table.

SUB CODE: 11/ SUBM DATE: 01Jun65/ ORIG REF: 008/ OTH REF: 005

Card 2/2

L 30041-66 EWT(1)/EWP(m)/EWT(m)/EWI(j) IJP(c) WW/RM

ACC NR: AP6012921 SOURCE CODE: UR/0020/66/167/005/1077/1078

AUTHOR: Barkalov, I.M.; Gol'danskiy, V.I. (Corresponding member AN SSSR); Gustov, V.V.; Dremin, A.N.; Mikhaylov, A.M.; Tal'roze, V.L.; Yampol'skiy, P.A.

ORG: Institute of Chemical Physics, Academy of Sciences SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Shock wave vulcanization of rubbers

SOURCE: AN SSSR. Doklady, v. 167, no. 5, 1966, 1077-1078

TOPIC TAGS: vulcanization, rubber, shock wave

ABSTRACT: Continuing the study of polymerization in shock waves, the authors investigated the possibility of vulcanizing rubbers by use of a shock wave. Samples of NK, SKB, "yuropren"-1500, SKS-30A, SKD, and polyisobutylene rubbers were subjected to shock waves with amplitudes from 30,000 to 100,000 atm. The percentage of the gel fraction and the molecular weight of the network were determined in each sample. No cross-linking could be detected in polyisobutylene (a rubber having no double bonds in the macromolecules); only a certain degree of degradation took place. The shock-wave-induced cross-linking reaction in SKB rubber has a definite threshold character, the threshold pressure being about 35,000 atm. The gel fraction appears above this pressure, and at 80,000 atm an almost completely cross-linked vulcanization is obtained. A partial calcination is observed above 100,000 atm. The vulcanization phenomena observed occur at the instant the shock

Card 1/2 UDC: 541.12.034.2

L 34041-66

ACC NR: AP6012921

wave passes through the rubber, i.e., in a time of the order of 10^{-5} sec. Thus, in SKB rubber (MW 80,000 — 200,000) at a pressure of 50,000 atm in the shock wave, over 10^{19} cross-links are formed per gram in 10^{-5} sec. Orig. art. has: 1 figure and 1 table.

SUB CODE: 11,07 / SUBM DATE: 16Nov65 / ORIG REF: 003 / OTH REF: 001

Card 2/2

L 40151-66

ACC NR: AP6012182 SOURCE CODE: UR/0386/66/003/008/0309/0312

AUTHOR: Barkalov, I. M.; Gol'danskiy, V. I.; Tal'roze, V. L.; Yampol'skiy, P. A.

ORG: Institute of Chemical Physics, Academy of Sciences SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Intensification of a shock wave by the polymerization energy and the feasibility of a polymerization detonation

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 8, 1966, 309-312

TOPIC TAGS: shock wave interaction, chemical explosion, plastic explosive, polymerization kinetics, detonation, monomer

ABSTRACT: This is a continuation of earlier work (Dokl. AN SSSR v. 165, 851, 1965), where polymerization of several solid monomers by a shock wave was observed, and the energy release was estimated. In the present article the authors compare this energy with the energy obtained by the substance as a result of compression by the shock wave. This is done by obtaining the dependence of the specific volume of the substance on the applied pressure from the shock adiabat of the investigated substance. The estimates are made for acryl amide, which was used in the earlier study, making use of published data on plexiglass and polystyrene, which have the

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same initial density and approximately equal compression coefficients. Since the passage of the shock wave left no traces of melting of the substance it is concluded that a considerable portion of the thermal energy released at the instant of polymerization is transferred to the shock wave, being converted into elastic energy of the substance. It is also shown that the energy released during polymerization is approximately equal to the energy lost by the shock wave to the compression of the monomer. Therefore the additional fraction of the energy obtained by the shock wave from the chemical processes is comparable with the total energy obtained by the substance upon compression by the shock wave. From a detailed theoretical analysis made by N. M. Kuznetsov at the authors' request (ZhETF v. 49, 1526, 1965) and from other considerations it is concluded that a detonation can occur as a result of polymerization by a shock wave. The authors thank Academician N. N. Semenov and N. M. Kuznetsov for a valuable discussion. [02]

SUB CODE: 07, 20 SUBM DATE: 17Feb66/ ORIG REF: 005/ OTH REF: 002
ATD PRESS: 4225

L 23593-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP5003840 S/0190/65/007/001/0180/0180

AUTHOR: Adadurov, G. A.; Barkalov, I. V.; Gol'danskiy, V. I.; Dremin, A. N.; Ignatovich, T. N.; Mikhaylov, A. M.; Tal'roze, V. L.; Yampol'skiy, P. A.

TITLE: The phenomenon of polymerization in a shock wave

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 1, 1965, 180

TOPIC TAGS: polymerization, shock wave, methacrylamide, trioxane, explosion, polyoxymethylene

ABSTRACT: A study has shown that a monomer in the condensed state can be made to polymerize by passing a shock wave through it. Powdered methacrylamide and trioxane were pelletized and subjected to the action of a shock wave with a wave front pressure of 1.5—3 x 10^4 atm abs produced by the explosion of trotyl-hexogen. The temperature in the pellet-containing capsule immediately after the explosion did not exceed 50C and dropped to room temperature in a few minutes. Methacrylamide formed a polymer decomposing at about 270C with a

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ACCESSION NR: AP5003840

yield of 5% on the monomer. In trioxane the polymer yield was 3%; the polymer behaves similarly to polyoxymethylene. Studies of polymerization in a shock wave are planned for other monomers. [SM]

ASSOCIATION: none

SUBMITTED: 24Jun64 ENCL: 00 SUB CODE: GC, ME

NO REF SOV: 001 OTHER: 000 ATD PRESS: 3171

Card 2/2

BARKALOV, P., inzh.

