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MOCHNULIG, A. N., et al., *Elasticheskiye Massy*, No 3, 1972, pp 53-56 ;

stabilized with PCB. Higher temperatures lead to formation of cracks, weight loss and poorer physical-mechanical properties.

BERLIN, A. A.

COLEEN

SO:JPRS 53389

17 Jul 71

UDC 547.281.1:547.455:546.65-36

EFFECT OF RARE EARTH METAL HYDROXIDES ON THE REACTION OF
FORMALDEHYDE CONDENSATION INTO SUBSTITUTED POLYMERES

(*Ukrainian*) 647.557

(Article by A. A. Berlin, O. V. Krylov and M. Ye. Sinyak; Moscow, Koordinatsionnaia Khimicheskaya Meditsina, Russian, Vol 5, No 1, 1971, pp 33-36, submitted for publication 9 March 1970)

Abstract: This paper gives a review of the literature on catalysts of the reaction of formaldehyde condensation into supran. Taking into account that every catalyst of this reaction has an ion radius, it is suggested that new catalysts should be sought among reagents whose ion radius conforms to the required conditions. Several catalysts based on lanthanides are considered suitable. It was found that at 110°C thulium, dysprosium, erbium, europium, samarium, cerium and scandium hydroxides accelerate the formation of carbohydrates.

The production of carbohydrates is one of the most important links in a system for reproducing foods for man during future space flights. Most of the systems for the physicochemical synthesis of carbohydrates are based on the formaldehyde condensation reaction. A. M. Butlerov (1861) was the first to demonstrate the fundamental possibility of synthesizing carbohydrates from CH_2O using $Ca(OH)_2$, K_2CO_3 , $Ba(OH)_2$ and H_2CO_3 as catalysts.

Later Loew discovered that simultaneously with the CH_2O condensation reaction there is a dimerization process, that is, the formation of formic acid and methyl alcohol. The rate of these processes is dependent on the alkalinity of the catalyst. With an increase in the latter (NaOH, KOH) the dimerization process is accelerated; at the same time, the weak alkali $Ca(OH)_2$ favors the condensation process. The condensation reaction is made almost twice as rapid when a mixture of 30% sodium chloride is added to the reaction mixture; on the other hand, potassium nitrate and sodium acetate slow down this process.

Space Chemistry

Polymers and Polymerization

USSR

UDC 541(64+67):678.76

MATNISHYAN, A. A., ZELENETSKIY, A. N., LIOGON'KIY, B. I., and BERLIN, A. A.

"Determination of Redox Potentials of Electron Exchange Polymers With a Conjugation System"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 13, No 5, May 71, pp 1170-1175

Abstract: An equilibrium method for determining redox potentials of insoluble, slightly swelling compounds (those unstable towards oxidizing agents, as well as compounds with low redox potentials) has been developed. The method is based on the calculation of the potential of a redox pair in equilibrium with the studied system. When two redox systems interact, an equilibrium will set up between them after some time, when $E_1 = E_2$. From the Nernst equation and above condition the formula was developed for calculation of the unknown E_{o2}^2

$$E_{o2}^2 = E_{o1} + \left[\frac{RT}{F} \ln \left(\frac{[O_1]}{[R_1]} \right)^{1/n_1} \left(\frac{[R_2]}{[O_2]} \right)^{1/n_2} \right]$$

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USSR

MATNISHYAN, A. A., et al., Vysokomolekulyarnyye Soyedineniya, Vol 13, No 5, May 71, pp 1170-1175

where $[O_1]$, $[R_1]$ are the concentrations of the oxidized and reduced forms of the soluble system, and $[O_2]$, $[R_2]$ -- of the insoluble system (test system), and n is the number of electrochemical equivalents. Using this formula, the normal redox potentials of polyphenylenequinone, polyphenylenehaloquinone, polyphenylenesulfoquinone, indigo, thioindigo, and polythioindigo were determined for the first time.

2/2

1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--OXIDATION OF DIPHENYLMETHANE IN THE PRESENCE OF POLYPHENYLACETYLENE
-U-
AUTHOR-(04)-BERLIN, A.A., ASEYEVA, R.M., YARKINA, V.V., KOBRYANSKIY, V.M.
COUNTRY OF INFO--USSR
SOURCE--KINET. KATAL. 1970, 11(1), 241-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--BENZENE DERIVATIVE, OXIDATION, ACETYLENE, ORGANIC AZO
COMPOUND, ORGANIC NITRILE COMPOUND, CONJUGATE BOND SYSTEM, ANTIOXIDANT
ADDITIVE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1620 STEP NO--UR/0195/70/011/001/0241/0244
CIRC ACCESSION NO--AP0112614
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112614

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION WAS STUDIED MANOMETRICALLY. POLY(PHENYLACETYLENE) (I) INHIBITS OXIDN. OF PH SUB2 CH SUB2. INTRODUCTION PERIOD OF PH SUB2 CH SUB2 OXIDN. INCREASED LINEARLY WITH I CONCN. ON REACTION WITH FREE RADICALS, ABSORPTION COEFF. OF I DECREASED AT DIFFERENT WAVELENGTHS DIFFERENTLY. BEST INHIBITORS ARE THE PARTS OF I MACROMOL. HAVING EXTENDED CONJUGATION. DURING A REACTION OF I WITH PH SUB2 CH SUB2 THE CONCN. OF PARAMAGNETIC CENTERS IN I DECREASED. ANALOGOUS EFFECTS WERE OBSERVED WHEN I WAS KEPT IN THE PRESENCE OF AZOBISISOBUTYRONITRILE IN THE ABSENCE OF O.
FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr

AP 0048826

Abstracting Service:
CHEMICAL ABST.

B
5-76

Ref. Code

UR0459

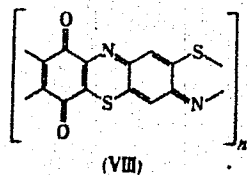
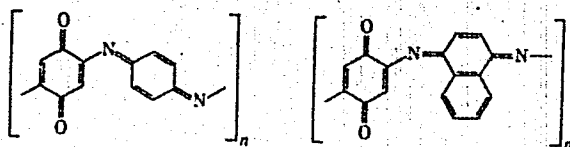
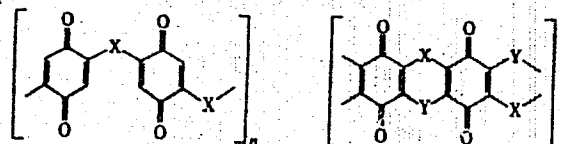
90938a Electrical conductivity of polyquinones and its dependence on the chemical structure of the polymer molecules. Dulov, A. A.; Gurov, A. A.; Liogon'kii, B. I.; Berlin, A. A. (Inst. Khim. Fiz., Moscow, USSR). *Vysokomol. Soedin. Ser. A* 1970, 12(1), 74-80 (Russ). The elec. cond. of poly(quinone oxide) (I), poly(quinonedioxin) (II), poly(quinonethioxin) (III), poly(quinoneamine) (IV), poly(quinonethiazine) (V), poly(quinonequinonediimine) (VI), poly(quinonenaphthoquinone-1,4-diimine) (VII), and poly(quinonephenodithiazine) (VIII) was measured at 20-200°/10⁻⁵ mm. Introduction of O bridges (and to a lesser extent NH groups) led to a marked decline in elec. cond. A transition to ladderlike polymers was accompanied by an increase in elec. cond.; the increase was most significant in VI vs. VIII. The activation energy increased and the sp. elec. cond. decreased on transition from the oxidized to the hydroquinone form. Ladderlike polymers contained a higher concn. of unpaired spins, suggesting that introduction of O bridges hindered the formation of paramagnetic centers considerably stronger than either -S- or NH-. CKJR

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REEL/FRAME
19800589

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AP0048826



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LD

19800590

Acc. Nr:

AP0052534

Abstracting Service:
CHEMICAL ABST. 5-7

Ref. Code:

4R0460

101209s "Condensation" of a polymer solution. Berlin, A. A.; Savad'yan, A. A.; Enikolopyan, N. S. (Inst. Khim. Fiz., Moscow, USSR). *Vysokomol. Soedin., Ser. B* 1970, 12(1), 16-19 (Russ). Math. anal. of the thermodynamic characteristics of dil. polymer solns. showed that when the polymer mols. have a tendency to interact, forming coils, there is a crit. concn. (c) above which there is a tendency toward formation of larger coils contg. many mols. Under certain conditions, the polymer may form a single, large dissolved coil. In a poor solvent or at the θ point $c = \infty$. However, in a good solvent $c < \infty$. Also c decreases with the increase in the mol. wt. of the undissocd. polymer. CPJR

REEL/FRA
19821177

1/2 070 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--THERMAL TRANSFORMATIONS OF SOME AROMATIC POLYAMIDO AND
POLYAMINOAMIDO ACIDS -U-
AUTHOR--(04)--SHANRAYEV, G.M., DULOV, A.A., LIKONKIY, B.I., BERLIN, A.A.
COUNTRY OF INFO--USSR **B**
SOURCE--VVSOKOMUL. SOBYTIY. SER. A 1970, 12(2), 401-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--PYROLYSIS, POLYMER, BENZIMIDAZOLE, IR SPECTRUM, EPR SPECTRUM,
X RAY DIFFRACTION, ELECTRON MICROSCOPY, CONJUGATED POLYMER, THERMAL
DEGRADATION, HIGH TEMPERATURE MATERIAL, HETEROCYCLIC NITROGEN COMPOUND,
POLYNUCLEAR HYDROCARBON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PRUXY REEL/FRAME--1992/0763 STEP NO--UR/0459/70/012/002/0401/0408
CIRC ACCESSION NO--AP0111955
UNCLASSIFIED

2/2 070

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0111955

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF PYROLYSIS TEMP. WAS STUDIED ON I (R IS A DIRECT BOND, D, CH SUB2, OR POLY(NAPHTHOYLENEBISBENZIMIDAZOLE)) OR II (R IS A DIRECT BOND OR G), THE PREPN. OF WHICH WAS REPORTED BY A. A. BERLIN, ET AL. (1966-8). IR SPECTROSCOPY, X RAY DIFFRACTION, ELECTRON MICROSCOPY, AND EPR SPECTROSCOPY WERE USED TO ESTABLISH THAT THE ORDERING OF I OR II PROCEEDS AT SMALLER THAN OR EQUAL TO 400DEGREES. THIS IS DUE TO FORMATION OF THE CONJUGATED HETEROCYCLIC POLYMERS, SUCH AS III OR IV. AT 500DEGREES AND SMALLER THAN OR EQUAL TO 800DEGREES, THE STRUCTURE ORDERING OF III AND IV DECREASES DOWING TO THERMAL DEGRADATION. FACILITY: INST. KHIM. FIX., MOSCOW, USSR.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--THERMODYNAMICS OF FORMALDEHYDE TRIOXANE POLYFORMALDEHYDE SYSTEM -U-
AUTHOR--BERLIN, A.A., VOLFSO**B**N, S.A., OLEINIK, E.F., ENIKOLOPYAN, N.S.
COUNTRY OF INFO--USSR
SOURCE--VYSOKOMOL. SOEDIN. SER. A 1970, 12(2), 443-9
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--THERMODYNAMICS, IR SPECTRUM, FORMALDEHYDE, TRIOXANE,
POLYFORMALDEHYDE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA**B**ME--1989/0245 STEP NO--UR/0459/70/012/002/0443/0449
CIRC ACCESSION NO--AP0106901
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106901

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IR SPECTRA OF HCHO (G) AND TRIOXANE (G) (I) ARE DIFFERENT. IR SPECTROSCOPY WAS USED TO DET. THE RELATIVE AMTS. OF HCHO AND I IN THE VAPOR PHASE ABOVE SOLID POLYFORMALDEHYDE (II) IN THE 25-72DEGREES RANGE. FROM THE RELATIVE CONCNS., AND THE REPORTED THERMODYNAMIC PROPERTIES OF HCHO, I, AND II, THE THERMODYNAMIC PARAMETERS OF HCHO AND I POLYMN. WERE CALCD. THE ACTIVATION ENTHALPY, ENTROPY, AND FREE ENERGY ARE GIVEN OF SOLID OR LIQ. II FORMATION FROM LIQ. OR GASEOUS HCHO AND LIQ., GASEOUS, OR SOLID I.

