USSR   UDC 529.4

LEBEDEV, D. V., GADZHIBALAYEV, G. A., Moscow

"Estimate of Impact Toughness of Steels at Cryogenic Temperatures"

Kiev, Problemy Prochnosti, No 8, Aug 73, pp 38-42.

Abstract: Data are presented characterizing the work of rupture and its components -- the work of formation and work of propagation of cracks -- in chrome-nickel and chrome-manganese steels in the temperature interval from 20 to -253° C. Results of determination of the work of crack propagation by the methods of Drozdovskiy and of Gulyayev are compared.

1/2   011   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--EFFECT OF THE NATURE OF THE PROMOTER ON THE CATALYTIC ACTIVITY OF
   ALUMINOCHROMIUM CATALYSTS IN ISOPENTANE DEHYDROGENATION -U-
AUTHOR-(03)-DADASHEV, B.A., SARYDZHANOV, A.A., GADZHIKASUMOV, V.S.

COUNTRY OF INFO--USSR

SOURCE--AZERB. NEFT. KHOZ. 1970, (1), 36-7 (RUSS)

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYST ACTIVITY, METAL OXIDE, DEHYDROGENATION, ISOPENTANE,
   POTASSIUM OXIDE, CESIUM COMPOUND, RUBIDIUM COMPOUND/(U)K5 CATALYST,
   (U)A19 CATALYST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1123   STEP NO--UR/0497/70/000/001/0036/0037

CIRC ACCESSION NO--AP0123550
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0128550
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OXIDE PROMOTERS WERE TESTED AT
2.5PERCENT CONCNS. (NH SUB2 O SUB3 AND CS SUB2 O FOR INDUSTRIAL CATALYST
K,5 AND CS SUB2 O, K SUB2 O, RB SUB2 O, CEO SUB2, AND YB SUB2 O SUB3 FOR
AL,CR CATALYST A,19). THE ALKALI METALS WERE THE ONLY ONES AFFECTING
YIELDS AND SELECTIVITY IN THE DEHYDROGENATION OF ISOPENTANE (I) TO
ISOAMYLENES. PROMOTION OF A,19 CATALYSTS BY K SUB2 O RAISED YIELDS FROM
20-18 AND 32-4 TO 37-3 AND 40-3PERCENT AND SELECTIVITY FROM 54-8 AND
60-5 AND 68-70PERCENT, RESP., RELATIVE TO UNPROMOTED K,5 CATALYST,
WHENDEHYDROGENATION OF I WAS CARRIED OUT IN STATIONARY AND FLUIDIZED
BEDS AT 530 AND 350-750EGREES AND VOL. INPUT RATES OF 0.5-2.0 AND 1-2.65
HR PRIME NEGATIVE1, RESP. YIELDS AND SELECTIVITY UNDER STATIONARY
CATALYST CONDITIONS WERE 26-3 AND 43-55PERCENT WHEN UNPROMOTED A,19
CATALYST WAS USED. RB SUB2 O AND CS SUB2 O WERE SLIGHTLY LESS EFFECTIVE
THAN K SUB2 O. FOR STATIONARY CATALYST CONDITIONS, PROMOTION OF K,5
CATALYST BY CS SUB2 O RAISED YEILDS AND SELECTIVITY TO 23-20 AND
63.5-65PERCENT, RESP.

USSR

IBRAGIMOV, I. I., Academician of the Azerbaydzhan SSR Academy of Sciences,
GADZHIYEV, A. D., Institute of Mathematics and Mechanics, Azerbaydzhan SSR
Academy of Sciences, Baku

"Concerning the Order of Convergence of Cauchy-Stieltjes-Type Singular
Integrals"

Abstract: Let Γ be a closed rectifiable Jordan curve of length l on the
plane of complex variable z. Let us denote by ϕ the angle between the
positive direction of the X-axis and the tangent to Γ at a given point
(the tangent obviously exists at almost all points of Γ). Let $f(s)$ be a
complex function of arc s, this function having bounded variation on seg-
ment $[0,l]$. Writing out the parametric equation of curve Γ in the form
$x = x(s)$, the authors examine an integral of the Cauchy-Stieltjes type

$$K(z) = \frac{1}{2\pi i} \int \frac{e^{i\phi} df(s)}{x - z} = \frac{1}{2\pi i} \int_0^l \frac{e^{i\phi(s)} df(s)}{x(s) - z}.$$

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It has been proved previously that the difference in the values of an integral of the Cauchy-Stieltjes type inside and outside of Γ approaches $f'(s_0)$ for all points of the line Γ, with the possible exception of a set of zero measure where $z \to \Gamma$ (from the inside and from the outside). In this paper the authors use a method based on the properties of singular integrals to establish the order of convergence of integrals of the Cauchy and Cauchy-Stieltjes types.

IBRAGIMOV, I. I., Academician of the Azerbaijan Academy of Sciences,
GADZHIYEV, A. D., and SHAKHVERDIYEV, V. M.

"Monotonicity Conditions of a Sequence of Derivatives of the Gel'fand-
Bernshteyn Polynomials"

Abstract: The authors note that by successfully determining the
monotonicity of a sequence of derivatives of the generalized poly-
nomials of A. O. Gel'fand and S. N. Bernshteyn, the results can
be applied to problems involving the numerical integration of dif-
ferential equations. They begin their investigation by offering
and proving a basic theorem for the difference between the deriva-
tives of two successive polynomials in the sequence, which enables
them to establish its monotonicity. Their notation for the se-
quence of derivatives is $\{\Gamma_n'(f;x)\}$. They also derive corollaries
of this theorem regarding the convergence properties of the se-
quence and an alternate method for expressing the difference
between two successive derivatives in it. The authors are mem-
bers of the Institute of Mathematics and Mechanics in Baku.

1/1   - 38 -

USSR   UDC 517.512.6

IBRAGIMOV, I. I., Academician Azerbaijan SSR Academy of Sciences,
GADZHIYEV, A. D.

"A Sequence of Linear Positive Operators"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 6, 1970, pp 1222-1225

Abstract: A sequence of linear positive operators of the most general
form, containing the operators of S. N. Bernshteyn, Bernshteyn-
Khlodovskiy, G. Mirak'yan, V. A. Baskakov, and others, as particular
cases, is constructed.   Problems of the uniform convergence of these
operators in the class of the continuous functions $C/0,A/$, where
$A>0$ is a given number, are considered and the peculiarities of the
functions' convexity or concavity are studied.   Proof that the
operators named above are particular cases of the sequence is pre-
sented, and some theorems regarding the convergence of the sequence
are derived.