Gas radiator for heating and drying rooms. Na stroi.Mosk. 1 no.12:11 D '58. (MIRA 11:12)

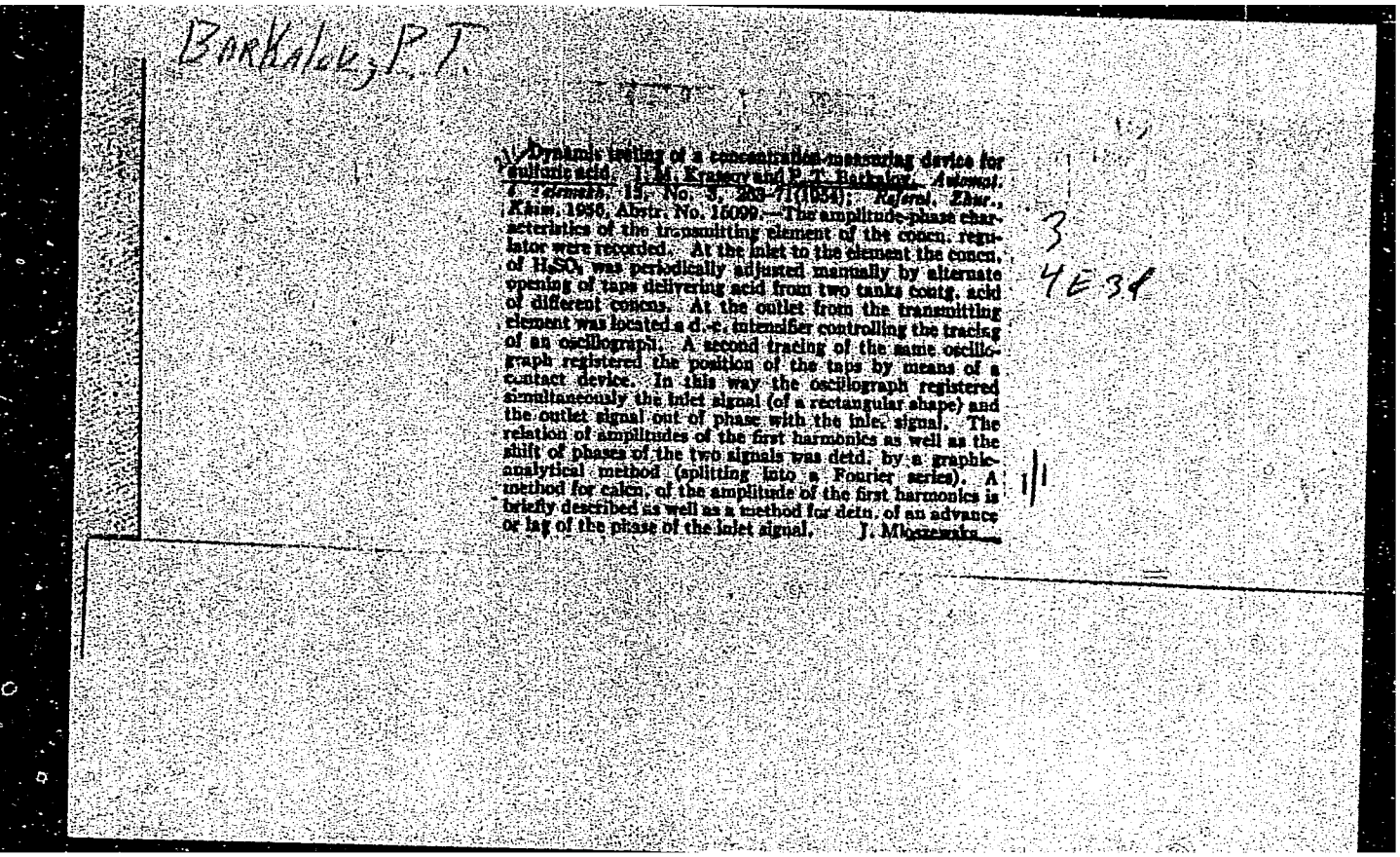
(Drying apparatus)

BARKALOV, P., inzh.

Contact water heater. Na stroi.Mosk. 2 no.3:22 Mr '59.
(MIRA 12:5)
(Water heaters)

BARKALOV, P. T.

Dudnikov, Ye. G., Krassov, I. M., Tagayevskaya, A. A., Tennyy, V. P., and Barkalov, P. T., "Experimental Determination of the Dynamic Characteristics of Regulated Industrial Machinery," Avtomatika i telemekhanika, 1953, Volume XIV, No. 4, Pages 418-423, 5 figures; bibliography, 6 items.



Barkalov, P. T.

Dynamic testing of a concentration-measuring device for sulfuric acid. I. M. Kramer and P. T. Barkalov. *Avtomat. i Zavodsk. Lab.*, No. 3, 203-7(1954); *Referat. Zhur., Khim.* 1956, Abstr. No. 15099.—The amplitude-phase characteristics of the transmitting element of the concn. regulator were recorded. At the inlet to the element the concn. of H_2SO_4 was periodically adjusted manually by alternate opening of taps delivering acid from two tanks contg. acid of different concns. At the outlet from the transmitting element was located a d.-c. intensifier controlling the tracing of an oscillograph. A second tracing of the same oscillograph registered the position of the taps by means of a contact device. In this way the oscillograph registered simultaneously the inlet signal (of a rectangular shape) and the outlet signal out of phase with the inlet signal. The relation of amplitudes of the first harmonics as well as the shift of phases of the two signals was detd. by a graphic-analytical method (splitting into a Fourier series). A method for calcn. of the amplitude of the first harmonics is briefly described as well as a method for detn. of an advance or lag of the phase of the inlet signal. J. Mozzhukhin

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4E34

ACCESSION NR: AT4011510 S/2531/63/000/146/0017/0020

AUTHOR: Barkalova, K. N.

TITLE: Data on the connection between atmospheric electromagnetic impulses and instability in the lower layer of the troposphere

SOURCE: Leningrad. Glavn. geofiz. observatoriya. Trudy*, no. 146, 1963. Atmosfernoye elektrichestvo, 17-20

TOPIC TAGS: meteorology, atmospheric disturbance, atmospheric turbulence, troposphere, weather forecasting, electromagnetic disturbance, thunderstorm, tropospheric instability

ABSTRACT: In continuation of earlier work at the Tsentral'ny*y institut prognozov (Central Institute of Forecasting) in 1953-55, in which only four stations were used, the connection between the weather and electromagnetic impulses was investigated during the months of April and June, 1961, using foci of impulses at 0.3, 0.9, 15.0 and 21.0 hours (Moscow time) which were detected by a direction-finding network between Moscow, Leningrad, Kiev, Minsk and Rostov-on-Don. In April and June, there were 130 and 328 electromagnetic disturbances, respectively. Comparison of the sites of these disturbances with the zones of atmospheric instability as revealed on synoptic charts showed a

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ACCESSION NR: AT4011510

correspondence in 93-95% of the cases. Pronounced zones of instability remained undetected by the network in only 10-15% of the cases, and most of these were relatively far from the detection centers and/or screened by intervening electromagnetic disturbances. The author recommends that data on electromagnetic disturbances be used for aerosynoptic studies in areas where there is a lack of meteorological data. Orig. art. has: 2 figures.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical Observatory)

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 00

SUB CODE: ES NO REF SOV: 001 OTHER: 000

Card 2/2

ACCESSION NR: AT4040539 S/2531/64/000/157/0085/0086

AUTHOR: Barkalova, K. N.