UNCLASSIFIED

1/2 017
UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--SYNTHESIS AND STUDIES OF SOME POLYAMINO ACIDS -U-
AUTHOR--(03)-BERLIN, A.A., LIOGONKIY, B.I., SHAMRAYEV, G.M.
COUNTRY OF INFO--USSR *B*
SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 938-47
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--ORGANIC SYNTHESIS, POLYCONDENSATION, NAPHTHALENE, CARBOXYLIC ACID, ANHYDRIDE, AMINE, BENZENE DERIVATIVE, POLYAMIDE COMPOUND, PLASTIC FILM, HETEROCYCLIC NITROGEN COMPOUND, POLYNUCLEAR HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1494 STEP NO--UR/0459/70/012/004/0938/0947
CIRC ACCESSION NO--AP0135155
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135155

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYCONDENSATION OF
1,4,5,8,NAPHTHALENETETRACARBOXYLIC ACID DIANHYDRIDE (I) WITH 3,3
PRIME,DIAMINOBENZIDENE, 3,3 PRIME, 4,4 PRIME TETRAAMUNODIPHENYLMETHANE,
OR 3,3 PRIME, 4, 4 PRIME,TETRAAMINODIPHENYL ETHER IN APROTIC SOLVENTS
GAVE THE CORRESPONDING POLYAMIDES. THE HIGHEST VISCOSITY OF THE
REACTION MIXT. WAS OBTAINED WHEN 1-2PERCENT I EXCESS WAS USED TO MAKE UP
FOR I HYDROLYZED TO THE TETRACARBOXYLIC ACID. THE EVAPN. OF THE SOLNS.
GAVE POLYAMIDE FILMS, WHICH ON HEATING IN VACUO 2 HR AT 300DEGREES GAVE
II (R IS ABSENT, O, OR CH SUB2). FACILITY: INST. KHIM. FIZ.,
MOSCOW, USSR.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--DEHYDROGENATION AND CROSSLINKING OF SATURATED POLYMERS -U-

AUTHOR--(04)-BERLIN, A.A., LIQONKIY, B.I., MATNISHYAN, A.A., MUSOELIAN,
I.N.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,438

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTRON ACCEPTOR, CHEMICAL PATENT, POLYMER, DEHYDROGENATION,
POLYMER CROSSLINKING, QUINONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3007/1764

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0137004

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0137004

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SATD. POLYMERS ARE DEHYDROGENATED AND CROSSLINKED WITH QUINONES TO WHICH HAVE BEEN ADDED A SUBSTANCE THAT IS A STRONGER ELECTRON ACCEPTOR THAN THE CORRESPONDING QUINONE, SUCH AS TETRACYANOBENZENE, TETRACYANOETHYLENE, DINITROPHENOL, A HALOSUBSTITUTED QUINONE, AND K BICHROMATE. FACILITY: INSTITUT KHIMICHESKOY FIZIKI AN SSSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--POLYADDS OF DIFURAN COMPOUNDS -U-
AUTHOR-(04)-BERLIN, A.A., BUDEVSKA, KH., MIKHAYLOV, M., ZABUNOVA, O.
COUNTRY OF INFO--USSR **B**
SOURCE--VYSOKOMOL. SOEDIN., SER. 6 1970, 12(4), 277-80
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--HEAT RESISTANT PLASTIC, FURAN, PHTHALATE, AZINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1245 STEP NO--UR/0460/70/012/004/0277/0280
CIRC ACCESSION NO--AP0134919
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134919

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTIVE POLYADDSUCTS WERE PREPD. FROM DIFURFURL TEREPTHALATE OR FURFURAL AZINE AND BISSDIENOPHILES, SUCH AS N,NPRIME,HEXAMETHYLENEDIMALEIMIDE (DIELS-ALDER REACTION). THE POLYADDSUCTS WERE HEATED IN VACUO (10 PRIMENEGATIVE3 -10 PRIMENEGATIVE4 MM) WITH OR WITHOUT HYDROQUINONE AT 150DEGREES TO GIVE CROSSLINKED, HEAT RESISTANT POLYMERS.

FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SPECIFICITY OF THE STRUCTURE AND PROPERTIES OF POLYCONJUGATED
SYSTEMS -U-
AUTHOR--~~BERLIN, A A~~ *B*
COUNTRY OF INFO--USSR
SOURCE--J. POLYM. SCI., PART C 1970, NO. 29, 187-9
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CONJUGATE BOND SYSTEM, PARAMAGNETISM, ORGANIC COMPLEX
COMPOUND, POLYMER, POLYETHYLENE, THERMAL STABILITY

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/0138 STEP NO--US/0000/70/000/029/0187/0189
CIRC ACCESSION NO--AP0125954
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125954

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW (NO REFS.) OF THE LOCAL ACTIVATION EFFECTS OF PARAMAGNETIC CENTERS WHICH INFLUENCE THE REACTIVITY, PHYSICOCHEM., AND ELECTROPHYS. PROPERTIES OF POLYCONJUGATED SYSTEMS AND THE COMPLEXES THEY FORM, E. G. OF POLY(PHENYLACETYLENE), POLY(TOLYLENE), POLY(TETRACYANODETHYLENE), AND POLYETHYLENE, BY INCREASING THE REACTIVITY OF THE UNSATD. POLYMERS TOWARDS RADICALS AND ABILITY TO COPOLYMERIZE; AND AFFECTING THEIR THERMAL STABILITY AND ABILITY TO INHIBIT THERMAL AND PHOTOOXIDN. PROCESSES. FACILITY: INST. CHEM. PHYS., MOSCOW, USSR.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--FEATURES OF ACRYLONITRILE POLYMERIZATION INITIATED WITH
TRIETHYLPHOSPHINE IN TETRAHYDROFURAN AND DIMETHYLFORMAMIDE -U-
AUTHOR--(04)-KOCHETOV, E.V., BERLIN, A.A., MASALSKAYA, E.M., YENIKOLOPYAN,
N.S. **B**
COUNTRY OF INFO--USSR
SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(5), 1118-26
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ACRYLONITRILE, POLYMERIZATION, AMIDE, CHEMICAL REACTION
KINETICS, PHOSPHATE ESTER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1375 STEP NO--UR/0459/70/012/005/1118/1126
CIRC ACCESSION NO--AP0135049

2/2 023

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0135049

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYMN. KINETICS OF H SUB2
C:CHCN (I) IN HCONME SUB2 (II) OR TETRAHYDROFURAN (III) SOLNS. CONTG. ET
SUB3 P WERE STUDIED. THE POLYMN. FOLLOWED 1ST ORDER KINETICS IN RESPECT
TO ET SUB3 P AND 2ND ORDER IN RESPECT TO I IN II SOLN. THE MOL. WT. OF
THE POLYMER DECREASED WITH CONVERSION, WAS INDEPENDENT OF ET SUB3 P
CONCN., AND INCREASED LINEARLY WITH INCREASING I CONCN. IN II OR WITH
THE SQUARE OF I CONCN. IN III SOLN. THE INITIATION RATE CONST.
INCREASED WITH INCREASING I CONCN. IN III. FACILITY: INST.
KHM. FIZ., MOSCOW, USSR.

1/2 033 UNCLASSIFIED PROCESSING DATE--04DEC71
TITLE--CARBONIZATION OF RESOL TYPE PHENOL FORMALDEHYDE RESINS -U-
AUTHOR--(05)-BERLIN, A.A., FIALKOV, A.S., TSVELIKHOYSKIY, G.I., ASEYEVA,
R.M., BAKER, A.I.
COUNTRY OF INFO--USSR *B*
SOURCE--PLAST. MASSY 1970, (6), 44-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--PHENOL FORMALDEHYDE RESIN, PYROLYSIS, X RAY STUDY, IR
SPECTRUM, METHYLENE, DEHYDROGENATION, GAS CHROMATOGRAPHY, MASS
SPECTROSCOPY, CONJUGATE BOND SYSTEM, POLYMER STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/0732 STEP NO--UR/0191/70/000/006/0044/0048
CIRC ACCESSION NO--AP0136171
UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--04DEC7

CIRC ACCESSION NO--AP0136171

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SAMPLES OF BAKELITE (I) CONTG. VARIOUS AMTS. OF PHOH WERE PREPD. BY THE PURIFICATION OF COM. I. I WAS THEN PYROLYZED IN VACUUM OR IN AR AT TEMPS. LESS THAN OR EQUAL TO 1000DEGREES. ANAL. OF DTA DATA AND S RAY AND IR SPECTRA SHOW THAT THE MAIN REACTIONS WERE BREAKING CH SUB2 BRIDGES, DEHYDROGENATION, AND FREE RADICAL REACTIONS INVOLVING QUINONOID STRUCTURES. GAS CHROMATOG. AND MASS SPECTROSCOPY SHOWED THAT THE MAIN DECOMP. PRODUCTS WERE PHOH, CRESOL, BENZENE, H SUB2, CH SUB4, CO, CO SUB2, AND H SUB2 O. THE CARBONIZED RESIDUE OBTAINED AT 900DEGREES HAD AN UNORGANIZED STRUCTURE. INCREASING THE PYROLYSIS TEMP. INCREASED THE NO. OF CONJUGATED STRUCTURES AND ORDERING. THE SAMPLES WITH LOWER INITIAL PHOH CONTENTS GAVE DENSER PYROLYZED STRUCTURES.