1/1

USSR

GADZHIYEV, A. R., RYVKIN, S. M., and SHLIMAK, I. S., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences USSR

"n-Germanium Compensated by Fast Neutrons as an Amorphous Semiconductor Model"

Abstract: The authors studied the use of fast neutron-irradiated, heavily doped n-type germanium for the creation of a controlled amorphous semiconductor model. n-Ge specimens with an arsenic concentration of $8 \cdot 10^{18}$ cm^{-3} underwent the fast-neutron irradiation. The results indicate that the irradiated n-germanium displays the principal features inherent in an amorphous semiconductor and in this sense can be considered as its model. The authors thank B. I. SHKLOVSKIY for discussing the results.

1/1

USSR   UDC 911.3.616.9.576.89(479.24)

GADZHIYEV, A. T., GAFAROVA, F. G., and MUTAFAYEVA, Z. A.

"The Effect of Anthropogenic Factors on the Distribution of Disease Vectors"
(Azerbaydchan SSR)

V sb. 5-ya Mezhvuz. zoogeogr. konferentsiya "Vliyanie antropogen. faktorov
na formir. zoogeogr. kompleksov" Ch. I.   (Fifth Joint Higher Education In-
stitution Zoogeographic Conference on the Effect of Anthropogenic Factors
on the Formation of Zoogeographic Complexes. Part I -- collection of works),
Kazan, 1970, pp 76-78 (from RZh-36, Meditsinskaya Geografiya, No 1, Jan 71,
Abstract No 1.36.69 by Yu. Dubrovskiy)

Translation: The red-tailed Libyan jird and the fleas specific to this
species have totally disappeared following the irrigation and tilling of
the Shirvanskaya, Mil'skaya, and Muganskaya steppe. At the same time this
rodent has become widespread in the foothills, and the fleas, which are
plague vectors have followed. The water vole has infiltrated along the
irrigation canals into the heart of the steppe, carrying its specific para-
sites, the tularemia vectors Laelaps muris, Hyperlaelaps amphibius, Haemola-
elaps glasgowi. The forest belts planted along the canals are now infil-
trated with house and field mice and their mites -- L. agilis and L.

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USSR

GADZHIYEV, A. T., et al,   V sb. 5-ya Mezhvuz. zoogeogr. konferentsiya "Vliyanie antropogen. faktorov na formir. zoogeogr. kompleksov" Ch. 1. (Fifth Joint Higher Education Institution Zoogeographic Conference on the Effect of Anthropogenic Factors on the Formation of Zoogeographic Complexes. Part I -- collection of works), Kazan, 1970, pp 76-78 (from RZh-36, Medit-sinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.69 by Yu. Dubrovskiy)

algericus. The nests of birds of the sparrow family in the forest belt contain great numbers of Ornithonyssus sylvarum, Steatonyssus viator and Dermanyssus passerinus. The emergence of new parasite cenoses provides the conditions for new natural foci of disease.

2/2

USSR

UDC 664.95

GADZHIYEV, D. N., and MAGOMAYEV, A. A., Candidate of Technical Sciences,
Dagestan University

"Survival of Staphylococcus in Sunflower and Olive Oil"

Moscow, Rybnoye Khozyaystvo, No 6, 1971, pp 66-69

Abstract: Ten samples each of olive and refined sunflower oil were taken
from different commercial lots. Six milliliters of fish-peptone bouillon con-
taining 7.5 percent common salt were put into a number of test tubes, small
lumps of cotton were dipped into it, and the test tubes were sterilized in an
autoclave (the cotton rising to the surface of the bouillon). Three milli-
liters of the oil being tested were injected into these test tubes; after
the cotton had absorbed the oil it was pushed to the bottom of the tube. The
inoculations were incubated at a thermostat temperature of $37^\circ C$ for 48 hours,
then smears made of the bouillon, stained and examined under microscope. No
Staphylococcus was found in the olive oil, while in the sunflower oil it was
found in three out of the 10 samples taken. Artificial inoculation with
Staphylococcus was made of samples of sunflower oil and olive oil, using
strains ST-1, ST-2, ST-Ts, and ST-A. All were found to be toxic. After one
to five days the toxic oil was inoculated into fish-peptone bouillon and into
slant agar. Two tubes containing oil with an equal degree of toxicity were
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USSR

GADZHIYEV, D. N. and MAGOMAYEV, A. A., Rybnoye Khozyaystvo, No 6, 1971, pp 66-69

taken in each case for analysis, with two control samples for every 10 tubes of toxic oil. The results showed that Staphylococcus survives well in sunflower oil but perishes fast in olive oil, and that with intoxication of from 100 to 500 million microbe bodies kept for 45 days Staphylococcus can be very well preserved for a long period.

The conclusion is that Staphylococcus may be introduced into canned food with sunflower oil when such oil is not first baked. Olive oil possesses bacteriostatic properties, apparently cannot be a source of Staphylococcus infection in canned fish, and may be used without advance baking.

2/2

UDC 537.311.1

USSR

ABDULLAYEV, G. B., Academician of the Academy of Sciences Azerbaydzhan SSR,
ALIYEV, G. M., MEKHTIYEVA, S. I., MAMEDALIYEVA, G. G., GADZHIYEV, F. B.,
DZHALILOV, N. Z., and ABDINOV, D. Sh., Institute of Physics of the Academy of
Sciences Azerbaydzhen SSR, Baku

"On the Origin of Hole Conduction in Selenium"

Abstract: The type of conductivity of amorphous selenium with different degrees
of crystallinity and also of monocrystalline selenium before and after deoxygeni-
zation was studied to obtain information on the origin of its hole conduction
and to clarify the possibility of producing selenium with electron conduction.
It is noted that it has been previously assumed that oxygen atoms in selenium
cause its hole conduction by producing acceptor levels but that direct data
supporting this assumption is practically nill. It is stated that the elec-
trical properties of selenium are not associated with the presence of periodi-
city in the lattice but are basically determined by the short-range order; this
short-range order therefore determines the width of the forbidden zone and con-
sequently the concentration of natural free electrons and holes. Under amorphi-
zation of the material there occurs a grouping of atoms around the defects such

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that admixtures which are active in the crystalline state become inactive in the amorphous state. Under deoxygenization of polycrystalline hexagonal selenium the conductance at a given temperature reduces by a factor of 1000; i.e., is approximately 100 times greater than in the case of single crystalline selenium. This is attributed to two factors: (a) in the production of single crystals of selenium the selenium is cleaned of oxygen admixtures; and (b) oxygen atoms in polycrystalline samples, by reducing the intermolecular potential barriers, cause a growth in the mobility of current carriers during the motion of current carriers. The change in the electrical properties of single crystals of selenium under deoxygenization is attributed to the entry of oxygen atoms in the selenium lattice.