TITLE: Relationship between the number of thunderstorms and the number of atmospherics creating a field strength above a specified level

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy*, no. 157, 1964. Atmosfernoye elektrichestvo (Atmospheric electricity), 85-86

TOPIC TAGS: meteorology, thunderstorm, static, atmospheric, atmospheric electricity

ABSTRACT: The author discusses the problem of the relationship between the number of thunderstorms over the European continent and the number of atmospherics creating a field strength above 0.1, 0.2, 0.3, 0.5 and 1.0 w/m recorded during two thunderstorm seasons (May-September) at Voyeykovo and one season at Odessa. The number of thunderstorms was summed from weather charts for the four principal synoptic times (0300, 0900, 1500 and 2100 hours). A conversion factor was introduced to take into account the nonuniformity of the density of the network of meteorological stations. The relative number of thunderstorms over the European continent was determined. Analysis of the data indicates that there is a good correlation between the number of thunderstorms and the number of atmospherics recorded at

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Voyeykovo and Odessa. The correlation is somewhat better for Voyeykovo than Odessa. A greater contribution to the number of atmospherics in summer is made by the thunderstorms occurring over the European SSSR than over the whole of Europe, as revealed very clearly by Voyeykovo data for 1961. Orig. art. has: 2 tables.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory)

SUBMITTED: 00	DATE ACQ: 02Jul64	ENCL: 00
SUB CODE: ES	NO REF SOV: 001	OTHER: 000

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BARKALOVA, K.N.

Relation between the frequency of thunderstorms and that of atmospheric disturbances causing field intensities above a given level. Trudy GGO no.[illegible] '64 (MIRA 17:8)

[redacted]

[redacted]. P.N.

Thunderstorm activity in the [redacted] in 1963. Trudy GGO no.177:39-41 '65. (MIRA 18:8)

ACC NR: AT6014848 (N) SOURCE CODE: UR/2531/66/000/188/0003/0010

AUTHOR: Kolokolov, V.P.; Barkalova, K.N.; Kuprovich, V.V.; Kutyavin, V.A.; Simonova, R.I.

ORG: None

TITLE: On a more precise method of mapping the number of lightning flashes

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 188, 1966. Atmosphernoye elektichestvo (Atmospheric electricty), 3-10

TOPIC TAGS: atmospheric electricity, thunderstorm activity, lightning, ~~lightning occurrence density~~ WEATHER MAP

ABSTRACT: The paper discusses improved methods for mapping the geographical density of lightning flashes. Lightning discharge counters with a known effective registration radius (defined as the maximum one within which all discharges are registered), were used. An expression for the effective radius, derived for wide band (2-20 kc) counters from a previously published (referenced) paper of L.G. Makhotkin, was too sensitive to its coefficient's errors; therefore, simultaneous registration with a narrow band (56-62 kc) counter was employed. Thunderstorm activity was expressed as the monthly number of discharges per 100 km^2 of the recording station vicinity area. Thunderstorm activity over the North Atlantic has been also evaluated from British MGG and MGS (unreferenced) radiolocation data. Dependence of thunderstorm activity, in

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ACC NR: AT6014848

form of number of discharges per 100 km^2 per month and also number of days with thunderstorms per month, - vs. a temperature-humidity index "te" was determined and established. The temperature-humidity index chosen was represented by the product of the temperature in ^{o}C x absolute humidity in millibars. Comments on further development are given. Orig. art. has: 2 figures, 3 formulas and 4 tables.

SUB CODE: 04/ SUBM DATE: None/ ORIG REF: 006/ OTH REF: 007

Card 2/2

BARKAN, A.

Important event in the life of a fire brigade. Pozh.delo 6 no.10:3 O '60. (MIRA 13:10)

1. Zamestitel' nachal'nika otdela Upravleniya pozharnoy okhrany Leningradskogo oblispolkoma.
(Fire extinction--Societies)

BARKAN, A.

Fifty years in the ranks. Pozh.delo 7 no.6:18 Je '61.
(MIRA 14:6)
(Leningrad--Firemen)

BARKAN, A.

Don't let children play with fire. Pozh.delo 7 no.8:3-4 Ag '61.
(MIRA 14:8)

1. Zamestitel' nachal'nika otdela. Upravleniya pozharnoy okhrany, Leningrad.
(Fire prevention)

SAMOYLOVICH, M.A.; BAHKAN, A.B.; RAVDEL', B.A.

Choosing an efficient system of automatic feeding of pyrite furnaces.
Khim. prom. no.2:113-114 Mr '58. (MIRA 11:5)
(Pyrites) (Smelting furnaces)

AUTHOR: Danoylovich, L. A., [illegible]
[illegible]del', M. [illegible]

TITLE: The Selection of Rational Feeding Automation for Pyrites Furnaces (Vybor ratsional'noy skhemy avtomatizatsii pitaniya kolchedannykh pechey)

PERIODICAL: Khimicheskaya Promyshlennost', 1958, Nr 2, pp. 49-50 (USSR)

ABSTRACT: In the investigations for obtaining the necessary gas concentration and temperature at the output of the furnace it was found that a complete readjustment of feeding is necessary. The following demands must be met by the feeding apparatus to be constructed: It must be standardized and produced in series. A widely variable filling interval for pyrite must exist which operates without using the dosing apparatus not acknowledged by industry. The plant must be capable of operating in a very dusty atmosphere and is to have a minimum number of contact elements in its regulation scheme. The constructions in use at present as well as a design by the Giprotsvetmet Institute did not meet these demands. In the Giprokhim branch consequently a scheme was elaborated in which the regulation system has practically no con-

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tact elements at all. From the mentioned schematic representations can be seen that the feeding mechanism is operated by a P K K-290-type motor which has a standard magnetic contactor T K -1122-12A2 for connection. The regulation apparatus is an electropotentiometer with a pneumatic isodromic system arrangement of the E P D-32*-type, while the thermocouple of the TXA-146-type or T K K-4 D -type with a special arrangement for gas purification is used corresponding to the conditions of regulation. A servo-motor of the M_3-420*-type permanently connected with a rheostat of the PB-10-L -type serves as operating element. The latter is connected with the field winding of the motor. The d.c.source for the motor as well as for the selenium rectifier of the type ABC-1oo-53, connected according to the three-phase scheme are directly connected with the 38o/22o V supply. An additional rheostat of the type PB-10-L serves for the automatic regulation of the shunt resistance. Besides the cased motor and the control buttons the whole systems in a casing (figure). The use of the isodromic system arrangements in

The Selection of Rational Feeding Automation for Pyrites Furnaces 64-58-2-10/16

explained by the few intermediate apparatus and the absence of contact elements; moreover this type of regulator has already proved valuable in the automation of sulfuric acid industry. The single parts of the described plant are produced in series and can easily be exchanged and assembled. The scheme of arrangement can be used for the automatic dosing in other technologic processes: then the regulation can be adjusted according to the specific weight, the concentration of hydrogen ions etc.
There are 2 figures and 4 references, all of which are Soviet.