1/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--THERMODYNAMICS OF REVERSIBLE COPOLYMERIZATION -U-

AUTHOR--(02)-BERLIN, A.A., ENIKOLOPYAN, N.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(5), 337-40

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMODYNAMICS, COPOLYMERIZATION, MONOMER, EQUILIBRIUM
CONSTANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0726

STEP NO--UR/0460/70/012/005/0337/0340

CIRC ACCESSION NO--AP0136165

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0136165

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EQUIL. CONC. OF A MONOMER IN A COPOLYMER WAS ALWAYS LOWER THAN IN A HOMOPOLYMER. AT EQUIL., THE AV. LENGTHS OF INNER BLOCKS WAS EQUAL TO THE AV. LENGTHS OF TERMINAL BLOCKS. A CERTAIN PARAMETER (DELTA EQUALS RATIO OF EQUIL. CONSTS.) WAS INTRODUCED TO EXPRESS THE RELATIVE EQUIL. CONCNS. OF COMONOMERS AS A FUNCTION OF COPOLYMER COMPN. "REAL" COPOLYMERS MAY BE TREATED IN TERMS OF DUHEM MARGULES EQUATION FOR SOLNS.

UNCLASSIFIED

USSR

UDC 621.374.4.029.65:621.382.2

VIZEL', A.A., NAVROTSKIY, V.I., BERLIN, A.S., VORONINA, L.A., VORONENKO, V.P.

"Frequency Multipliers Based On GaAs Diodes For Millimeter Wavelengths"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1337-1339

Abstract: The results are presented of a study of frequency triplers and quadruplers of millimeter wavelengths (27-36 GHz) based on GaAs diodes. The subject of the study was diffusion diodes with junction capacitance $C_{-6v} = 0.24-0.4$ pf, $T_{-6v} = (C_{p-n} \cdot R_s) = 0.6-0.8$ nsec and a breakdown voltage of 40-60 v in an ordinary metalceramic casing; and also diodes with a metal-semiconductor barrier with $C_{0v} = 0.5-1.0$ pf, $T_{-2v} = 0.5-0.8$ nsec and a breakdown voltage of 13-24 V (in a small-size metalceramic casing). The experimental study of the diodes was conducted in a frequency multiplier of the waveguide "cross overlap" [krest vnakhlest] type, with open circuits which have a high efficiency and a satisfactorily high output power. It is shown that on the base of GaAs diodes with a metal-semiconductor barrier and also of diffusion GaAs diodes it is possible to create effective frequency multipliers for millimeter wavelengths. The principal results of the work were reported at the 1971 European Microwave Conference. 3 fig. 3 ref. Received by editors, 9 September 1971.

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- 183 -

1/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--EPITAXIAL PARAMETRIC DIODE BASED ON GALLIUM ARSENIDE -U-
AUTHOR--(05)-BERLIN, A.S., GOLOVANOV, YU.A., DAVYDOV, V.M., MIKHAYLOVA,
L.G., MIKHAYLOV, L.N.
COUNTRY OF INFO--USSR **B**
SOURCE--V SB. PCLUPROVDN. PRIBORY I IKH PRIMENENIYE (SEMICONDUCTOR
REFERENCE--RZH-ELEKTRONIKA I YEYE PRIMENENIYE, NO 4; APR 70, ABSTRACT NO
DATE PUBLISHED-----69
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--GALLIUM ARSENIDE SEMICONDUCTOR; SEMICONDUCTOR DIODE, CIRCUIT
PARAMETER, EPITAXIAL GROWTH
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/2048 STEP NO--UR/0000/69/000/000/0013/0028
CIRC ACCESSION NO--AR0133873
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AR0133373

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PARAMETRIC SEMICONDUCTOR DIODES (SD) WITH A METAL, N GAAS, N PLUS GAAS STRUCTURE ARE INVESTIGATED. ON THE BASIS OF A CALCULATION OF THE RESISTANCE OF A SD, WITH THE SURFACE MICROWAVE FREQUENCY, LOSSES TAKEN INTO ACCOUNT, THE ADVANTAGE OF THE USE OF EPITAXIAL FILMS IS SHOWN. EPITAXIAL LAYERS OF THE N TYPE GAAS WITH AN IMPURITY CONCENTRATION OF T TIMES 10 PRIME15-10 PRIME17 CM NEGATIVE PRIME3 AND A THICKNESS OF 0.5-2 MICRONS WERE OBTAINED BY THE METHOD OF GAS TRANSPORT REACTIONS IN A CIRCULATING SYSTEM WITH THE USE OF ASCL SUB3 AND GA AS THE PARENT SUBSTANCE. THE SUBSTRATES WERE MADE OF GAAS, DOPED WITH TE UP TO CONCENTRATIONS OF 10 PRIME19 CM NEGATIVE PRIME3. THE PLANAR SD WERE PREPARED EITHER BY CHEMICAL PRECIPITATION OF NI OR BY DEPOSITION OF AU OR AG IN A SIO SUB2 WINDOW, APPLIED ON THE GAAS SURFACE BY THE METHOD OF CATHODE SPUTTERING OF SI IN AN O SUB2 ATMOSPHERE. THE DIAMETER OF THE WINDOW PREPARED BY PHOTOLITHOGRAPHY AMOUNTED TO 5-25 MICRONS. ANNEALING OF THE SD PERFORMED IN A N SUB2 ATMOSPHERE SHOWED THAT THE MAXIMUM TEMPERATURE FOR AU, GAAS, AG-GAAS AND NI-GAAS CONTACTS WAS 230, 300, AND 450 DEGREES, RESPECTIVELY. THE CAPACITANCE AND TIME CONSTANT OF THE EXPERIMENTAL SD WITH A SCHOTTKY BARRIER CONSTITUTED 0.01-0.1 NANO FARAD AND 0.15-0.6 NANOSECOND AT FREQUENCIES OF 10 AND 35 GHZ.

UNCLASSIFIED

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USSR

UDC 621.382.2

BERLIN, A. S., GOLOVANOV, YU. A., DAVYDOV, V. M., MIKHAYLOVA, L. G.,
MIKHAYLOV, L. N., TISHCHENKOV, N. T.

"Epitaxial Parametric Diode Based on Gallium Arsenide"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor De-
vices and Their Applications -- Collection of Works), Vyp. 22,
Moscow, "Sov.radio," 1969, pp 13-28 (from RZh-Elektronika i yeye
primeneniye, No 4, Apr 70, Abstract No 4B195)

Translation: Parametric semiconductor diodes (SD) with a metal--
n GaAs--n + GaAs structure are investigated. On the basis of a
calculation of the resistance of a SD, with the surface microwave
frequency -- losses taken into account, the advantage of the use
of epitaxial films is shown. Epitaxial layers of n-type GaAs with
an impurity concentration of $5 \cdot 10^{15}$ -- 10^{17} cm⁻³ and a thick-
ness of 0.5-- 2 microns were obtained by the method of gas-trans-
port reactions in a circulating system with the use of AsCl₃ and Ga
as the parent substance. The substrates were made of GaAs, doped
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USSR

BERLIN, A. S., et al, V sb. Poluprovodn. pribory i ikh primeneniye, Vyp. 22, Moscow, "Sov.radio," 1969, pp 13-23 (from RZh-Elektronika i yeye primeneniye, No 4, Apr 70, Abstract No 4B195)

with Te up to concentrations of 10^{19} cm^{-3} . The planar SD were prepared either by chemical precipitation of Ni or by deposition of Au or Ag in a SiO_2 window, applied on the GaAs surface by the method of cathode sputtering of Si in an O_2 atmosphere. The diameter of the window prepared by photolithography amounted to 5--25 microns. Annealing of the SD performed in a N_2 atmosphere showed that the maximum temperature for Au--GaAs, Ag--GaAs and Ni--GaAs contacts was 230, 300, and 450° , respectively. The capacitance and time constant of the experimental SD with a Schottky barrier constituted 0.01--0.1 nanofarad and 0.15--0.6 nanosecond at frequencies of 10 and 35 GHz. A. Ye.

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USSR

UDC 541.64:542.952/.954:006.3

BERLIN, A. Ya., and TOPCHIYEVA, I. N.

"Third Symposium on Physiologically Active Synthetic Polymers and Macromolecular Biopolymer Models"

Moscow, Bysokomolekularnyye Soyedineniya, Vol 14, No 6, Jun 72, pp 1452-1453

Abstract: The symposium was held in Riga during 16-19 November 1971. KROPACHEV, V. A., opened it with a paper on the use of polymers as carriers of medicinal functions. KRENTSEL', B. A., discussed the relationship between the polymeric structure and physiological activity, and KABANOV, V. A., -- synthesis of non-protein type macromolecules as models of enzymic activity. Thermodynamic basis of enzyme catalysis was covered by BEREZIN, I. V., and synthetic methods and properties of enzymes connected with polymer carriers -- by ANTONOV, V. K. BRESLER, S. YE., analyzed the problems of nucleic acid synthesis and modelling their functions, and GILLER, S. A., -- synthesis of nucleic acids with changing "unnatural" basic targets. In the report of PLATE, N. A., and DAUROVA, T. T., the fate of synthetic polymers in organisms was discussed and BERGEL'SON, L. D., reported on the architecture of cell membranes. Synthesis of novel medicinal compounds was the predominant topic at the symposium. Several papers covered studies of synthetic macro-

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USSR

BERLIN, A. Ya., et al, Vysokomolekularnyye Soyedineniya, Vol 14, No 6, Jun 72, pp 1452-1453

molecules as models of enzymic action. It was noted that cooperative studies are needed involving multidisciplinary collaboration, and standardization of bioassays. The attendance of biologists, pharmacologists and clinicians at the symposium was rather disappointing, it was noted.

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USSR

BERLIN, A. YA., Professor, Editor

Puti Sinteza i Izyskaniya Protivoopukholevykh Preparatov (Paths to Synthesizing and Discovering Antitumor Drugs), Vyp 3, Riga, "Zinatne", 1970, 359 pp

Translation: This anthology, which is presented for the reader's attention, contains materials from the First All Union Conference on Chemical Therapy of Malignant Tumors (primarily from the chemistry section), which took place in Riga on 7-11 October 1968. The practice of publishing reports from this type of conference, which has been seen earlier in the publication of the anthologies of the same title in 1962 and 1967 (nos 1 and 2 respectively), has unquestionably proved itself and aroused great interest and approval among scientists concerned with creating medicinal means of combating malignant neoplasma.

There are 49 reports in the book. Of them, the first six are pieces which were given at plenary meetings of the conference, and they are primarily of a general nature. The remaining articles describe the brief results of research in individual concrete areas. Half of them are devoted to study of substances of the imitator-antimetabolite type, natural substances, hormones, and other compounds close to them, while the other half deal with alkylating agents, including chlorethylamine and ethylenimine, and to the search for new types of alkylating agents.

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USSR

BERLIN, A. YA., Paths to Synthesizing and Discovering Antitumor Drugs, Vyp
3, Riga, "Zinatne", 1970, 359 pp

It may be assumed that systematic publication of this type of antho-
logy presents very useful information which is important to all persons
employed in this branch of oncology.

CSO: 1840-W

- END -

2/2

USSR

UDC: 621.397.61

SHAPIRO, Ya. A., GALAKHOVA, N. G., VOVSI, L. M., BERLIN, B. A., KHARCHIK-
YAN, R. S., VOROB'YEVA, F. Kh.