2/2

IMANOV, L. M., Corresponding Member of the Azerbaydzhan SSR Academy of Sciences,
ZUL'FUGARZADE, K. E., AKHUNDOV, A. A., GADZHIYEV, G. A., Institute of Physics,
Azerbaydzhan SSR Academy of Sciences

"Investigation of Intramolecular Motions in Some Dialkyl Phthalates by the
Method of Polymer Matrix Isolation"

Abstract: The paper gives some results of a study of radio-frequency spectra
of relaxation absorption in the dimethyl phthalate-polystyrene and di-n-butyl
phthalate-polystyrene system with ether content of 20% by weight. The di-
electric loss tangents of both systems were measured on eight frequencies
ranging from $5 \cdot 10^2$ to $7 \cdot 10^5$ Hz at temperatures from 40 to 150°C. On the
basis of analysis with regard to the magnitudes of dipole moments correspond-
ing to the observed dielectric absorption regions for dimethyl and dibutyl
phthalates, as well as the spectrum of iodobenzene in the polystyrene matrix
with a single absorption region, it is concluded that the low-frequency
contribution to the absorption regions is from the motion of individual
molecules of the dialkyl phthalates as a whole, while the high-frequency
component is due to intramolecular motions.
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- 56 -

1/2   027   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--CRACKING OF A WIDE FRACTION OF SIAZAN PETROLEUMS OVER AN ALUMINA
CHROMIA CATALYST -U-
AUTHOR-(05)-GUSEINOV, D.A., GAMIDZADE, G.A., ABASOVA, N.A., GADZHIEV,
G.G., AKOPYAN, M.P.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., NEFT GAZ 1970, 13(3), 47-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS, PROPULSION AND FUELS

TOPIC TAGS--GASOLINE, CATALYTIC CRACKING, ALUMINA, CHROMIUM, METHANE,
HYDROGEN, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/2096   STEP NO--UR/0152/70/013/003/0047/0049

CIRC ACCESSION NO--AP0127469
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0127469
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   A GASOLINE LIGROINE FRACTION, B.
IS SMALLER THAN OR EQUAL TO 220DEGREES, WAS PROCESSED.   AS THE TEMP.
INCREASED FROM 480 TO 560DEGREES, THE YIELD OF H-CH SUB4 FRACTION
INCREASED AND THAT OF UNSATD. HYDROCARBONS DECREASED FROM 47.8 TO 44.9
WT. PERCENT.   THE MAX. GAS YIELD OF 72.0 WT. PERCENT BASED ON RAW
MATERIAL WAS OBTAINED AT 0.5 HR PRIME NEGATIVE1 AND 560DEGREES WHEN
3.2PERCENT COKE WAS DEPOSITED ON THE CATALYST, BUT THE OPTIMUM GAS AND
UNSATD. HYDROCARBON YIELD WAS OBTAINED AT 0.7 HR PRIME NEGATIVE1.   THE
HIGHER YIELD OF 87PERCENT CATALYZATE WAS OBTAINED AT 0.7 HR PRIME
NEGATIVE1 AND 480DEGREES.   THE LIQ. CATALYZATE WAS USED FOR HIGH OCTANE
GASOLINE.   CHARACTERISTICS OF THE RAW MATERIAL AND RESULTS ARE
TABULATED.   FACILITY: AZERB. INST. NEFTI KHIM. IM. AZIZBEKOVA,
BAKU, USSR.

UNCLASSIFIED

1/3   032   UNCLASSIFIED   PROCESSING DATE--30CCT70
TITLE--THERMAL CONDUCTIVITY OF COMPLEX SEMICONDUCTOR COMPOUNDS IN SOLID.
   AND MOLTEN STATES -U-
AUTHOR-(02)-GADZHIYEV, G.G., MAGOMEDOV, YA.B.

CCUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2), 387-8

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, SEMICONDUCTOR PROPERTY, LIQUID
   SEMICONDUCTOR, MELTING POINT, PHONON, TEMPERATURE DEPENDENCE, ELECTRON
   MOBILITY, THERMOELECTRIC PROPERTY, SELENIDE, TELLURIDE, COPPER COMPOUND,
   ANTIMONY COMPOUND, ARSENIC COMPOUND

CCNTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1484   STEP NO--UR/0363/70/006/002/0387/0388

CIRC ACCESSION NO--AP0118473
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0118473

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ORDER TO EXPLAIN THE HEAT
TRANSFER MECHANISMS AND TO MORE ACCURATELY DEFINE THE PROBLEM CONCERNING
THE THERMOELEC. QUALITY IN THE SOLID AND THE MOLTEN STATES, THE THERMAL
COND. OF CU SUB3 ASSE SUB4, CU SUB2 SBSE SUB4, AND CUSBTE SUB2 AT
300-1000DEGREESK WAS INVESTIGATED. THERMAL COND. WAS MEASURED BY THE
ABS. METHOD UNDER STEADY STATE HEAT CONDITIONS. AT ROOM TEMP. THE
THERMAL COND. FOR CU SUB3 ASSE SUB4 IS 2.7 W PER M DEGREE, AND WITH
INCREASING TEMP. IT DECREASES LINEARLY. A SHARPER DECREASE TAKES PLACE
FROM 700DEGREESK ON TO THE M.P., WHICH IS APPARENTLY ASSOCD. WITH THE
TRANSITION OF CU SUB3 ASSE SUB4 FROM THE LOW TEMP. TETRAGONAL TO THE
HIGH TEMP. CUBIC PHASE. IN THE SOLID STATE THE FUNDAMENTAL HEAT
TRANSFER MECHANISM IS THE PHONON ONE, ALL THE SAY TO THE M.P. THE
ELECTRONIC PORTION OF THE THERMAL COND. AS CALCD. FROM THE
WIEDEMANN-FRANZ RATIO IS 5.2 TIMES 10 PRIME NEGATIVE3 W PER M DEGREE AT
ROOM TEMP., AND WITH INCREASING TEMP. IT INCREASES, ATTAINING A VALUE OF
0.5 W PER M DEGREE PRIOR TO THE M.P. AT THE M.P. THE THERMAL COND.
INCREASES ABRUPTLY, AS DOES THE ELEC. COND., AND IT INCREASES UPUPON
FURTHER HEATING IN THE MOLTEN STATE. THIS MEANS THAN AN ADDNL. HEAT
TRANSFER MECHANISM, NAMELY BIPOLAR THERMAL COND., IS PRESENT.   THE
TEMP. DEPENDENCE OF THE THERMAL COND. OF CU SUB3 SBSE SUB4 IS SIMILAR TO
THAT OF CU SUB3 ASSE SUB4, EXCEPT THAT UPON MELTING, THE THERMAL COND.
OF CU SUB3 SBSE SUB4 DOES NOT EXPERIENCE MARKED CHANGES; CERTAIN OTHER
DIFFERENCES ARE ALSO NOTED. IN THE CASE OF CUSBTE SUB2 THE ELECTRONS
AND THE PHONONS ARE THE HEAT CARRIERS FROM ROOM TEMP. TO THE M.P.