AVAILABLE: Library of Congress

1. Furnaces--Operation 2. Pyrites--Handling 3 Furnace equipment --Control systems 4. Control systems--Operation

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OBNOVLENSKIY, Petr Avenirovich, dots.; KOROTKOV, Petr Arkhipovich, dots.; GUREVICH, Aleksandr L'vovich, dots.; IL'IN, Boris Vladimirovich, dots.; MUSYAKOV, L.A., kand. tekhn. nauk, red.; BARKAN, A.B., inzh., red.

[Fundamentals of automatic control and automation in the chemical industries] Osnovy avtomatiki i avtomatizatsii khimicheskikh proizvodstv. Moskva, Khimiia, 1965. 607 p. (MIRA 19:1)

1. Kafedra avtomatizatsii khimicheskikh proizvodstv Leningradskogo tekstil'nogo instituta (for Obnovlenskiy).

BARKAN, A.G.

Some problems in Solonetzic soils improvement in the Altai Territory. Trudy Biol. inst. Sib. otd. AN SSSR no.9:247-254 '62 (MIRA 17:3)

BARKAN, A. I.

"Restoration of Used Oils from Gas-Producing Motors," Les. prom., 12, No.[illegible], 1952

BARKAN, A.I.; BRAY, I.V.; ZILLER, G.K.

Petroleum oil reclamation with the use of surface-active agents. Khim.i tekh.topl.i masel 7 no.4:33-38 Ap '62. (MIRA 15:4)

1. TSentral'naya nauchno-issledovatel'skaya laboratoriya Vsesoyuznoy kontory "Regotmas".
(Oil reclamation) (Surface-active agents)

BARKAN, A.I.; ZILLER, G.K.

On the article " Reclamation of mineral oils by calcium metasilicate."
Khim. i tekh. topl. i masel 8 no.12:66 D '63. (MIRA 17:1)

1. Vsesoyuznyy trest po regeneratsii otrabotannykh neftyanykh masel Glavneftesbyta Ministerstva neftyanoy promyshlennosti SSSR.

BARKAN, A.I.; ZILLER, G.K.

Potentiometric method for determining the saponification number in used and recovered oils. Khim. i tekh. topl. i masel 7 no.10: 62-66 O '62 (MIRA 17:7)

Barkan, Abram Samuilovich

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Barkan, Abram Samuilovich

Radioaktivnost' i yeye primeneniye (Radioactivity and Its Applications) Minsk, Izd-vo Belgosuniversiteta im. V.I. Lenina, 1956. 50 p. 5,500 copies printed.

Sponsoring agency: Ministerstvo vysshego obrazovaniya SSSR.

Ed.: Kishchenko, L.V.; Tech. Ed.: Belen'kaya, I.Ye.

PURPOSE: This pamphlet is meant for the layman and for lecturers speaking to popular audiences.

COVERAGE: This is a popular presentation of the subject of radioactivity, its theoretical principles and industrial applications. Included are chapters on nuclear fission, atomic weapons, and the peaceful uses of atomic energy. Personalities mentioned include D.I. Ivanenko; D.V. Skobel'tsev; A.P. Vinogradov; R.V. Teys; A.L. Kursanov;

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Radioactivity and Its Applications (Cont.)

G.K. Boreskov; N.N. Semenov, Academician; Yu.B. Khariton; Ya.B. Zel'dovich; G.M. Frelov; K.A. Petrazh; and I.V. Kurchatov, Academician. There are 16 references, 14 of which are Soviet.

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EW/lab
May 27,1958

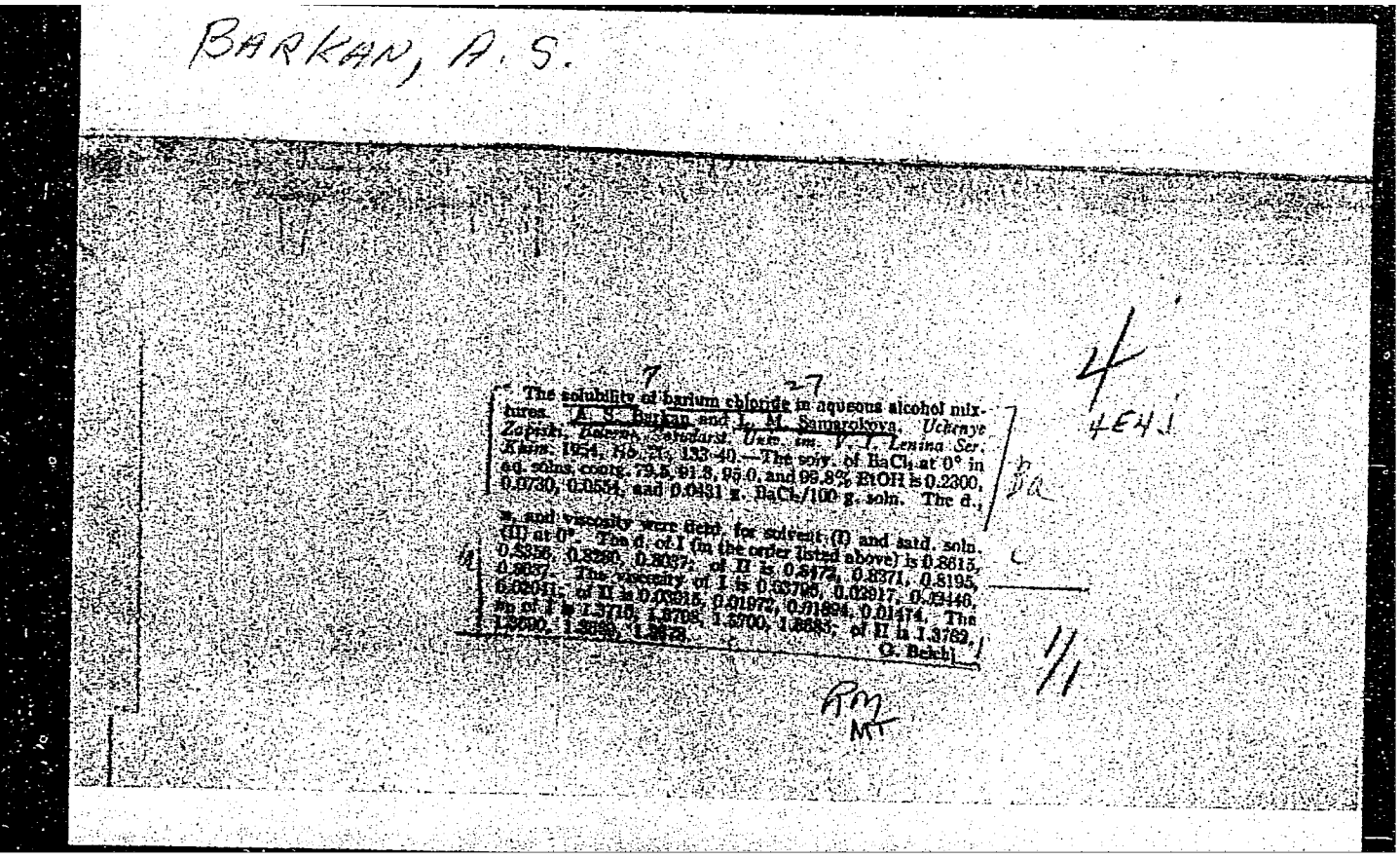
BARKAN, A. S.