"Technical Facilities of Television Services of the Soviet-Wide Television
Center"

V sb. Televizion. tekhnika (Television Technology--collection of works),
Moscow, "Svyaz", 1971, pp 127-163 (from RZh-Radiotekhnika, No 6, Jun 71,
Abstract No 6G190)

Translation: Basic data are given on studio and announcer TV cameras,
motion picture cameras with TV view finder, cameras for transmitting motion
picture films in TV and motion picture projection rooms, and epidiascopic
projectors for transmitting transparencies, photos, drawings, etc. The
individual elements of the instrument and program unit, central instrument
room and video recording unit are described. N. S.

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USSR

UDC 531.768:621.385.1

BERLIN, G. S. and KOLYUSHEV, B. P.

"Highly Sensitive Mechanotron Accelerometers"

Moscow, Izmeritel'naya Tekhnika, No 5, May 1973, pp 39-42

Abstract: A mechanotron accelerometer is an inertial instrument made in the form of an electron tube with mechanically controllable electrodes; the electrodes can be constructed with internal control or can be controlled externally. Such instruments are used for measurement of the accelerations of moving objects and seismic processes, as well as for the recording of very low acceleration rates (on the order of about 0.01 g). Design variants of mechanotron accelerators with external and internal control, with and without a damping device, are described; these instruments provide for the measurement of accelerations within the ranges of 0-0,1 g, 0 - 1 g, 0 - 10 g, and 0 - 50 g, with an error of 3-5%. 2 tables. 3 figures, 4 references.

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Vacuum Tubes

USSR

UDC: 621.317.39:621.385.032

BERLIN, G. S., MOROZOV, G. G., TSVETKOVA, V. V., Moscow Vacuum Tube Plant

"A Triode Longitudinal-Control Mechanotron"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovernyye Znaki, No 7, Mar 72, Author's Certificate No 329372, Division G, H, filed 10 Jan 70, published 9 Feb 72, p 151

Translation: This Author's Certificate introduces: 1. A triode longitudinal-control mechanotron containing a fixed cathode and a movable system of electrodes. As a distinguishing feature of the patent, sensitivity is improved and the measurement range is extended by making the movable system in the form of an anode and grid securely fastened together by insulators, and electrically connected to the base of the device by flexible leads. 2. A modification of this mechanotron distinguished by the fact that provision is made for connection in a differential circuit by making the movable electrode system in the form of two pairs of anodes and grids fastened together and located on both sides of the cathode.

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Recorders and Sensors

USSR

UDC 621.385

BERLIN, G. S. **B**

"Mechanotrons and Their Use"

Moscow, V sb. Vibrats. tekhnika (Oscillation Technology -- collection of works), No 1, 1969, pp 43-52 (from RZh -- Elektronika i yeye primeneniye, No 2, Feb 70, Abstract No 2A158)

Abstract: Mechanotrons (M) -- these are electron tubes in which current control is accomplished by mechanical movement of the electrodes. M are intended for conversion of mechanical quantities to electrical and are used as pickups for transfer of forces, pressure, velocity, etc. The principles of action, and the existing types of M, their construction and parameters, are briefly described. M of several types which are being manufactured and developed -- pickups for linear and angular transfer and for forces -- are reported. The prospects for building M for measurement of pressure, velocity, and vibrations parameters are considered.

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USSR

UDC 615.849.2.015.25.038

VLADIMIROV, V. G., DZHARAK'YAN, T. K., BERLIN, I. B., GOLUBENTSEV, D. A.,
and SMIRNOV, A. D., Military Medical Academy imeni S. M. Kirov, Leningrad

"Some Criteria for Evaluating the Effectiveness of Radioprotective Agents
in Man"

Moscow, Meditsinskaya Radiologiya, Vol 16, No 9, Sep 71, pp 54-60

Abstract: Since cystamine hydrochloride effectively protects mice from radiation sickness, the dose given per unit of body surface was extrapolated to the average size of man, and a dose of 3 g was calculated (taken internally) as the probable, optimum protective dose for man. Tolerable doses of cystamine (0.8-1.2 gm) given to patients with pulmonary or pelvic tumors prior to single local treatments with x-rays and gamma-rays reduced the number of chromosome aberrations in myeloid cells and lymphocytes in the peripheral blood by 40%. Evidence indicates that a prophylactic intake of the tolerable dose of cystamine hydrochloride will significantly protect men in cases of accidental exposure to ionizing radiation.

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USSR

UDC 612.112.94:612.014.482.4:615.778.71

BERLIN, L. B., Military Medical Academy imeni S. M. Kirov, Leningrad

"The Effect of Cystamine on Chromosome Aberrations of Human Peripheral Blood Lymphocytes Accompanying Local Fractionated Gamma-Ray Irradiation"

Moscow, Doklady Akademii Nauk SSSR, Vol 195, No 4, Dec 70, pp 998-1000

Abstract: After removal of the uterus, 36 cancer patients were irradiated daily with about 500 rad per exposure. Some patients were given a dose of 0.8 g cystamine prior to irradiation, and others served as controls. It was determined that the patients taking cystamine showed a significantly lower number of aberrant cells. On the other hand, there were no differences noted between experimental and control groups with respect to the number of aneuploid cells and cells with chromatid aberrations. Cystamine exhibited its protective effect only when used prophylactically.

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1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--STEREOCHEMISTRY OF ANTIBIOTICS OF THE AUREOLIC ACID GROUP -U-
AUTHOR--(03)-BERLIN, YU.A., KOLOSOV, M.N., PIOTROVICH, L.A.
COUNTRY OF INFO--USSR
SOURCE--TETRAHEDRON LETT. 1970, (16), 1329-31
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--STEREOCHEMISTRY, ANTIBIOTIC, MOLECULAR STRUCTURE/(U)OLIVIN
ANTIBIOTIC, (U)CHROMOMYCIN ANTIBIOTIC, (U)OLIVOMYCIN ANTIBIOTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1999/0414 STEP NO--UK/0000/70/000/016/1329/1331
CIRC ACCESSION NO--AP0122594
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122594

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHEM. EVIDENCE IS GIVEN FOR THE
ABS. CONFIGURATION OF 1 PRIME S, 2S, 3R, 3 PRIME S, 4 PRIME R FOR OLIVIN
(I, R EQUALS R PRIME1 EQUALS R PRIME2 EQUALS H) AND CHROMOMYCIN (I, R
EQUALS ME, R PRIME1 EQUALS R PRIME2 EQUALS H), WHICH ARE THE AGLYCONES
OF AUREDIC ACID, CHROMOCYCINS AND OLIVOMYCINS. FACILITY: INST.
CHEM. NAT. PROD., MOSCOW, USSR.

UNCLASSIFIED

1/2 006

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--DETERMINATION OF THE RADIATING POWER OF SULFUR DIOXIDE IN WASTE
HEAT BOILERS -U-

AUTHOR--(02)-GOLITSYN, A.V., BERLIN, Z.L.

B

COUNTRY OF INFO--USSR

SOURCE--KHIM. NEFT. MASHINDSTR. 1970, (3), 42

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--STEAM BOILER, SULFUR OXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1990/1305

STEP NO--UR/0314/70/000/003/0042/0042

CIRC ACCESSION NO--AP0109389

UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109389

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF SO SUB2 GASES ON THE RADIANT HEAT TRANSFER IN WASTE HEAT BOILERS WAS STUDIED IN A SYSTEM MODELED AFTER U.C. HOTTEL AND C. H. MANGELSDORF (1937). GASES CONTG 10-90PERCENT SO SUB2 WERE COMBUSTED AT 400-1000DEGREES AT PS EQUAL 0.029-0.150 (WHERE PS IS THE PRODUCT OF SO SUB2 PARTIAL PRESSURE (B) AND THE RAY PATH LENGTH (S) WHICH IS 0.16 M AND THE HEAT FLOW (Q) MEASURED. EXPTL. DETD. Q WERE 16-38PERCENT LOWER THAN THEORETICAL VALUES; THE DIFFERENCES WERE LARGEST AT THE HIGH PS VALUES.

UNCLASSIFIED

1/2 022

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--EFFECT OF THYROID HORMONES INJECTED INTO THE POSTERIOR HYPOTHALAMIC NUCLEUS ON CONDITIONED REFLEX ACTIVITY -U-

AUTHOR--(02)-AMIRAGGVA, M.G., BERLINA, M.A.

B

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(3), 720-2

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--THYROID HORMONE, BRAIN, CONDITIONED REFLEX, SALIVARY GLAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1486

STEP NO--UR/0020/70/191/003/0720/0722

CIRC ACCESSION NO--AF0130415

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT0130415

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADRENERGIC STRUCTURES OF THE POSTERIOR HYPOTHALAMIC NUCLEUS OF ANIMALS SEEMED TO PERCEIVE THE ACTION OF HYROID HORMONES, AND THROUGH THESE BRAIN STRUCTURES THYROXINE CAN ACT DIRECTLY ON THE ADAPTATION ACTIVITY. THYROXINE ADMINISTERED AT 10 MUG-KG DIRECTLY INTO THE NUCLEUS SHORTENED THE LATEN PERIOD FOR CONDITIONED REFLEX ACTIVITY AND INCREASED BOTH CONDITIONED AND NONCONDITIONED SALIVATION, BUT REDUCED SALIVATION AFTER TERMINATION OF NONCONDITIONED STIMULI. THYROXINE ADMINISTERED AGAINST A BACKGROUND OF AMINAZINE (0.05-0.1 MG-KG) SIGNIFICANTLY INHIBITED CONDITIONED REFLEX ACTIVITY. FACILITY: INST. NORM. PATGL. FIZIOL., MOSCOW, USSR.

UNCLASSIFIED

1/2 021

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--MECHANISM OF TRANSMISSION OF HORMONAL STIMULI FROM THE POSTERIOR

HYPOTHALAMUS TO THE CEREBRAL CORTEX -U-

AUTHOR-(02)-AMIRAGOVA, M.G., BERLINA, M.A.

COUNTRY OF INFO--USSR

B

SOURCE--DOKLADY, VOL. 191, APR. 11, 1970, P. 1186-1188

DATE PUBLISHED--11APR70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--THYROID HORMONE, BRAIN, CONDITIONED REFLEX, INHIBITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1485

STEP NO--UR/0020/70/191/000/1186/1188

CIRC ACCESSION NO--AT0130414

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--ZONOV70

CIRC ACCESSION NO--AT0130414

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. EXPERIMENTAL INVESTIGATION SHOWING THAT THE DORSOMEDIAL NUCLEUS OF THE THALAMUS IS THE PRINCIPAL SWITCHING POINT OF STIMULI, ASSOCIATED WITH THE INTRODUCTION OF THYROXIN INTO THE POSTERIOR HYPOTHALAMIC NUCLEUS, TO THE CORTEX. IT IS FOUND THAT DEACTIVATION OF THE ADRENERGIC STRUCTURES OF THE DORSOMEDIAL NUCLEUS OF THE THALAMUS LEADS TO SUPPRESSION OF CONDITIONED REFLEX ACTIVITY.