UNCLASSIFIED

ABSTRACT/EXTRACT--THE ELECTRONIC PORTION OF THE THERMAL COND. AT ROOM
TEMP. IS 1.7 W PER M DEGREE AND EXCEEDS THAT OF THE PHONON PORTION. AT
THE INSTANT OF THE MELTING THE THERMAL COND. OF CUSBTE SUB2 INCREASE
ABRUPTLY BY A FACTOR OF 1.5, AFTER WHICH THE THERMAL COND. OF THE MELT
INCREASES. THE COURSE OF THE THERMAL COND. IS EXPLAINED SATISFACTORILY
BY THE PRESENCE OF ELECTRONIC AND BIPOLAR THERMAL CONDS. THE HIGH ELEC.
COND., THE OPTIMUM CARRIER CONCN., AND THE LOW THERMAL COND. OF CUSBTE
SUB2 AS COMPARED TO THOSE OF OTHER A PRIMEI B PRIMEV C PRIMEVI SUB2 TYPE
COMPOS. INDICATE THAT OF THIS COMPD. CAN BE USED FOR MAKING THERMOELEC.
ELEMENTS.   FACILITY: INST. FIZ., MAKHACHKALA, USSR.

UNCLASSIFIED

1/2   023   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--THERMAL CONDUCTIVITY OF COMPLEX A PRIMEI B PRIMEV C PRIMEVI SUB2
  SEMICONDUTORS IN SOLID AND LIQUID STATES -U-
AUTHOR-(03)-GADZHIYEV, G.G., MAGOMEDOV, YA.B., ISMAYLOV, SH.M.

COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(1), 213-15

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, SEMICONDUCTOR MATERIAL, THERMAL EFFECT,
  COPPER COMPOUND, ARSENIC COMPOUND, ANTIMONY COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0921   STEP NO--UR/0294/70/008/001/0213/0215

CIRC ACCESSION NO--AP0107450
                   UNCLASSIFIED

CIRC ACCESSION NO--AP0107450
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL COND. (LAMBDA) OF
CUSBTE SUB2, CUSBS SUB2, AND CUASSE SUB2 WAS MEASURED IN BOTH SOLID AND
LIQ. STATES AT 300-1000DEGREESK. THE LAMBDA OF THE 3 COMPDS. DECREASES
WITH INCREASE IN TEMP. IN THE SOLID STATE GREATER THAN OR EQUAL TO
300DEGREESK AND IT INCREASES WITH INCREASE IN TEMP. IN THE LIQ. STATE
LESS THAN OR EQUAL TO 1000DEGREESK. THE MIN. IN LAMBDA IS IN THE SOLID
STATE FOR CUSBTE SUB2, THE M.P. IN THE SOLID STATE FOR CUSBS SUB2, AND
IN THE LIQ. STATE FOR CUASSE SUB2. THE JUMP IN LAMBDA AT THE M.P. IS
POS. FOR CUSBTE SUB2 AND CUSBS SUB2 AND NEG. FOR CUASSE SUB2. CUASSE
SUB2 IS AN INTERMETALLIC SEMICONDUCTOR WITH A METALLIC COND. AND THE
INTRINSIC COND. OF CUSBTE SUB2 AND CUSBS SUB2 BEGINS AT 500 AND
550DEGREESK, RESP. ALL 3 COMPDS. ARE INSTRINSIC SEMICONDUCTORS IN THE
LIQ. STATE. THE COND. OF CUSBTE SUB2 AND CUSBS SUB2 CONSITS OF THE
PHONON AND ELECTRON CONDS. IN THE SOLID STATE AND IN THE INTRINSIC COND.
REGION THERE IS AN ADDNL. COND. DUE TO THE BIPOLAR THERMAL DIFFUSION.
THE WIDTH OF THE FORBIDDEN ZONE WAS CALCD. FOR CUSBTE SUB2 AS 0.16 EV
AND FOR CUSBS SUB2 AS 0.42 EV. OVER THESE 3 CONDS., THE PHONON COND. IF
SOLID CUASSE SUB2 IS SUPERIMPOSED.   FACILITY: ISNT. FIZ.,
MAKHACHKALA, USSR.