~~ARKAN, A. S.~~

USSR.

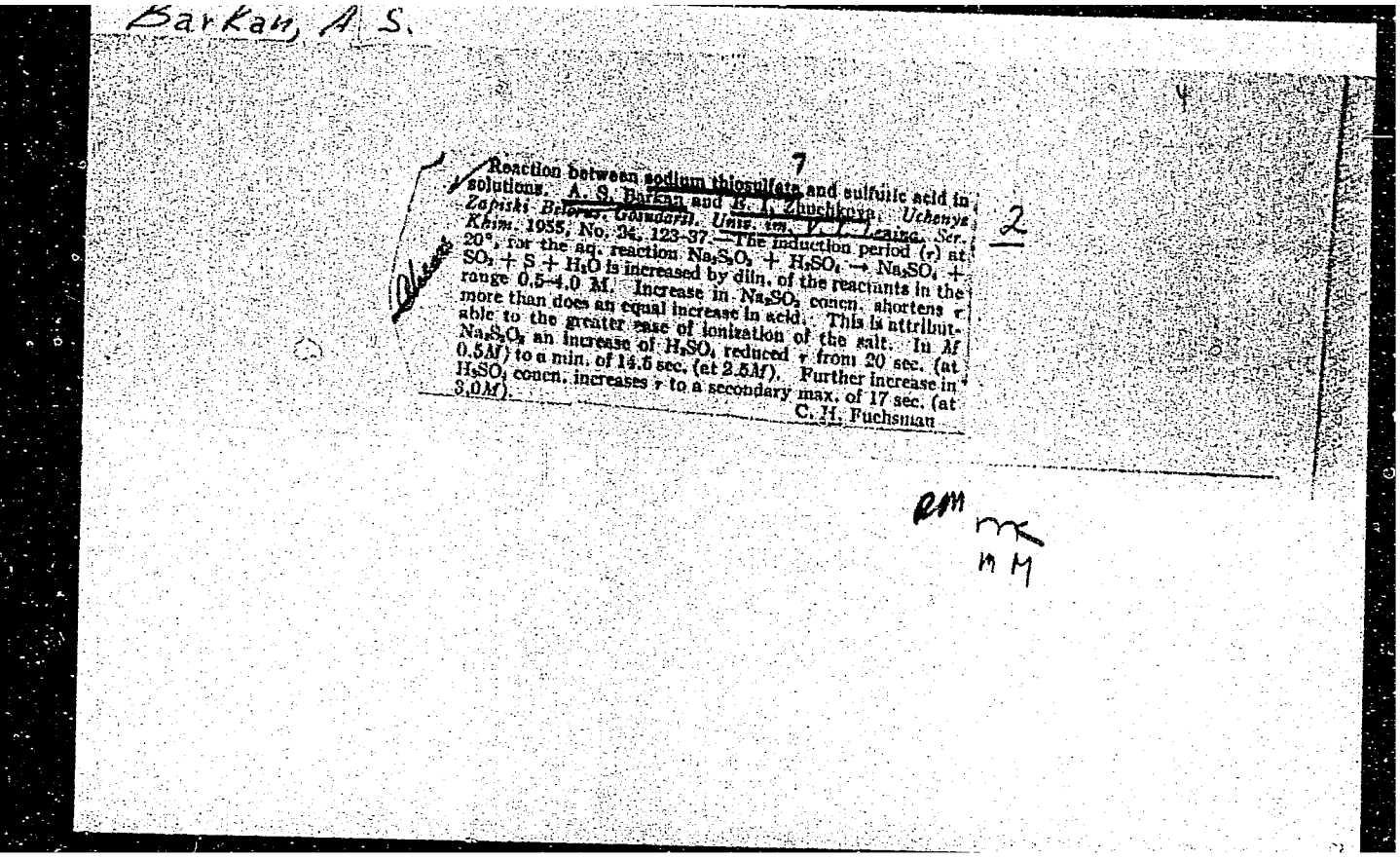
Chromatographic separation of components in the unsaponifiable part of kok-saghyz resin. F. G. Osipenko, A. S. Barkan, and A. A. Talko. *Uchenye Zapiski Belorus. Gosudarst. Univ.* 1953, No. 14, 100-5; *Referat. Zhur., Khim.* 1954, No. 22719.—Expts. on the chromatographic partition of the components in a Al_2O_3 column are described. Subsequent elution yielded 9 fractions of the resin, differing in m.ps., color, and external appearance under a microscope.

M. Hogeh



BARKAN, A. S.

The solubility of barium chloride in aqueous alcohol mixtures. A. S. Barkan and L. M. Samarokova. *Uchenye Zapiski, Leningrad. Gosudarst. Univ. im. V. I. Lenina Ser. Khim.* 1954, No. 21, 133-40.—The solv. of $BaCl_2$ at 0° in ad. solns. contg. 79.5, 91.3, 95.0, and 96.8% EtOH is 0.2300, 0.0730, 0.0534, and 0.0431 g. $BaCl_2$/100 g. soln. The d., η, and viscosity were detd. for solvent (I) and satd. soln. (II) at 0°. The d. of I (in the order listed above) is 0.8615, 0.8356, 0.8280, 0.8037; of II is 0.8479, 0.8371, 0.8195, 0.8087. The viscosity of I is 0.03795, 0.02917, 0.02446, 0.02011; of II is 0.00915, 0.01972, 0.01824, 0.01474. The η of I is 1.3719, 1.3708, 1.3700, 1.3685; of II is 1.3789, 1.3690, 1.3672. O. Belchi



Barkan, A. S.