FACILITY: AKADEMIJA MEDITSINSKIKH NAUK SSSR, INSTITUT NORMAL'NOI I PATOLOGICHESKOI FIZIOLOGII, MOSCOW, USSR.

UNCLASSIFIED

BERLINER E.M.

Acc. Nr: AP0049132 Abstracting Service:
CHEMICAL ABST. 5/10

Ref. Code:

490079

100852j New reactions of tribromogermane. Mironov, V. F.; Berliner, E. M.; Gar, T. K.; Ponomareva, E. K. (USSR). *Zh. Obshch. Khim.* 1970, 40(1), 109-15 (Russ). Mixing 6.75 g acrylic acid with 58.4 g $\text{HGeBr}_3 \cdot \text{Et}_2\text{O}$ at -10° and warming to room temp. gave 38% $\text{Br}_3\text{Ge}(\text{CH}_2)_2\text{CO}_2\text{H}$, m. $100-1.5^\circ$, which with PBr_3 in 3 hr at 90° gave the acyl bromide, b₂ 113° , also prepd. from $\text{H}_2\text{C}=\text{CHCOCl}$ and $\text{HGeBr}_3 \cdot \text{Et}_2\text{O}$ in 14% yield. $\text{HGeBr}_3 \cdot \text{Et}_2\text{O}$ stored 2 days and treated with acrylic acid as above gave 41% $\text{Br}_3\text{Ge}(\text{CH}_2)_2\text{CO}_2\text{Et}$, b₂ 110° , d₂₀ 2.1433, n_D²⁰ 1.5512. Similar reaction with CH_2O gas gave 39% $\text{Br}_3\text{GeCH}_2\text{OEt}$, b₂ $71.5-2.5^\circ$, 2.2922, 1.5690. If the reaction mixt. is treated with MeMgCl there is formed 17% $\text{Me}_3\text{GeCH}_2\text{OH}$, b₂ $56-8.5^\circ$, —, 1.4468, while ethylene oxide gave $\text{Me}_3\text{Ge}(\text{CH}_2)_2\text{OH}$, b₂ $48-9.5^\circ$, —, 1.4881. Reaction of AcH and HGeBr_3 , followed by MeMgCl gave 31% $\text{Me}_3\text{GeCHMeOCHMeGeMe}_3$, while crude HGeBr_3 , treated with thiophene at -10° , gave 45% bis(tribromogermanyl)tetrahydrothiophene, m. $76.5-9.5^\circ$. Also reported are: $\text{Br}_3\text{GeCHRCHR}^1\text{CO}_2\text{H}$ (R and R¹, and m.p. shown): F, Me, $75-6.5^\circ$; Me, H, $73-4^\circ$; CO_2H , H, $160.5-1.5^\circ$; Ph, H, $122.5-3.5^\circ$. $\text{HC}=\text{CCO}_2\text{H}$ and GeHBr_3 gave $\text{Br}_3\text{GeCH}_2\text{CH}(\text{CO}_2\text{H})\text{GeBr}_3$, m. $135-7^\circ$. $\text{Br}_3\text{Ge}(\text{CH}_2)\text{COCl}$ could not be isolated by distn. owing to Cl-Br exchange, but blowing the crude product with HBr gave the acyl bromide.

G. M. Kosolapoff

REEL/FRAME

USSR

UDC: 533.275.08 → 551.508.71

BERLINER, M. A., Candidate of Technical Sciences, BRZHOZOVSKIY, B. M.,
Engineer

"A Laser Hygrometer"

Moscow, Pribory i Sistemy Upravleniya, No 1, Jan 73, pp 26-27

Abstract: The paper describes a laser hygrometer developed by the authors at Moscow Automobile and Highway Institute. The device is designed for measuring the moisture content of limited (often very small) volumes of gas. The resonator scheme is based on the relation between laser output power and losses in the resonator. The wet gas to be studied is introduced into the laser cavity, which is equivalent to introducing additional losses into the cavity. The optical resonator is tuned to a wavelength which coincides with the absorption line for water. The test chamber can be made for continuous flow of the moisture-containing gas. Experimental results agree with theoretical calculations.

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USSR

UDC 681.2.002.5:530.93

BERLINER, M. A. and LELYANOV, B. N.

"An Automatic Moisture Meter at Superhigh Frequencies"

Moscow, Metrologiya, No 5, 1972, pp 26-38

Abstract: An experimental model of a superhigh-frequency moisture meter has been developed, which is superior to known moisture meters of its class produced abroad with respect to numerous indicators; it can serve as a prototype for the organization of series production of such moisture meters in the USSR. The instrument operates on the basis of the attenuation of 3.2 cm radial waves in a free space. An outstanding increase of reliability was attained by means of replacement of an attenuator of the conventional electromechanical type by a static device or a semiconductor attenuator. On the basis of this moisture meter, an automatic system has been developed for automatic correction of the process of preparing a concrete mixture; this system can be recommended as a standard one for continuous-action concrete plants. The developed moisture meter has universal applicability, and can be used in systems for the automatic moisture monitoring and control of various solid materials and liquids in numerous branches of the economy. 1 figure. 1 table. 4 references.

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1/2 013 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--SOME ASPECTS OF STANDARDIZATION OF ROLL TYPE SHEET BENDING MACHINES
-U-
AUTHOR--BERLINER, YU.I. B
COUNTRY OF INFO--USSR
SOURCE--STANDARTY I KACHESTVO, 1970, NR 3, PP 10-11
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--TECHNICAL STANDARD, BIBLIOGRAPHY, METAL BENDING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REF./FRAME--1986/0867 STEP NO--UR/0422/70/000/003/0010/0011
CIRC ACQUISITION NO--AP0102828
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0102828

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVISION OF GOST 10664-63 IS SUGGESTED. THE AUTHOR'S SOLUTION OF THE DESIGN PROBLEMS MAKE IT POSSIBLE TO NOTABLY DECREASE THE VARIETY OF MACHINES REQUIRED TO PERFORM THE SAME RANGE OF JOBS.

UNCLASSIFIED

USSR

UDC: 621.374.32

BERLINKOV, G. I.

~~"A-Flip-Flop"~~

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 30, 1970, Soviet Patent No 282417, Class 21, filed 9 Jun 69, p 57

Abstract: This Author's Certificate introduces a flip-flop with separate inputs based on MDS field-effect transistors with induced channel. The device contains two double-input NOR cells with resistive loading and with a positive feedback loop from output to input. As a distinguishing feature of the patent, speed is increased and power dissipation is reduced by connecting two additional MDS field-effect transistors in each of the NOR cells. The drain of the first additional transistor is connected to the power supply line, while the source is connected to one NOR cell. Connected to the gate of this transistor are a capacitor, a diode and the drain of the second additional transistor. The capacitor is connected to the source of the first additional transistor, and the diode is connected to the input of the other NOR cell. The source of the second additional transistor is connected to the common line of the power supply, and the gate is connected to the input of the first NOR cell.

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USSR

UDC 681.142.078

BERLINKOV, G. I., TSVETKOV, V. V.

"A Buffer Circuit"

Moscow, Otkrytiya, izobreneniya, promyshlennyye obraztsy, tovarnyye znaki, No 8, Mar 71, Author's Certificate No 296263, division H, filed 4 Dec 69, published 12 Feb 71, p 191

Translation: This Author's Certificate introduces a buffer circuit based on field-effect transistors with metal-dielectric-semiconductor (MDS) structure with induced channel. As a distinguishing feature of the device, power consumption is reduced and speed is increased by including two additional MDS transistors and an MDS capacitor in the circuit, the gates and sinks of both transistors being connected to the power supply bus, while the above-mentioned MDS capacitor is connected between the sources of the transistors. One of the plates of the capacitor is connected to the source, and the other is connected to the gate of the transistor in the preceding stage.

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1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--HYDRODYNAMIC PARAMETERS OF FLOTATION FROTH WATER SPRAYING -U-
AUTHOR--BERLINSKIY, A.I. **B**
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHBE. ZAVED., TSVET., MET. 1970, 13(1), 3-5
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, EARTH SCIENCES AND
OCEANOGRAPHY
TOPIC TAGS--FLOTATION, ORE BENEFICATION, JET FLOW, FOAM, TUNGSTEN
TRIOXIDE, HYDRODYNAMIC PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0839 STEP NO--UR/0149/70/013/001/0003/0005
CIRC ACCESSION NO--AT0132929
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--04DEC70

2/2 018

CIRC ACCESSION NO--AT0132929

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. BY WATER SPRAYING THE FROTH FROM SCHEELITE FLOTATION, 88.7PERCENT WD SUB3 WAS EXTD. THE OPTIMUM CONDITIONS WERE: DIAM. OF THE WATER JET 2 MM.; WATER CONSUMPTION PER UNIT AER 18 L.-M PRIME2 MIN; THICKNESS OF THE FROTH 4 CM; RELATIVE VELOCITY OF THE WATER IN THE CHANNEL 51.1 CM-SEC; STAY OF WATER IN THE CHANNEL 0.078 SEC; DEPTH OF JET PENETRATION 6.6 MM; AND WATER CONSUMPTION 0.2 CM PRIME3-SEC-JET.

UNCLASSIFIED

1/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--REASONS FOR DEFECTIVE PRODUCTS AND AN IMPROVEMENT IN QUALITY

CONTROL FOR DIELECTRIC RUBBER FOOTWEAR -U-

AUTHOR--(03)--BERLIZEV, G.K., PAVLOV, A.A., STAROV, I.N.

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(3), 42-3

B

DATE PUBLISHED--70

SUBJECT AREAS--MATERIALS, MILITARY SCIENCES

TOPIC TAGS--FOOTGEAR, ELASTOMER, DIELECTRIC PROPERTY, ELECTRIC STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0835

STEP NO--UR/0138/70/029/003/0042/0043

CIRC ACCESSION NO--AP0124502

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE—30OCT70

CIRC ACCESSION NO—AP0124502

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CAUSES FOR DEFECTS IN RUBBER FOOTWEAR WERE TRACED TO IMPROPER PREPN. OF RUBBER BLENDS AND FORMATION OF AIR GAPS IN THE BONDED SEAM. ELASTOMER SHEETS USED FOR THE MANUF. OF DIELEC. FOOTWEAR HAD ADEQUATE ELEC. STRENGTH. A METHOD WAS DEVELOPED FOR TESTING THE BREAKDOWN VOLTAGE OF RUBBER FOOTWEAR. FACILITY: MOSK. INST. KHIM. MASHINOSTR., MOSCOW, USSR.