UNCLASSIFIED

Semiconductor Technology

USSR   UDC: 546.56'86'23:541.66

GADZHIYEV, G. G., and MAGOMEDOV, YA. B., Institute of Physics, Dagestan Branch,
Academy of Sciences USSR, Makhachala

"Heat Conductance in Complex Semiconductor Compounds in Solid and Liquid States"

Moscow, Neorganicheskiye Materialy, Vol 6, No 2, Feb 70, pp 387-388

Abstract: The thermal conductance of Cu_3AsSe_4, Cu_3SbSe_4, and $CuSbTe_2$ was
studied at 300--1000°C to determine their heat transfer mechanisms and define
more accurately the problem of the thermoelectric Q factor in both solid and
liquid states. Homogeneous polycrystalline specimens were produced in evacuated
and sealed-off quartz ampules under specific temperature conditions. The phase
composition of the obtained specimens was determined by thermal and metallographic
analyses. The heat conductance was measured by the absolute method under station-
ary temperature conditions. Figures in the original article show the temperature
dependence of the thermal conductance of Cu_3AsSe_4, Cu_3SbSe_4, and $CuSbTe_2$. In the
solid state up to the point of melting, the basic heat transfer mechanism in
Cu_3AsSe_4 is phonon-based. The n-type share of thermal conductivity computed

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USSR

GADZHIYEV, G. G., and MAGOMEDOV, YA. B., Neorganicheskiye Materialy, Vol 6, No 2, Feb 70, pp 387-388

according to the Wiedemann-Franz law is, at room temperature, $5.2 \cdot 10^{-3}$ w/m·deg, and increases with temperature, attaining, prior to melting, 0.5 w/m·deg. After melting it drops abruptly. Compraison of experimental data with those of Wiedemann-Franz indicates the presence of an additional heat transfer mechanism in the Cu_3AsSe_4 melt, which is attributed to bipolar thermal conductance. The curve of Cu_3SbSe_4 is similar to that of Cu_3AsSe_4. There is no abrupt drop in thermal conductance in Cu_3SbSe_4, however. In the $CuSbTe_2$ curve, the heat carriers from room temperature to the melting point, are electrons and phonons. At room temperature the electron share of heat conductance exceeds the phonon share. The increase in thermal conductance prior to melting indicates bipolar heat conductance. At the melting point, $CuSbTe_2$ heat conductance abruptly increases 1.5 times and continues to grow, indicating both electron and bipolar heat conductances. High electroconductivity, optimum concentration of carriers, and low heat conductance of $CuSbTe_2$, in comparison to other $A^IB^VC_2^{VI}$ compounds, indicates the potential application of this material for thermoelectric batteries.

2/2

USSR   UDC 616.986.7-036.22 (479.24)

GADZHIYEV, I. A.

"On A Study of Leptospirosis Among the Population of the Shirvanskaya Steppe of the Kura-Araksinskaya Lowland, Aserbaydzhan SSR"

Baku, Azerbaydzhanskiy Meditsinskiy Zhurnal, No 4, Apr 71, pp 59-64

Abstract: Between 1966 and 1968, 5,220 samples of blood serum of various population groups were examined for leptospirosis in four rayons (Kyurdamirskiy, Agdamskiy, Udzharskiy, and Zardobskiy) of the Shirvanskaya Steppe of the Kura-Araksinskaya Lowland. Positive reactions in the microagglutination and lysis test were obtained in 141 (2.7%) of cases. The highest percentage of positive cases was recorded in Agdamskiy Rayon (5.3%). The highest percentage of positive serological reactions (4.6%0 of 1,683 examined) was found among workers connected with agriculture (among stock breeders -- 11.0% of 271 examined, among field-crop growers and horticulturists -- 3.4% of 1,412 examined), while the rate among people not connected with such work was only 0.7% of 1,157 examined. The highest percentage of antibodies to Leptospira was found in people between 7 and 15 years of age (33.3%) and 26 to 35 years of age (27.6%). On the basis of the serological tests conducted, it can be stated that the following serotypes of Leptospira are in circulation on the Shirvanskaya Steppe of the Kura-Araksinskaya Lowland: grippotyphosa, pomona, tarassovi, canicola, icterohaemorrhagiae, and hebdomadis. 1/1

USSR   UDC 616.986.7-036.22(479.24)

GADZHIYEV, I. A.

"Epidemiology of Leptospirosis in the Shirvan Steppe of the Kura-Araks Lowland in
the Azerbaydzhan SSR"

Baku, Azerbayzhanskiy Meditsinskiy Zhurnal, Vol. 47, No 7, Jul 70, pp 59-63

Abstract: The presence of leptospirosis antibodies in persons from various popu-
lation centers within the region was established on the basis of serological tests.
Analysis of the data compiled indicates the necessity for further population
studies and for elimination of the infection in animals, field workers, and school
children. The occupational character of the disease was established. Extension
of the studies to other regions was recommended as a means of establishing the
sources and etiological structure of leptospirosis, as well as the presence of
the disease in natural foci.

1/1

USSR

GADZHIYEV, M. M.

"Maximum Length of Abbreviated Disjunctive Normal Form for Boolean Functions of Five and Six Variables"

Diskretn. Analiz. [Discrete Analysis -- Collection of Works], No 18, Novo-sibirsk, 1971, pp 3-24, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V343 by A. Sapozhenko).

Translation: The precise value of the maximum possible number $S(n)$ of terms in the abbreviated disjunctive normal form for Boolean functions of five and six variables is found. It is shown that $S(5) = 32$, $S(6) = 92$ and that these values are achieved in symmetrical functions.

USSR   UDC 621.382.004:539.293

ABDULLAYEV, G. B., Corresponding Member of the USSR Academy of
Sciences, GARIBOV, M. A., GADZHIYEV, N. D., and TALIBI, M. A.

"Selenium Moisture Element -- a New Form of Semiconductor Converter"

Abstract: This theoretical paper is concerned with selenium diodes
with p-n heterojunctions which are capable of producing an elec-
trical voltage in response to a moisture or humidity stimulus.
The voltage-moisture characteristic of such a device is similar
to that of photosensitive diodes responding to light. The pur-
pose of this paper is to obtain a fuller notion of the mechanism
producing this moisture emf. Experiments performed on such diodes
showed that the electrical effects of the moisture are the results
of processes in the electron-hole junction region. It is found
that, under the action of humidity, there is an imbalance of
electron-hole pairs on the n-layer side. All the holes originating
in the n-layer and arriving at the junction under the effect of
the contact field cross over to the p region; the electrons are
repelled by the contact field and remain in the n region.
1/2

. USSR

UDC   621.382.004:539.293

ABDULLAYEV, G. B., et al, Doklady Akademii Nauk Azerbaydzhanskoy SSR, No 2, 1973, pp 17-21

Expressions are found for the current and voltage as functions of the humidity, and the corresponding characteristics are plotted.

USSR   UDC 621.382.322

GADZHIYEV, N. D., KASIMOV, F. P., and KADYMOV, G. G.