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Reaction between sodium thiosulfate and sulfuric acid in solutions. A. S. Barkan and E. I. Zhuchkova. *Uchenye Zapiski Belorus. Gosudarst. Univ. im. V. I. Lenina, Ser. Khim.* 1955, No. 24, 123-37.—The induction period (τ) at 20°, for the aq. reaction $Na_2S_2O_3 + H_2SO_4 \rightarrow Na_2SO_4 + SO_2 + S + H_2O$ is increased by dilu. of the reactants in the range 0.5–4.0 *M*. Increase in Na_2SO_3 concn. shortens τ more than does an equal increase in acid. This is attributable to the greater ease of ionization of the salt. In *M* $Na_2S_2O_3$ an increase of H_2SO_4 reduced τ from 20 sec. (at 0.5*M*) to a min. of 14.5 sec. (at 2.5*M*). Further increase in H_2SO_4 concn. increases τ to a secondary max. of 17 sec. (at 3.0*M*).

C. H. Fuchsman

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BARKAN A. S.

The solubility of substances in mixed solvents. A. S. Barkan. *Uchenye Zapiski Belorussk. Gosudarst. Univ. im. V. I. Lenina, Ser. Khim.* 1955, No. 24, 102–13.; *cf. C.A.* 50, 8301h.—The separate and mutual solubilities of benzene and solid solutes (KCl, $BaCl_2$, K_2SO_4) were measured in MeOH-H_2O solvent (contg. 10–70% MeOH); EtOH-H_2O (contg. 11–70% EtOH); and acetone-H_2O (contg. 11–60% acetone). The soly. of glucose was measured in the benzene-MeOH-H_2O system; that of phenacetin in the benzene-EtOH-H_2O system; and that of anthranilic acid in the benzene-acetone-H_2O system. The soly. of benzene is increased by the presence of glucose in MeOH-H_2O, and by the presence of any of the tested solid solutes in EtOH-H_2O. It is reduced by all solid solutes in acetone.

C. H. Fuchsman

BARKAN, A.S.

Fuel

Utilization of peat ashes. A. S. Barkan, M. I. Mazel, and M. G. Mil'china. *Uchenyé Zapiski, Belorus. Gosudarst. Univ. im. V. I. Lenina, Ser. Khim.* 1955, No. 24, 114–23.—Fine peat ash contg. (%) SiO_2 41.9, $Al_2O_3 + Fe_2O_3$ 23.83, CaO 24.3, K_2O 1.86, and MgO 2.14 is not a satisfactory raw material for *cement manuf.*, but can be used to *fertilize* acid soils. C. H. Fuchsman

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BARKAN, A.S.; BEKETOVA, A.G.

Effect of the fourth component on solubility of sodium chloride and benzene in dioxine - water mixtures. Uch.zap. BGU no.29: 222-232 '56. (MIRA 11:11)
(Systems (Chemistry)) (Solubility)

YERMOLENKO, N.F.; TISHCHENKO, I.G.; BARKAN, A.S.

Chemistry at the White Russian State University; on the fortieth anniversary of the October Revolution. Uch.zap.BGU no.42:3-29 '58. (MIRA 12:1)

(White Russia--Chemistry)

BARKAN, A.S.; SERZHANINA, T.A.

Effect of additional components on the solubility of substances in mixtures. Uch.zap.BGU no.42:199-219 '58. (MIRA 12:1)
(Solubility) (Systems (Chemistry))

BARKAN, A.S.; KONDRUS', N.A.

Effect of a fourth component on the solubility of substances in mixtures. Uch.zap.BGU no.42:221-232 '58. (MIRA 12:1)
(Solubility) (Systems (Chemistry))

BARKAN, A.S.

24(5) PHASE I BOOK EXPLOITATION SOV/[illegible]

Akademiya nauk SSSR, Otdeleniye [illegible] nauk

Termodinamika i stroyentsiye rastvorov; trudy soveshchaniya... (Thermodynamics and Structure of Solutions; Transactions of the Conference Held January 27-30, 1958) Moscow, Izd-vo AN SSSR, 1959. 295 p. 3,000 copies printed.

Ed.: M. I. Shakhparonov, Doctor of Chemical Sciences; Ed. of Publishing House: M. G. Yegorov; Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for physicists, chemists, and chemical engineers.

COVERAGE: This collection of papers was originally presented at the Conference on Thermodynamics and Structure of Solutions sponsored by the Section of Chemical Sciences of the Academy of Sciences, USSR, and the Department of Chemistry of Moscow State University, and held in Moscow on January 27-30, 1958. Officers of the conference are listed in the Foreword. A list of other reports also read at the conference, but not included in this book, are given. Among the problems treated in this work are: electrolytic solutions, ultrasonic measurement, dielectric and thermodynamic properties of various mixtures, specific acoustic analysis, etc. References accompany individual articles.

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S/069/60/022/02/023/024
D034/D002

AUTHORS: Starobinets, G.L., Barkan, A.S.

TITLE: Nikolay Fedorovich Yermolenko (60 Years Old and 36 Years of Scientific, Pedagogical and Social Work).

PERIODICAL: Kolloidnyy zhurnal, 1960, Vol XXII, Nr 2, pp 259-260 (USSR)

ABSTRACT: This article was written on occasion of the sixtieth birthday (January 29, 1960) and the thirty-sixth anniversary of the beginning of the scientific, pedagogical and public career of Nikolay Fedorovich Yermolenko. From 1930 the scientist is the head of the Kafedra obshcheny i neorganicheskoy khimii Belorusskogo universiteta (Chair of General and Inorganic Chemistry of the Belorusskiy University). In 1932 he organized the Kolloidnaya laboratoriy (Colloidal Laboratory) at the Akademiya nauk BSSR (AS of the

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Nikolay Fedorovich Yermolenko (60 Years Old and 36 Years of Scientific, Pedagogical and Social Work).

Belorusskaya SSR), which is also under his guidance up to the present day. The scientific interests of N.F. Yermolenko comprise a wide range of subjects. In addition to works on colloidal chemistry, the physical chemistry of high polymers and the adsorption from solutions - the article gives more detailed information on the achievements in these fields which were the main object of interest to the scientist-, N.F. Yermolenko and his followers carried out investigations on general, inorganic and applied chemistry, and also on the history of chemistry - in all more than 200 works. The scientist also took part in the development of a number of branches of the chemical industry of the Belorusskaya SSR. N.F. Yermolenko trained many scientists and founded a

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S/069/60/022/02/023/024
D034/D002

Nikolay Fedorovich Yermolenko (60 Years Old and 36 Years of Scientific, Pedagogical and Social Work).

scientific school, whose representatives teach and develop the chemical science at the Akademy of Sciences of the BSSR, the Belorusskiy University and a number of other scientific research institutes and vuzes of the republic. The public activites of the scientist are also remarkable. For many years he has had the leading position at the Minskoye otdeleniye Mendeleyevskogó obshchestva (Minsk Section of the Mendeleyev Society), and he is a permanent member of the Minsk Oblastnoy Sovet deputatov trudyashchikhsya (Minsk Oblast' Council of the Worker Deputies) of the last four convocations. N.F. Yermolenko was awarded the Order of Lenin, two orders of the Trudovoye Krasnoye Znamya (Red Banner of Labor), the medal "Za doblestnyy trud v Velikoy Otechestvennoy

Card 3/4

B/069/60/022/02/025/024
D034/D002

Nikolay Fedorovich Yermolenko (60 Years Old and 36 Years of Scientific, Pedagogical and Social Work).

voyne" ("For valiant labor in the Great Patriotic War"), and the Pochetnaya gramota Verkhovnogo Soveta BSSR (Diploma of the Supreme Council of the Belorusskaya SSR). He also received the honorary title of Zasluzhennyy deyatel' nauki BSSR (Honored Scientist of the Belorusskaya SSR). There is 1 photograph.