UNCLASSIFIED

USSR

BERLOVICH, E. Ye., BLINNIKOV, Yu. S., VAYSHNIS, P. P., VITMAN, V. D., YELKIN, Yu. V., IGNATENKO, Ye. I., PANTELEYEV, V. N., and TARASOV, V.K., B. P.
Konstantinov Nuclear Physics Institute

"Short-Lived Osmium Isotopes"

Moscow, Izvestiya Akademii Nauk SSSR -- Seriya Fizicheskaya, No 12, 1972, pp 2490-2498

Abstract: The purpose of the experiments described in this paper is to detect 175Os and to obtain information concerning gamma irradiation of this and lighter osmium isotopes. The short-lived isotopes were obtained in spallation reactions by irradiating mercury with 1-Gev protons in the synchro-cyclotron of the irradiation conditions vary, inasmuch as the proportion of the different Os isotopes in the specimens depends on the mode of proton bombardment. In the gamma irradiation, the gamma ray spectrum was measured by a Ge(Li) detector, with a resolution of 3.5 kev for a line of 662 kev, and the spectra were recorded by an electronic system including an AI-1024 analyzer, a control block with timer, and the Minsk-22 computer to measure half-lives. Isotopes

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USSR

BERLOVICH, E. Ye., Izvestiya Akademii Nauk SSSR -- Seriya Fizicheskaya,
No 12, 1972, pp 2490-2498

with half-lives of more than 2.5 minutes and less than 2.0 minutes were investigated, and tables of their gamma-radiation spectra are given. Results of the present paper are compared with those of earlier papers. An attempt was also made to find a genetic connection between short-lived osmium and rhenium isotopes, and a table for the gamma irradiation of ^{174}Re is also given.

* Leningrad Institute of Nuclear Physics;

2/2

USSR

UDC: 681.325.63

BERLINKOV, G. I.

"A Flip-Flop Based on Field-Effect Transistors with Induced Channel"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 4, Feb 71, Author's Certificate No 292220, Division H, filed 25 Aug 69, published 6 Jan 71, pp 145-146

Translation: This Author's Certificate introduces a flip-flop based on field-effect transistors with induced channel. As a distinguishing feature of the patent, the functional possibilities of the circuit are extended by connecting the sinks of the field-effect transistors and one of the plates of capacitors to each of the gates of the transistors used for triggering the flip-flop which has separate inputs. The gates of the field-effect transistors and the other plates of the capacitors are connected to the logic inputs of the circuit, and the sources of the transistors are connected to the common line of the power supply.

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USSR

UDC 535.373.1(083.76)

BERLOVSKIY, A. YA., DAYCH, A. R., TSIRLIN, YU. A.

"The Standardization of Scintillation Products"

Kharkov, Monokristally, Stsintillyatory i Organicheskiye Lyumino-
fory -- Sbornik (Monocrystals, Scintillators, and Organic Lumino-
phores -- Collection of Works), No 5, 1970, pp 278-281 (from
Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No
12, 1970, Abstract No 12.32.1500)

Translation: We do not have as yet the conditions necessary for standardization, namely -- reliability and unity of measurements, getting a result with a specific and known error, attachment to an international system of units. This has necessitated standardization and the creation of an appropriate testing service. The system is based upon a standard scintillator (stilbene) with respect to the totality of its physicochemical and scintillation properties. We have defined the absolute technical light output of the standard (%). For all standard scintillators,

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USSR

BERLOVSKIY, A. YA., et al, Monokristally, Stsintillyatory i Organicheskiye Lyuminofory -- Sbornik, No 5, 1970, pp 278-281

model detectors have been developed with diameters equal to the heights, and standard values of the light output have been defined for types and sizes subject to standardization. The light output of these types and sizes is expressed in terms of the light output of the standard. Working specimens for the producing enterprises are compared with the model scintillators. To eliminate indeterminacy in the resolution of the scintillator, the natural resolution of NaI (Tl) is measured. Already now, interested organizations can obtain scintillation detectors of NaI (Tl), stilbene, and plastic scintillators that have been compared with the above-mentioned standard scintillator. 6 bibliographic entries.

2/2

Industrial & Mining

USSR

UDC 621.18.004

VAVILIN, A. N., BERLINSKIY, YU. N., NOSOV, B. N., Engineers, and GOL'DBERG, YU. A.,
Candidate of Technical Sciences (Kirishskaya State Regional Electric Power
Plant)

"First Period of Operation of the Gas-Tight TGMP-324 Boiler Unit"

Moscow, Energetik, No 6, June 1973, pp 3-5

Abstract: The single-pass, single-unit TGMP-324 boiler unit, with a steam productivity of 1000 t/hour at a superheated-steam temperature of 545/545°C, was designed for operation with pressure charging at an efficiency of 94.7% with the combustion of mazut M100. The unit is described, and its distinguishing features are enumerated. In its first year of operation, the unit was in service for more than 4500 hours, including over 3600 hours with pressure charging. The following conclusions are drawn from an analysis of its first year of operation:

1. The decisions adopted in designing the gas-tight features of the TGMP boiler unit are satisfactory; the unit was viable for operation with pressure charging. With attentive and skilled installation, difficulties were not encountered in providing the seals with the requisite tightness.

2. Unsatisfactory design of hatches for observation of the heating

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USSR

VAVILIN, A. N., et al., Energetik, No 6, June 1973, pp 3-5

regime of the boiler, during operation with pressure charging, hinders the determination of flaws and breaches on the pipes of the heating surfaces.

3. The design of the joints of the combustion-chamber screens is in need of improvement.

4. The adopted burned devices with steam-mechanical nozzles permit operation within the load range of 10 to 100% of D_{nom} without turning the burners off.

5. The temperature regime of the heating surfaces has been satisfactory.

6. Increasing the capacity of the unit to the nominal value during operation of the boiler with pressure charging was attained by decreasing the resistance of the gas-air channel and increasing the thrust of the blower fans.

7. By means of appropriate adjustments, it became possible to attain economical operation of the unit with a unit consumption of standard fuel of 336 g/kwh at a capacity utilization factor of 70% and a preparedness factor pf 88% (in separate months). 5 figures.

2/2

USSR.

UDC: 51.330.115(02)

BAGRINOVSKIY, A. K., BERLYAND, Ye. L. (science editors)

"Mathematical Analysis of Economic Models. Part I"

Matematicheskiy analiz ekonomicheskikh modeley. Ch. I. AN SSSR. Sib. otd. In-t ekon. i organiz. prom. proiz-va (cf. English above. Academy of Sciences of the USSR. Siberian Department. Institute of the Economics and Organization of Industrial Production), Novosibirsk, 1971, 200 pp, ill. 76 k. (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V840 K)

Translation: To be abstracted by articles.

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USSR

UDC: 512.25/.26+519.3:330.115

BAGRINOVSKIY, K. A., BERLYAND, Ye. L.,

"On One Approximate Method of Solving Multiple-Extremum Problems"

V sb. Mat. metody resheniya ekon. zadach (Mathematical Methods of Solving Economic Problems--collection of works), Novosibirsk, "Nauka", 1971, pp. 42-62 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V494)

[No abstract]

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USSR

UDC 51.330.115

BAGRINOVSKIY, K. A., BAKHTIN, A. Ye., BERLYAND, Ye. L.

"Algorithm for Production of Global Optimal in Economic System with Two Levels of Planning"

Mat. Vopr. Formir. Ekon. Modeley [Mathematical Problems of Formation of Economic Models -- Collection of Works], Novosibirsk, 1970, pp 27-54 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V587).

No Abstract.

1/1

USSR

UDC 541.6+541.15

KARPOV, V. L., FINKEL', E. E., BERLYANT, S. M., and BRAGINSKIY, R. P.

"Radiation Modification of Polyolefines"

Moscow, Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva imeni D. I. Mendeleev, Vol 18, No 3, 1973, pp 270-278

Abstract: A review with 87 references analyzing the effect of radiation on the changes in physico-mechanical and electric properties of polyethylene and other polyolefines as well as the thermal stabilization of the radiation modified polyolefines. The reported data suggest that radiation modification of polyethylene is one of the most promising radio-chemical processes. The polyethylene modified by radiation exhibits several novel qualities in comparison to the nonirradiated one, expanding considerably its applicability. The properties and areas of application of the products manufactured from radiation modified polyethylene have been noted.

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USSR

KRYLOVA, S. V., et al., *Plasticheskiye Massy*, No 1, 1973, pp 16-18

The results of the effect of the nature of the alkyl radical of esters of phthalic acid on their resistance to γ -radiation and the effect of the nature of the acid radical on the resistance of polyvinyl chloride plasticizers to γ -radiation are tabulated. After subjecting dioctyl phthalate and dioctyl adipate to γ -radiation with different initial acidity it was found that the greater the initial acidity of these compounds, the less the relative increase in acidity after irradiation. The increase in acidity for dioctyl phthalate after irradiation was always less than for dioctyl adipate. Thus, dioctyl phthalate has self-defensive properties with respect to γ -radiation. The high stability of "acid" plasticizers can be explained by the fact that the high content of free carboxylic acid in the initial esters prevents their decomposition under the effect of γ -radiation. The stabilization of the esters by carboxylic acid probably arises from the absorption or dissipation of some portion of the γ -radiation energy.

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Acc. Nr: APO054285

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 2, pp 224-231

ON DIFFERENCES BETWEEN THE CONDENSED AND DIFFUSE CHROMATIN OF NORMAL AND MALIGNANT CELLS

A. BERMAN, N. P. LEBKOVA, V. A. ARTAMONOVA, and I. B. ZBARSKIY

Advanced Training Institute for Physicians, and Institute of Epidemiology and Microbiology, Academy of Medical Sciences, USSR, Moscow

Diffuse chromatin of both normal and malignant mouse tissues contains much more polyanions (RNA, non-histone protejns) than the condensed chromatin. For liver it was shown that ³⁵S-methionine was incorporated 20--30 per cent faster into histones and 40--50 per cent faster into non-histone proteins of the diffuse chromatin as compared with the same fractions of the condensed chromatin. Similar results were obtained in the case of hepatoma chromatin fractions. Experiments involving DNA-RNA hybridization revealed that in the liver the DNA of the diffuse chromatin was more active in mRNA synthesis than that of the condensed one. In liver the condensed chromatin contains a part of DNA cistrons that are derepressed in hepatoma.

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REEL/FRA
19831423

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1/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF DIFFUSION ON THE COURSE OF CATALYTIC REACTIONS IN A
CHROMATOGRAPHIC SYSTEM -U-
AUTHOR--(03)-BERMAN, A.D., YANOVSKIY, M.I., ROGINSKIY, S.Z.
COUNTRY OF INFO--USSR *B*
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(4), 864-7 (PHYS CHEM)
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CATALYSIS, CHROMATOGRAPHY, DIFFUSION COEFFICIENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1579 STEP NO--UR/0020/70/190/004/0864/0867
CIRC ACCESSION NO--AT0116987
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0116987

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF DIFFUSION ON CATALYTIC REACTIONS IN A CHROMATOGRAPHIC SYSTEM IS DISCUSSED CONSIDERING AN IRREVERSIBLE REACTION, 2A YIELDS B, AND A 2ND ORDER REVERSIBLE REACTION, A FORMS AND IS FORMED FROM 2B. GRAPHS FOR THE DEPENDENCE OF THE RATE CONSTS. ON THE DIFFUSION COEFF. ARE GIVEN. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--ON A CERTAIN METHOD IN THE THEORY OF STRONG TURBULENCY IN A PLASMA

-U-

AUTHOR--(02)-BERMAN, G.P., ZASLAVSKIY, G.M.