"MOS Transistor Sensitivity to Pressure"

MOS-tranzistor chuvetvitel'nyy k davleniyu (cf. English above. Editorial Board
of the Journal "Izv. AN AzSSr. ser. fiz.-tekhn. i mat. n." [News of the
Academy of Sciences Azerbaidzhan SSR. Physico-Technical and Mathematical
Sciences Series]), Baku, 1971, 5 pp. 3 ref (No 2695-71 DEP (from RZh-
Elektronika i yey primeneniye, No 7, July 1971, Abstract No 7B304 DEP)

Translation: A model is proposed of a sensitive electromechanical transducer using
a MOS transistor as a base, the gate of which is in direct contact with piezcelectric
material.   A calculation for barium titanate shows that the sensitivity of the
device may be on the order of 10^{-4} kg/cm^2. It is possible to adjust the sensitivity
within wide limits by a choice of the thickness of the insulating film of the transis-
tor gate, by a change of the channel length, and also by a choice of the appropriate
piezomaterial.

1/1

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TITLE--THERMOCHEMICAL STUDIES OF ORGANOMETALLIC COMPOUNDS. II.
   THERMOCHEMISTRY OF METHYLCHLOROSILANES -U-

AUTHOR-(02)-GADZHEIV, S.N., AGARUNOV, M.YA.

COUNTRY OF INFO--USSR

SOURCE--J. ORGANOMETAL. CHEM. 1970, 22(2), 305-11

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMOCHEMISTRY, ORGANIC SILANE, ENTHALPY, ENTROPY,
   CALCULATION, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0618   STEP NO--NE/0000/70/022/002/0305/0311

CIRC ACCESSION NO--AP0119530
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0119530

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THIS PAPER PRESENTS THE RESULTS OF
  THE EXPTL. DETN. OF THE HEATS OF FORMATION OF TRIMETHYLCHLOROSILANE AND
  METHYLTRICHLOROSILANE AND THE CALCN. FOR THE HEAT OF FORMATION FOR A
  SIXTH COMPD. IN THIS SERIES, GASEOUS MONOMETHYLMONOCHLOROSILANE HAS BEEN
  ESTD. IN ADDN., THE THERMODYNAMIC PROPERTIES OF THE METHYLCHLOROSILANES
  HAVE BEEN LISTED. THESE WERE CALCD. ON THE BASIS OF OUT ENTHALPIES OF
  FORMATION AND THE ENTROPIES OF THESE COMPDS. CITED IN THE LITERATURE.
       FACILITY: INST. PHYS., BAKU, USSR.

UNCLASSIFIED

1/2   007
UNCLASSIFIED
TITLE--RECTIFACTION OF METHYLCHLOROSILANES -U-

PROCESSING DATE--16OCT70

AUTHOR--GADZHIEY, S.N.

G

COUNTRY OF INFO--USSR

SOURCE--IND. ENG. CHEM., PROCESS DES. DEVELOP. 1970, 9(2), 229-33

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, ORGANIC SILANE, DISTILLATION, CHEMICAL PURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1285

STEP NO--US/0000/70/009/002/0229/0233

CIRC ACCESSION NO--AP0116747

UNCLASSIFIED

CIRC ACCESSION NO--AP0116747

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   A HIGHLY EFFICIENT LAB. COLUMN OF
SPECIAL DESIGN AND A PROCEDURE FOR RECTIFICATION AT ATM. PRESSURE OF
MOISTURE SENSITIVE AND CHEM. ACTIVE LIQS. ARE DESCRIBED. THE
DISTINGUISHING FEATURES OF THE COLUMN ARE THE APPLICATION OF A SPECIAL
HEAD, THE USE OF A THER STOR FOR THE RECTIFICATION TEMP. MEASUREMENT, A
SIMPLIFIED METHOD OF PREPN. OF THIN, GLASS SPIRAL, PACKAGE THREADS (BY
PROCESSING IN HF SOLN.), A SIMPLIFIED AND EFFECTIVE WAY OF VAPORIZATION
IN THE COLUMN STILL, AND AVOIDANCE OF THE GROUND GLASS JAMMING OWING TO
SILANES BY INTRODUCING THE TAPERED TEFLON TUBE. METHYLCHLOROSILANES OF
99.5-99.8PERCENT PURITY WERE ISOLATED, THEIR PHYSICOCHEM. PARAMETERS
HAVING BEEN DETD.   FACILITY: INST. PHYS., BAKU, USSR.

UNCLASSIFIED

UNCLASSIFIED

TITLE--ELECTROABSORPTION OF GALLIUM SELENIDE -U-   PROCESSING DATE--04DEC70

AUTHOR-(04)-GADZHIYEV, V.A., SOKOLOV, V.I., SUBASHIYEV, V.K., TAGIYEV,
B.K.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1350-4

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ABSORPTION SPECTRUM, GALLIUM SELENIDE, PHOTON, EXCITON,
IONIZATION, LIQUID NITROGEN, FORBIDDEN BAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3009/0113

STEP NO--UR/0181/70/012/005/1350/1354

CIRC ACCESSION NO--AP0138978

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138978

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTROABSORPTION SPECTRUM OF GASE WAS INVESTIGATED AT 80, 295, 345, AND 395DEGREESK IN FIELDS OF 5 TIMES 10 PRIME3 -2 TIMES 10 PRIME4 V-CM. COMPARISON OF EXPTL. RESULTS WITH THE THEORETICAL EXPRESSION FOR THE 1ST HARMONIC ALPHA SUB1 OF A COMPLETE VARIATION OF THE ABSORPTION COEFF., DELTA O(H OMEGA, F) EQUALS ALPHA (H OMEGA, F) MINUS ALPHA(H OMEGA 0) (H OMEGA EQUALS PHOTON ENERGY, F EQUALS ELEC. FIELD) FOR THE CASE OF DIRECT ALLOWED TRANSITIONS WITHOUT ACCOUNTING FOR EXCITONS SHOWED A CONSIDERABLE DIFFERENCE BETWEEN THEM. THE EXPTL. DETD. ALPHA SUB1 IS MORE DEPENDENT ON TEMP. AND IT DECREASES WITH INCREASING ENERGY OF THE QUANTUM MORE RAPIDLY THAN PREDICTED BY THE THEORY. EXPTL. DATA CAN BE EXPLAINED IF IT IS ASSUMED THAT THE MAIN CONTRIBUTION TO ELECTRO ABSORPTION COMES FROM DECOMPN. OF EXCITONS IN THE 2-DIMENSIONAL CASE. AT ROOM TEMP. THE ENERGY OF IONIZATION OF EXCITION E SUBEX EQUALS 67 MEV AND THE WIDTH OF THE FORBIDDEN BAND E SUBG EQUALS 2.036 MEV. AT LIQ. N TEMP. THE OBSD. SPECTRUM OF ELECTROABSORPTION IS RELATED TO DECOMPN. OF EXCITON PEAKS. E SUBEX IS 70 MEV AND E SUBG IS 2.131 MEV.   FACILITY: INST. POLUPROV., LENINGRAD, USSR.