Card 4/4

BARKAN, A.S.; KAVTSEVICH, L.P.

Effect of the additional component on the solubility in demixing solvents. Part 1: Effect of benzene on the solubility of potassium chloride in mixtures of n.butyl alcohol with water. Izv.-vys.ucheb.zav.;khim.i khim.tekh. 5 no.2:236-242 '62.

(MIRA 15:8)

1. Belorusskiy gosudarstvennyy universitet imeni Lenina, kafedra obshchey i neorganicheskoy khimii.

(Benzene) (Potassium chloride) (Solubility)

[illegible], A.S.; GRIN'KO, S.V.

Effect of the additional component on the solubility in demixing solvents. Part 2: Effect of benzene on the solubility of KCl mixtures of isopropyl alcohol with water. Izv.vys.ucheb.zav.;khim.i khim.tekh. 5 no.3:394-397 '62. (MIRA 15:7)

1. Gorkovskiy gosudarstvennyy universitet imeni Lenina, kafedra obshchey i neorganicheskoy khimii.

(Benzene) (Potassium chloride) (Solvents)

BARKAN, A.S.; RUDAKOVSKAYA, I.V.

Effect of an additional component on the solubility in demixing solvents. Part 3: Effect of benzene on the solubility of potassium chloride in mixtures of propyl alcohol with water. Izv.vys.uch.zav.; khim.i khim.tekh. 5 no.4:559-563 '62. (MIRA 15:12)

1. Belorusskiy gosudarstvennyy universitet imeni Lenina, kafedra obshchey i neorganicheskoy khimii.
(Benzene)
(Potassium chloride)
(Solubility)

ACCESSION NR: AP4029210 S/0226/64/000/002/0089/0098

AUTHOR: Lev, M. B. (Moscow); Pavlovskaya, Ye. I. (Moscow); Shibryayev, B. F. (Moscow); Barkan, B. L. (Moscow)

TITLE: Obtaining spherical iron powder by the method of atomizing fused metal

SOURCE: Poroshkovaya metallurgiya, no. 2, 1964, 89-98

TOPIC TAGS: spherical powder, spherical iron powder, Armco iron, 10 steel, 30 steel, 45 steel

ABSTRACT: The authors describe the effect of various factors (design of the burner, carbon content in the atomized metal, preliminary annealing, air pressure, distance from burner to water level in the powder gathering chambers, etc.) on the yield of Armco iron and Nos. 10, 30 and 45 steels are given in tables, which include the granulometric composition and pressability. The design and description of a device for atomizing fused metal by water is shown. The first results of its operation are given. The authors find it difficult to say which variant of atomizing will be preferable. It is entirely possible that both methods will be used depending upon specific conditions. Orig. art. has: 8 figures and 7 tables.

Card 1/2

ACCESSION NR: AP4029210

ASSOCIATION: none

SUBMITTED: 14Feb63 DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: ML NO REF SOV: 005 OTHER: 000

Card 2/2

BAYSH, L.G.; BARKAN, B.N.

Level indicators with an electric explosionproof pickup and remote control. Priborostroenie no.9:28-29 S '64. (MIRA 17:11)

ACCESSION NR: AP4045922 S/0119/64/000/009/0028/0029

AUTHOR: Baysh, L. G. (Engineer); Barkan, B. N. (Engineer)

TITLE: Remote level indicators with an electric explosionproof sensor

SOURCE: Priborostroyeniye, no. 9, 1964, 28-29

TOPIC TAGS: level gauge, level indicator, remote level indicator/ DIU-SOA level indicator

ABSTRACT: A short description is presented of a DIU-SOA remote indicator capable of measuring inflammable-liquid levels within 630, 1,000, and 1,600 mm at a pressure of 320 kg/cm^2. Maximum operating distance, 250 m; permissible gas density, 0.02—0.1 g/cm^2; float-system stroke, 15—25 mm; relative error, ±5%; power supply, 127—220 v, 50 cps; ambient temperature range, -30+60C. The sensor is intended for operation in Class V-1a explosion-hazardous rooms where gas mixtures of Category 4 and Group A are possible. A design drawing

Card 1/2

ACCESSION NR: AP4045922

and other details are given. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: IE NO REF SOV: 000 OTHER: 000

Card 2/2

VAREN', L. I.

Raschet, proektirovanie i vozvedenie v usloviiakh voennogo vremeni fundamentov pod mashiny s dinamicheskimi nagruzkami. Moskva, 1942. 31 p. illus. (Stakhanovskaia biblioteka, No. 8)

Calculation, designing and erection under wartime conditions of foundations for machines with dynamic loads.

LC: TJ240.V36

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

BARKAN, D. D.

D. D. Barkan

The Seismographic Waves and Their Effect on Buildings

State Printing House of Constructive Literature, Moscow 1945, 47 pages

From: Monthly List of Russian Accessions
January 1951, Vol. 3, No. 10, p. 8

BARKAN, D. D. Cr. Tech. Sci.

Dissertation: "Application of Vibration in Construction of the Artificial Footholds of Structures." Moscow Order of the Labor Red Banner Construction Engineering Inst., imeni V. V. Kuybyshev, 30 Jun 47.