B

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 4, PP 1453-1465

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--APPROXIMATION CALCULATION, TURBULENT PLASMA, PLASMA WAVE, ENERGY SPECTRUM, PHASE SHIFT, NONLINEAR EFFECT, KINETIC EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1988/1712

STEP NO--UR/0056/70/058/004/1453/1465

CIRC ACCESSION NO--AP0106449

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106449

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NONLINEAR TWO DIMENSIONAL ION SOUND MOTIONS WITH VELOCITIES SLIGHTLY EXCEEDING THAT OF SOUND ARE CONSIDERED. IN THE ONE DIMENSIONAL CASE THE APPROXIMATION LEADS TO THE KORTEWEG DE VRIES EQUATION. IN THE TWO DIMENSIONAL CASE THE SOLUTION IS EXPRESSED AS AN EXPANSION ON ONE DIMENSIONAL NONLINEAR PERIODIC WAVES. THE EXPANSION PARAMETER IS A QUANTITY WHICH IS THE RECIPROCAL OF THE SQUARE ROOT OF THE REYNOLDS NUMBER ANALOG FOR THE GIVEN PROBLEM. THE LATTER IS ASSUMED TO BE LARGE, WHICH SIGNIFIES APPRECIABLE NONLINEARITY. INTERACTION OF TWO NONLINEAR WAVES AND RESONANCE OF THREE NONLINEAR WAVES ARE CONSIDERED. A CONDITION FOR RANDOMNESS OF THE WAVE PHASE SHIFTS IS OBTAINED FOR THOSE CASES WHEN A LARGE NUMBER OF WAVES ARE EXCITED. A MASTER KINETIC EQUATION FOR AN ENSEMBLE OF NONLINEAR WAVES IS SET UP. IN THE GENERAL CASE OF THE MASTER KINETIC EQUATION AN EXACT SOLUTION FOR THE MANY PARTICLE DISTRIBUTION FUNCTION IS FOUND WHICH LEADS TO A CONSTANT ENERGY FLUX OVER THE SPECTRUM. THE SOLUTION CORRESPONDS TO STATIONARY UNIFORM TURBULANCE AND IS EMPLOYED FOR DETERMINING THE TURBULENCE SPECTRUM. IT IS SHOWN HOW THE RESULTS OBTAINED CAN BE EXTENDED TO THE THREE DIMENSIONAL CASE.
FACILITY: NOVOSIBIRSKIY GOSUDARSTVENNYI UNIVERSITET.

UNCLASSIFIED

USSR

UDC 537.312.62

BERMAN, I. V., BRANDT, N. B., SIDOROV, V. I.

"Superconductivity of Gallium Arsenide at High Pressures"

Pis'ma v ZhETF (Letters to the Journal of Experimental and Theoretical Physics), 1971, Vol 14, No 1, pp 18-19 (from RZh-Radiotekhnika, No 10, Oct 71, Abstract No 10D300)

Translation: A report is given on detecting superconductivity in GaAs in the pressure range exceeding 250 kilobars. Pressures up to 300 kilobars were created at room temperature in a high pressure chamber using anvils made of polycrystalline superhard materials of the SV type, and they were analyzed by a calibration curve based on the reference lines of the phase transitions of Bi, Fe, Pb, and Fe-Co. A force of up to 4 tons was created by a mechanical low temperature press. The transition temperature was 4.8° K at a pressure of 260 kilobars, and it decreased with a further decrease in pressure at an average rate of $dT_k/dp = 0.2 \cdot 10^{-5}$ deg/bar. It is assumed that the transition temperature of metallic versions of the compounds of groups AIII-BV must be close to the transition temperature of isostructural or metallic versions of the elements of group IV having an atomic mass close to the mean atomic mass of the compound

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USSR

BERMAN, I. V., et al., Pis'ma v ZhETF, 1971, Vol 14, No 1, pp 18-19

only in the case where the atomic weights of the elements differ little from each other. There is 1 illustration and a 5-entry bibliography.

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BERMAN, L.D.

JPRS 59676
1 August 1973

UDC 621.175.3.001.24
METHODS FOR CALCULATING THE THERMAL
PARAMETERS OF COOLING TOWERS

Article by L.D. Berman, doctor of engineering sciences, and A. Zauer, candidate of engineering sciences, All-Union Order of the Labor Red Banner Heat Engineering Institute (Lenin P.E. Dzerzhinsky and Moscow Order of Lenin Power Engineering Institute, Moscow, Teploenergetika, Russian, Vol 18, No 8, August 1971, pp 41-45)

New and large heating power stations using organic and nuclear fuel, designed for construction in future years, will in a number of cases have a reverse system of water supply with cooling of the circulation water in cooling towers. For the same system of water supply of a heat and power station in an atomic power station the most costly element of the low-potential portion of the turbo-unit, including the turbine low-temperature cylinders, condenser, and system of circulating water supply, is the cooling tower. Capital expenditures for its construction amount to 40-50% of the total expenditures for the low-potential portion and almost twice exceeds the costs for the turbine low-pressure cylinder and condenser. Therefore, selection of the operation and design parameters of the cooling tower, being part of the complex problem of optimizing the parameters of the low-potential portion of the turbo-unit, renders a decisive effect on determination of the optimum turbine counterpressure under design conditions and, respectively, the complete economic efficiency of the power block as a whole. Accuracy of this selection substantially depends on the accuracy of the engineering design of the cooling tower.

The engineering design of the cooling tower requires the joint solution of the system of heat- and mass-exchange differential equations and the equation of Gravelly /1/. Working in mind the reflux sprayer with a constant transverse cross section along

USSR

UDC 621.646.958

BERMAN, L. G., YEVLAMPIYEV, A. I., KARLOV, V. I.

"GTI-6 Halide Leak Detector"

Moscow, Kholodil'naya Tekhnika, No 6, 1971, pp 27-30

Abstract: The GTI-6 pressure-vacuum halogenated gas leak detector is described. The sensor of the leak detector comprises two platinum electrodes (a collector and an incandescent emitter) reacting to the partial pressure of the test gas. It operates on the principle of emission of positive ions by incandescent platinum and a sharp increase in this emission in the presence of halide compounds. The operation of the device is described, and schematics of its assemblies are presented. Curves for the leak detector signal as a function of the volumetric flow rate of the test gas through the sensor at various temperatures of the emitter show that longer presence of halides in the sensor caused by a decrease in the volumetric flow rate to $V = 0.05-0.1$ liters/minute increases the ionization efficiency and, consequently, the reading and sensitivity of the detector. Below 0.05 liters/minute contamination of the emitter takes place. A table is presented showing the comparative characteristics of various Soviet and the best foreign halideleak detectors. The GTI-6 will go into series production in 1971.

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1/2 057 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--MECHANISM OF THE INFLUENCE OF PULSATING BLOWING ON THE INTENSITY OF
THE CONVERTER OXIDATION OF IMPURITIES -U-
AUTHOR-(04)-MINAYEV, YU.A., GRIGORYAN, V.A., BERMAN, L.I., FILIPPOV, K.S.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(4), 31-3
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--METAL OXYGEN CONVERSION, OXIDATION KINETICS, SLAG, GAS JET,
NOZZLE FLOW, EMULSION, VANADIUM, GAS DYNAMICS, PERIODIC PULSE/(U)NTMK
CONVERTER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/0805 STEP NO--UR/0148/70/013/004/0031/0033
CIRC ACCESSION NO--AT0132902
UNCLASSIFIED

2/2 057

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132902

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OXIDN. OF IMPURITIES IN A CONVERTER BATH IS DETD. BOTH BY THE CHARACTERISTICS OF THE KINETIC DIFFUSION CONDITIONS AND THE INTENSITY OF THE FEEDING OF THE OXIDIZER, AS WELL AS BY THE FORMATION DYNAMICS OF THE SLAG METALLIC EMULSION. THE DYNAMICS OF THE FORMATION OF EMULSION WAS STUDIED ON A NO. OF MELTS IN A NTMK 100 TON CONVERTER. INTERMEDIATE TIPPING OF THE CONVERTER WAS DONE TO SELECT THE SAMPLES FOR DETG. THE REGULUS METAL CONTENT IN THE SLAG LAYER. THE CONTENT OF THE ASSAY BUTTONS WAS COMPARED WITH THE RATE OF TRANSITION OF V INTO SLAG AND WITH THE CONSUMPTION OF THE OXIDIZER. IN CASE OF ALL 8 TEST SAMPLES DURING THE COURSE OF THE ENTIRE PROCESS THE RATE OF TRANSITION OF V INTO THE SLAG VARIES IN ACCORDANCE WITH THE CHANGE IN THE NO. OF THE ASSAY BUTTONS. THUS, DURING OXIDN. OF V IN THE CONVERTER THE RATE OF TRANSITION OF THE COMPONENT INTO THE SLAG IS ESSENTIALLY DETD. BY THE DYNAMICS OF EMULSIFYING OF THE PHASES. THE PARAMETERS CHARACTERIZING THE EMULSION DEPEND ON THE PHYS. CHEM. PROPERTIES OF THE METAL AND THE SLAG, AS WELL AS ON HYDRODYNAMIC CONDITIONS. IN THE LATTER CASE, THE MANNER IN WHICH THE BLOWING IS PROVIDED IS THE DETG. FACTOR. IN ORDER TO EXPLAIN THE MECHANISM OF THE EFFECT OF PULSATING BLOWING ON THE KINETICS OF THE TRANSITION OF THE IMPURITIES, THE EXPTS. WERE PERFORMED ON A COLD MODEL OF THE CONVERTER. WATER WAS USED AS THE MODEL FOR THE METALLIC PHASE, AND PETROLATUM OIL AS THE MODEL FOR THE SLAG. THE APPLICATION OF PULSATING BLOWING LEADS TO A DECREASE IN GAS CONSUMPTION AND TO AN INCREASE IN THE AV. PRESSURE LEVEL AT THE NOZZLE.

UNCLASSIFIED

USSR

UDC 621.382.233

BERMAN, L. S., TAGER, A. S.

"A Semiconductor Diode in the Avalanche Breakdown Mode as a Controlled Reactance"

Moscow, Poluprovodnikovyye Pribory i ikh Primeneniye, No 24, Izd-vo "Sovetskoye Radio", 1970, pp 149-154

Abstract: It is shown that the capacitance and Q coverage factor of a semiconductor diode can be considerably improved by utilizing the avalanche breakdown mode. As the avalanche current through the diode is increased, its reactance varies over a wide range, going from capacitive to inductive. This appreciably extends the adjustment limits of resonant systems based on these diodes. In addition, use of the Townsend avalanche effect means that the Q of the resonator can be increased by partial compensation of losses in the resonator by the back resistance of the diode. One disadvantage of avalanche reactances is that they have a higher noise level than the conventional varicap. Four figures, bibliography of three titles.

1/1

USSR

UDC 621.382.2

BERMAN, L.S., TAGER, A.S.