UNCLASSIFIED

1/2   018   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--ALKYLATION OF PHENOL BY A PETROLEUM DISTILLATE OBTAINED FROM BAKU
   RAW MATERIAL IN THE PRESENCE OF A KU-2 ION EXCHANGE RESIN -U-
AUTHOR-(04)-FATULLAYEV, A.N., GADZHIYEVA, Z.K., GSANOV, D.G., RZAYEV, R.G.

COUNTRY OF INFO--USSR

SOURCE--AZERB. NEFT. KHOZ. 1970, (1), 35-6

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--LUBRICATING OIL, LUBRICANT ADDITIVE, PHENOL, ALKYLATION, CRUDE
   OIL, PETROLEUM DEPOSIT, GEOGRAPHIC LOCATION, ION EXCHANGE RESIN/(U)KU2
   ION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/2070   STEP NO--UR/0487/70/000/001/0035/0036

CIRC ACCESSION NO--AP0127443
                     UNCLASSIFIED

CIRC ACCESSION NO--AP0127443
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPTIMUM ALKYLPHENOL YIELDS
(45PERCENT) WERE OBTAINED WHEN CRUDE PHENOL (I) WAS CONTINUOUSLY
ALKYLATED AT 140DEGREES WITH 2 VOLS. (BASED ON I) OF A S FREE PETROLEUM
DISTILLATE (INITIAL B.P. 75DEGREES, 75PERCENT DISTD. AT 127DEGREES,
FINAL B.P. 180DEGREES, D. 0.7420) ON A COLUMN OF ION EXCHANGE RESIN KU-2
IN NA FORM. THE UNREACTED PETROLEUM DISTILLATE WAS RECOVERED
PRACTICALLY UNCHANGED. THE ALKYLPHENOL HAD SIMILAR PROPERTIES TO THE
STD. LUBRICATING OIL ADDITIVE PRODUCED BY ALKYLATING I IN THE PRESENCE
OF PHSO SUB3 H. .

UNCLASSIFIED

USSR   UDC 614.449.57:615.285.7

LINEVA, V. A., PRSHIVORA, M., LEVIYEV, P. YA., OKULOV, V. P.,
GADZHIZALOV, D., SANINA, M. M., SAGATELOVA, I. S., and OBOLENSKAYA,
L. F.

"Trails of the Czechoslovak Insecticide ES-50 Metathion in the USSR.
I. ES-50 Metathion Used to Control the Housefly"

Abstract: ES-50 metathion, an organophosphorus compound derived
from phenitrothion 0, 0-dimethyl (0-3-methyl-4-nitrophenyl) thio-
phosphate, was developed and tested in Czechoslovakia where it
demonstrated a broad spectrum of action against flies, cockroaches,
ticks, and crop pests. It has low toxicity for warm-blooded animals
and no cumulative effect. Laboratory and field tests of the insecti-
cide in five different climatic regions of the Soviet Union showed
that it is highly effective in a dose of 2 g/m^2 of treated surface
for 30-60 days. The temperature and humudity are the most important
factors in the action of metathion. The higher the temperature and
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USSR

LINEVA, V. A., et al., Moscow, Meditsinskaya Parazitologiya i
Parazitarnyye Bolezni, No 2, 1970, pp 211-220

humidity, the more toxic its effect. Increasing the humidity of
the room or moistening the treated surfaces increases metathion's
potency, especially on glass or wood. Among the negative features:
(i) it has an unpleasant odor; (ii) it leaves marks on the treated
surfaces; (iii) flies seem to develop resistance to it fairly
quickly.

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UDC 531.717.2.082.54:621.835

USSR

GAFANOVICH, G. YA., and GATSKALOVA, T. G.

"The Interferometer Method of Verifying Sample Involute Cams"

Khar'kov, Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb. (Ukrainian Republic Scientific and Technological Conference Honoring the 50th Anniversary of the Ukrainian SSR's Metrological Service, 1972 -- Collection of Works), 1972, pp 196-197 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika, No 2, 1973, Abstract No 2.32.424)

Translation: KhGNIIM [Khar'kov State Scientific Research Institute of Metrology] has developed an IPPK [expansion unknown] instrument for verifying involute surfaces that is based on the interferometer method of measuring the involute in the polar system of coordinates, which method insures the highest degree of accuracy. The involute profile is verified on the instrument by comparing the actual coordinates of discrete points on the profile being verified with theoretical points that are determined for each of the radii of the main circumferences. The instrument consists of two interferometer devices that measure angular and linear displacement. The angular interferometer has two actuating arms and no reference mirror, and also contains two system of compensators and angular reflectors. The linear relationship between the

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USSR

GAFANOVICH, G. YA. and GATSKALOVA, T. G., Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972, pp 196-197

displacements of the angular reflectors and the rotation of the involute cam is provided by a combination of a disk and rotary rulers. The interferometer that measures the radius vector is built according to the design of the Michaelson interferometer, and includes a device that makes it possible to equate the intensity of the rays reflected from the surface being investigated and from the reference mirror. The unit operates with a colorless light source, but can also operate in monochromatic light. It enables sample involute cams with main circumference radii of 35 to 150 mm to be verified. Surface verification error is on the order of 0.5-1 micron. The use of the interferometer method to verify and certify the involute makes it possible to provide the upper branch of a verificatory system for involute gear wheels and to reduce the measurement of the involute to the measurement of linear and angular values, which is presently done with an adequate degree of accuracy. It also makes it possible to connect the system by which measurement units are transmitted during the measurement of gear wheels, when involute wheels are concerned, with the upper branches of verificatory systems for end measures of length and angular measures, or directly with the standard light wave length.