SO: Vechernyaya Moskva, Jun, 1947 (Project #17636)

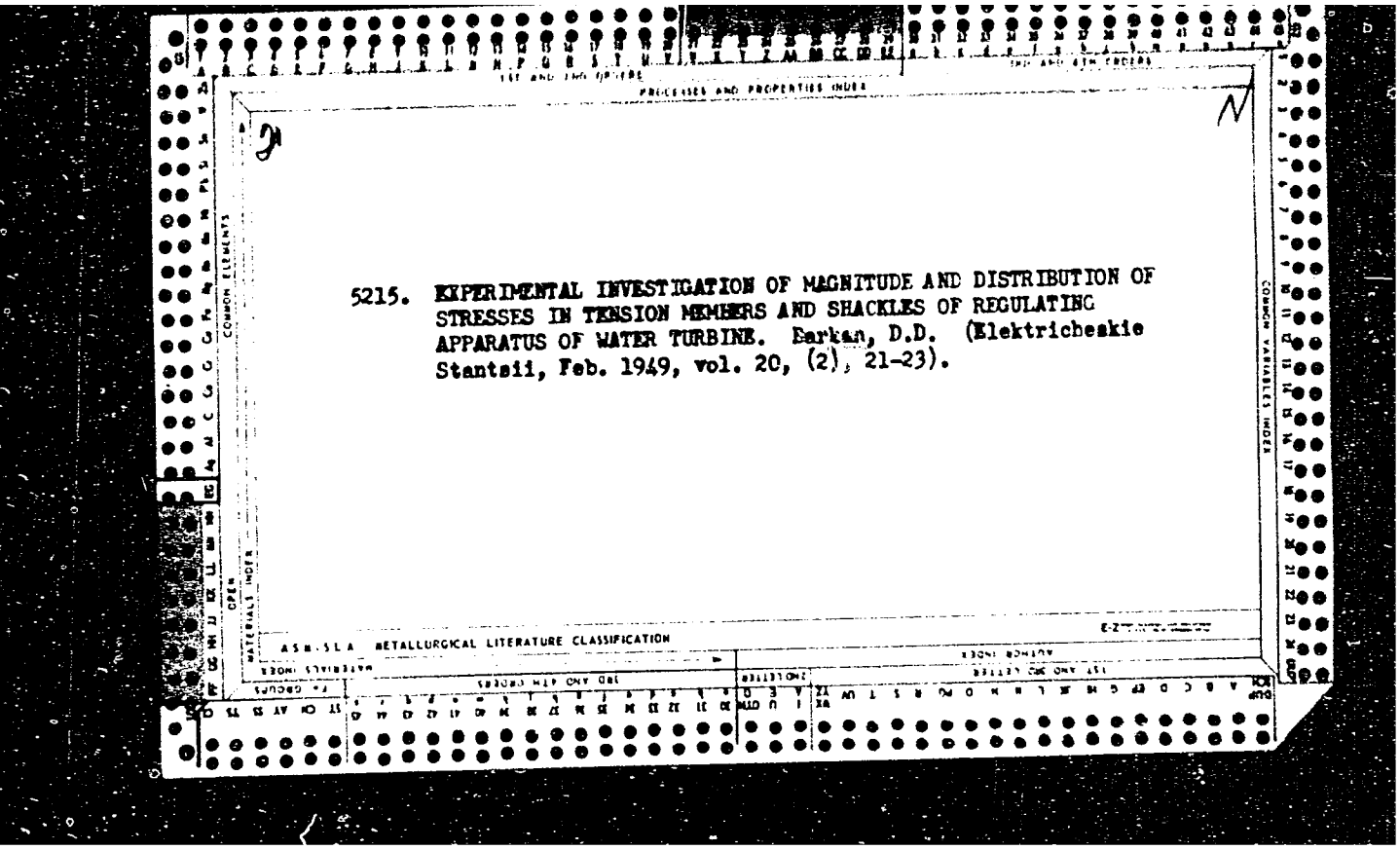
BARKAN, D. D.

Dynamics of foundations and sub-structures.

Moskva, Stroivoenmorizdat, 1948. 410 p. (50-34237)

BARKAN, D.D.

Investigating certain dynamic problems concerning forge hammers.
Trudy NII osn. i fund. no.12:130-157 '48. (MLRA 7:11)
(Forging machinery--Vibration) (Foundations--Vibration)



5215. EXPERIMENTAL INVESTIGATION OF MAGNITUDE AND DISTRIBUTION OF STRESSES IN TENSION MEMBERS AND SHACKLES OF REGULATING APPARATUS OF WATER TURBINE. Barkan, D.D. (Elektricheskie Stantsii, Feb. 1949, vol. 20, (2), 21-23).

BARKAN, D. D. PA 160T25

USSR/Engineering - Construction Industry Mar 50
Vibrators

"Sinking a Metal Post by Vibration," D. D. Barkan, Dr Tech Sci, Sci Res Inst, Min for Constr of Mach Bldg Enterprises, 5 pp

"Gidrotekh Stroi" No 3

Uses electric motor with transmission and vibrator on top of post. Finds rate of sinking in moist sandy ground was 6.5 meters in 1 min, 13.5 meters in 5 min; in dense brown clay, 3 meters in 12 min and 10 cm/min thereafter. Claims method is technically efficient and more economical than steam or compressed air impact methods.

160T25

1. BARKAN D.D., GUTSALENKO I.S., KOVROV A.V.

2. USSR (600)

4. Vibration

7. Use of vibration in construction of foundations for buildings, Latv. FSR Zin.Akad.Vestis no.6, 1951.

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

BARKAN, D. D.

"Method of Driving Sheet Pilings, Piles, Tubes, and Boring for Geologic Survey Purposes by Vibration," Oidr. stroi., 20, No.5, 1951

BARIN, D.

"Applying the Vibration Method in Electrical Engineering and Industries. . ." (АВКУЛТАЦИЯ В ЕЛЕКТРОТЕХНИКАТА) Vol. 2, No. 2, 19[illegible], Sofia, Bulgaria.

SO: Monthly List of East European Accessions L.C. Vol. 3, No. 11, Nov. 1953, Uncl.

1. BARKAN, D. D., Dr.

2. USSR (600)

4. Pile Driving

7. Experimental study of driving piles, sheet pilings and tubes into the ground. Mekh. stroi, 9 No. 10, 1952.

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

BARKAN, D. D.

PA 243T44

USSR/Engineering - Construction, 30 Nov 52
Ground Compacting

"Technology of the Operation for Installing Compacting Hole (Sand Piles) by the Vibration Method," Prof D. D. Barkan, Stalin Prize Laureate, Sci Res Inst of Footings and Foundations, Minmashstroy (Ministry of Machine Building)

"Byul Stroit Tekh" No 22, pp 18-20

Describes method and equipment for compacting weak grounds by sinking pipes of 6.5-7 m length, packing inner space of pipes with sand, and by pulling pipes out of ground. Discusses case when installation of compacting holes increased permissible pressure on ground from 1 to 2.5 kg/sq cm.

243T44

243T44

BARKAN, D.D., professor, laureat Stalinskoy premii.

New vibrator for sinking metal planks, piles and shafts. Biul.stroi.tekh. 10 no.3:19-20 F '53. (MLRA 6:12)

1. Nauchno-issledovatel'skiy institut osnovaniy i fundamentov Minmashstroya. (Pile driving)