"Semiconductor Diode In A Regime Of Avalanche Breakdown As A Controlled Reactance"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works), Issue 24, Moscow, "Sov.radio," 1970, pp 149-156 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 48159)

Translation: The possibility is shown of a marked increase of the overlap factor of the capacitance and Q of a semiconductor diode by use of a regime of avalanche breakdown. 4 ill. 3 ref.

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1/2 021 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--EFFECT OF THE ELECTRICAL FIELD ON THE PHOTOCONDUCTIVITY SPECTRUM OF
GERMANIUM WITH HYDROGEN LIKE IMPURITIES -U-
AUTHOR-(02)-BERMAN, L.V., ZHUKOV, A.G. **B**
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2) 401-3
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, CHEMISTRY
TOPIC TAGS--ELECTRIC FIELD, GERMANIUM, HYDROGEN, PHOTOCONDUCTIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0552 STEP NO--UR/0449/70/004/002/0401/0403
CIRC ACCESSION NO--AP0105537
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105537

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS ATTEMPT TO EXPLAIN
QUAL. HOW THE DEPENDENCE OF THE LIFETIME OF THE PHOTOCARRIERS AND THEIR
MOBILITY ON THE ENERGY OF THESE CARRIERS IN THE BAND IN WHICH THEY ARE
FOUND LEADS TO THE APPEARANCE OF A DISPLACEMENT OF THE RED BOUNDARY, AND
WHY THIS CANNOT BE EXPLAINED IN TERMS OF THE FRENKEL SHOTTKY EFFECT.
THE EXPLANATIONS OF THIS EFFECT GIVEN PREVIOUSLY (B. AND ZH., 1969) ARE
RECAPITULATED.

UNCLASSIFIED

USSR

UDC: 536.24:536.42:669-154

GORBIS, Z.R. and BERMAN, M.I.

"Process Investigation of Water Boiling in Porous Medium"

Odessa, 11-ya Vses. Konf. pa Vopr. Ispareniya, Goreniya i Gaz.
Dinamiki Dispersn. Sistem, 1971 (11th All-Union Conference on Problems
of Evaporation, Combustion and Gas Dynamics of Dispersion Systems, 1971),
1972, pp 71-72 (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract
No 2B903)

Translation: Experimental Investigation was conducted of the process of water
boiling in porous medium under atmospheric pressure and with electric heat-
ing of a horizontal heating surface. Effects were investigated of height, type
of material, size of pores and differential temperature on beginning of boiling,
heat transfer intensity, magnitude of heat flow and its limit indicated by the
heat surface burn-out.

It is established that availability of dispersion mass results in reduction
of the critical heat flow with Archimedes number
 $1/2$

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GORBIS, Z. R. and BERMAN, M. I., 11-ya Vses. Konf. pa Vopr. Ispareniya, Gorennya i Gaz. Dinamiki Dispersn. Sistem, 1971, 1972, pp 71-72

$$A = g d_T^3 (\rho_T - \rho_{жк}) / \rho_{жк} \nu_{жк} = 5 \times 10^5 \div 4 \cdot 10^6$$

$$\beta = G_T / F = 70 \div 300 \text{ kg/m}^2$$

The results obtained indicate three boiling regimes under above conditions. Two design relations are obtained for a dispersion mass of limit density. The difference between the two is explained by the interaction of two mechanisms; generation of steam bubbles along the wall and convection removal of steam by filtration through the dispersion mass. The effect of the first mechanism is believed to prevail with small Δt , of the second with large Δt ; the limiting effect of the second mechanism causes a process crisis with the increase of Δt .

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USSR

UDC 536.21

BERMAN, N. R., IOYSHER, A. M., and CHEBAN, V. G.

"The Problem of Dynamic Heat Conductivity of a Hollow Cylinder"

Kishinev, Izvestiya Akademii Nauk Moldavskoy SSR -- Seriya Fizikotekhnicheskikh i Matematicheskikh Nauk, No 2, 1972, pp 3-10

Abstract: The problem of a nonstationary temperature field with no phase transitions is considered under the condition that the thermophysical parameters of the medium and the cylinder material are independent of the temperature. This cylinder is assumed to be hollow and semibounded, and is drawn into an oven whose temperature is maintained constant; the rate at which the cylinder is drawn into the oven is also constant. It is assumed that the outer and inner surfaces of the cylinder have specified boundary value conditions of the third kind and that the initial temperature distribution is determined by the solution of the stationary problem at zero velocity of the cylinder. The problem is divided into three stages: determining the initial temperature; solving for the transient heating mode; and finally, examining the quasi-stationary state. It is noted that the solutions here obtained can be used for describing the surface tempering of tubes, the cooling of glass tubes during the casting of miniaturized conductors, and other technical processes.

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USSR

UDC 621.775.24

BERMAN, S.I., ZALESKIY, V. I., and IMANOV, Kh. I., Moscow Institute of Steel and Alloys, Chair of Pressing and Forging Production

"Briquetting and Pressing of Granules of Aluminum-Based Alloys"

Ordzhonikidze, Tsvetnaya Metallurgiya, No 4, 1971, pp 127-131

Abstract: Differences in compressive forces on upper- and female dies by briquetting and pressing granules of aluminum-based alloys on a vertical hydraulic press with a nominal pressing force of 200 tons were experimentally investigated. The experimental conditions and investigation results are discussed by reference to diagrams showing the installation, typical oscillograms, and compressive forces on dies. It was found that by a briquetting process of granules with a length-to-diameter proportion of 2.4 of the initial charging, quality bricks can be produced with a minimum energy expenditure in cases when the granules are in aluminum vessels and the briquetting is processed with container lubrication. By this method, the compressive force in the female die rises to 70-75% of the punch force. A further increase of the specific pressure does not produce a higher brick density. By pressing bricks 40 mm high and 39 mm in diameter, the maximum compressive force on dies is approximately 70% of the forces when pressing without lubrication. Six illustr., five biblio. refs.

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USSR

UDC 621.775.24

BERMAN, S. I., ZALESSKIY, V. I., and IMANOV, KH. I., Moscow
Institute of Steels and Alloys, Department of Pressing and Forging

"Influence of Dimensions and Form of Aluminum Alloy Granules on
the Properties and Structure of Pressed Semifinished Goods"

IVUZ, Tsvetnaya Metallurgiya, No 2, 1971, pp 123-125

Abstract: This work presents a study of the influence of the dimensions and form of granules produced by centrifugal spraying on the properties and structure of pressed semifinished goods. Granules of needle and circular shape of V96TS alloy were compared with sections cut from an ingot produced by semicontinuous casting. The granules and ingots were then both used to produce bars, the mechanical properties of which were compared. The strength properties of the bars produced from granules were higher than those produced from the ingot, the strength properties of bars from needle-shaped granules being highest of all. These bars were found to have a finer grain structure than the other two types.

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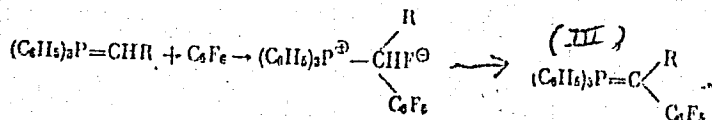
UDC 542.91:547.341:547.539.16

NESMEYANOV, N. A., ~~BERMAN, S. T.~~, and REUTOV, O. A., Moscow State University
 imeni M. V. Lomonosov

"Reaction of Phosphorus Ylids with Perfluorobenzene"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972,
 pp 605-606

Abstract: Perfluorobenzene is known to lose one of the fluorine atoms during nucleophilic attack. Five compounds were prepared; chemical equations and NMR data are presented for several of the compounds. All the reactions were carried out in anhydrous solvents in an atmosphere of dry pure nitrogen. For the nmr data, a working frequency of 60 MHz and a CF₃COOH standard were used. Triphenylphosphinepentafluorophenylmethylene (III) was prepared as follows:



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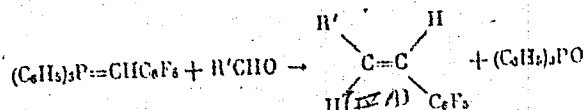
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UDC 542.91:547.341:547.539.16

NESMEYANOV, N. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 605-606

From (III), 2,3,4,5,6-pentafluorobenzyltriphenylphosphonium iodide was prepared; nmr data gave δ , m.d.: 58.5 (multiplet), 72.7 (triplet) and 82.2 (multiplet). Compound (IVA), 2,3,4,5,6-pentafluoro-4'-nitrostilbene was synthesized from (III) by the reaction



where $\text{R}' = \text{p} - \text{NO}_2\text{C}_6\text{H}_4$.

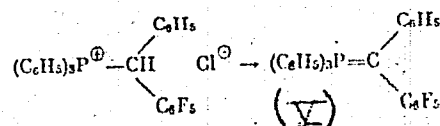
There are three peaks (2:1:2), δ , m.d.: 66.0 (multiplet), 78.5 (triplet), 86.2 (multiplet). Compound (IVB), 2,3,4,5,6-pentafluoro-4'-chlorostilbene was prepared using an analogous reaction for which $\text{R}' = \text{p} - \text{ClC}_6\text{H}_4$.

The nmr characteristics were similar, with the triplet shifting to 79.2 the former multiplets to 66.2 and the latter remaining at 86.2. Compound (V), triphenylphosphine-(2,3,4,5,6-pentafluorophenyl)phenylmethylenes, was prepared by the reaction

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No 3, 1972, pp 605-606



The nmr spectra of ^{19}F has three multiplets, δ m.d.: 58.3, 81.4, and 86.6,

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USSR

PUTYATIN, Ye. P., YURCHENKO, V. P., ABRAMOV, O. M., LEVIKOV, V. B.,
BERMAN, V. A.

"Normalization of Rotations of Flat Images"

Probl. Bioniki. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb. [Problems of Bionics. Republic Interdepartmental Thematic Scientific and Technical Collection], 1972, No 9, pp 61-69 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V706, by the authors).

Translation: With the goal of further development of the theory of construction of normalization operators for patterns subjected to rotation transformation, the unambiguity of correction of patterns to a standard position is studied, as well as the effects of interfering factors -- changes in brightness and background level.

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UDC 536.46

BERMAN, V. C., and RYAZANTSEV, YU. S. (Moscow)

"Asymptotic Analysis of Steady-State Propagation of the Front of a Two-Stage Sequential Exothermic Reaction in a Condensed Medium"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1973, pp 75-87

Abstract: There is developed an approximate theory of the steady-state propagation of the two-dimensional front of a two-stage exothermic sequential chemical reaction in a condensed medium. The method of coalescing asymptotic expansions is used in constructing the solutions. The expansion parameter is the ratio of the sum of the activation energies of the reactions to the final adiabatic temperature of combustion. Characteristic limit regimes of steady-state propagation of the wave are developed, which correspond to various values of the parameters involved in the problem. Approximate analytic expressions for the wave velocity and for the distribution of the concentrations are obtained for each of the regimes. These analytic relationships make it possible, on the basis of the given physicochemical characteristics of the condensed system, to conduct a classification of the combustion regimes, to make an approximate calculation of the rate of propagation of the combustion front, and to investigate the concentration and temperature profiles. 1 figure. 6 references.
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