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1/2   020   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--A FREQUENCY FERRODYNAMIC SYSTEM OF CONTROL AND REGULATION
    INSTRUMENTS -U-
AUTHOR-(05)-DIDENKO, K.I., BRAUDE, V.A., GAFANOVICH, M.D., ZAGARIY, G.I.,
    LEVIN, V.M.
COUNTRY OF INFO--USSR

SOURCE--A FREQUENCY FERRODYNAMIC SYSTEM OF CONTROL AND REGULATION
    INSTRUMENTS. CHASTOTNO FERRODYNAMICHESKAYA SISTEMA PRIBOROV KONTROLYA I
DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MECH., IND., CIVIL AND
    MARINE ENGR
TOPIC TAGS--FREQUENCY CONTROL, FERROMAGNETIC STRUCTURE, ELECTRONIC
    EQUIPMENT, DESIGN BUREAU, INDUSTRIAL AUTOMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0576   STEP NO--UR/0000/70/000/000/0001/0222

CIRC ACCESSION NO--AM0110369
                    UNCLASSIFIED

CIRC ACCESSION NO--AM0110369
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 3.   CHAPTER I   THE
COMPOSITION AND STRUCTURE OF A COMPLEX OF FREQUENCY FERRODYNAMIC
EQUIPMENT 4.   II UNIFIED NODES, UNITS AND ELEMENTS 14.   III
PRIMARY MEASURING INSTRUMENTS AND COMPLEXES 100.   IV SECONDARY
INSTRUMENTS AND MECHANISMS 169.   V REGULATORS AND AUXILIARY
MECHANISMS 207.   LITERATURE 221.   EXAMINED ARE COMPOSITION,
STRUCTURE, PRINCIPLES OF DESIGN AND BASIC TECHNICAL CHARACTERISTICS OF A
COMPLEX OF EQUIPMENT DESIGNED AT THE SPECIAL CONSTRUCTION BUREAU OF
SYSTEMS OF AUTOMATIC CONTROL IN KHAR'KOV FOR THE CONSTRUCTION OF VARIOUS
AUTOMIZED SYSTEMS OF CONTROL AND REGULATION IN VARIOUS BRANCHES OF
INDUSTRY. THE BOOK IS FOR SPECIALISTS IN THE FIELD OF AUTOMATION OF
PRODUCTION DESIGNING SYSTEMS OF AUTOMATION IN THEIR INDUSTRIAL
OPERATION.

UNCLASSIFIED

USSR

UDC 536.46:533.6

GABIDOVSKIY, A. G., GAFAROV, A. S., REPIN, V. B., KHALITOV, N. Kh.

"Area of Existence as a Function of Diameter of Injection Pipe"

Sb. Aspirantsk. Rabot. Kazan. Un-t. Tochn. Nauki. Mekh. Fiz. [Collected Post Graduate Writings of Kazan' University, Precision Mechanics, Mechanical Physics], No 2, 1972, pp 91-94, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 B776 by G. M. Makhviladze).

Translation: An experimental study is performed into the influence of the diameter of an injection pipe on the area of existence of relaxation vibration combustion. The fuel mixture used is city gas and air. The experiments were performed at room temperature and atmospheric pressure. The area of existence of relaxation vibration combustion was determined in the coordinates gas mixture consumption vs. mixture concentration. The boundaries of flame-out and breakthrough are determined for various diameters of injection tubes. The area of existence of relaxation vibration combustion is displaced in the direction of higher consumptions and higher concentrations as the diameter of the injection tube is increased.

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USSR   UDC 620.197.6:621.791.763-1

PORTNOY, N. D., and GEYNRIKHSDORF, N. G., Candidates of Technical Sciences,
GAFAROV, N. T., NOVIKOVA, Ye. Z. (Ural Railroad Car Plant), TARASOVA, A. A.,
and KARPECHENKOVA, G. M. (Ural Scientific Research Institute of Ferrous
Metallurgy), Engineers

"Characteristics of Certain Protective Coatings Used in Point Resistance
Welding"

Abstract: A study was made of the effect of impact strength, film elas-
ticity, covering power, and electrical conductivity of corrosion-resistant
coatings based on various lacquers on joint quality during welding of type-
09G2 steel. Fifteen percent aluminum powder was added to two of the
lacquers in order to increase electrical conductivity. With coatings
based on lacquers 170 and LSP-1 welding can be done for six days after
application. The quality of welded joints covered with composition 119
is decreased if welding is performed more than two days after application
of the coating. Oil-base paints are compatible with coatings based on
composition 119 and 170 lacquer, but do not dry in the established time
when painted over LSP-1 lacquer. Coatings based on 170 lacquer have the
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USSR

PORTNOY, N. D.; et al, Svarochnoye Proizvodstvo, No 10, Oct 70, pp 43-45

greatest impact strength. The impact strength of coatings based on LSP-1 lacquer decreases as the temperature increases to 70°C. Such properties of coatings as elasticity, covering power, hardness, heat resistance, and drying time fall within the established norms set by the standards. When parts are painted with LSP-1 varnish and composition 119, the content of xylene in the working area somewhat exceeds the safety norm. When 170 varnish is used, the content of harmful substances falls within the safety norms. The best technological and mechanical properties are provided by corrosion-resistant, low-toxicity coatings based on 170 varnish.

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USSR

UDC: 911.3.616.9.576.89(479.24)

GADZHIYEV, A. T., GAFAROVA, F. G., and MUTAFAYEVA, Z. A.

"The Effect of Anthropogenic Factors on the Distribution of Disease Vectors"
(Azerbaydchan SSR)

V sb. 5-ya Mezhvuz. zoogeogr. konferentsiya "Vliyanie antropogen. faktorov
na formir. zoogeogr. kompleksov" Ch. I. (Fifth Joint Higher Education In-
stitution Zoogeographic Conference on the Effect of Anthropogenic Factors
on the Formation of Zoogeographic Complexes. Part I -- collection of works),
Kazan, 1970, pp 76-78 (from RZh-36, Meditsinskaya Geografiya, No 1, Jan 71,
Abstract No 1.36.69 by Yu. Dubrovskiy)

Translation: The red-tailed Libyan jird and the fleas specific to this
species have totally disappeared following the irrigation and tilling of
the Shirvanskaya, Mil'skaya, and Muganskaya steppe. At the same time this
rodent has become widespread in the foothills, and the fleas, which are
plague vectors have followed. The water vole has infiltrated along the
irrigation canals into the heart of the steppe, carrying its specific para-
sites, the tularemia vectors Laelaps muris, Hyperlaelaps amphibius, Haemola-
elaps glasgowi. The forest belts planted along the canals are now infil-
trated with house and field mice and their mites -- L. agilis and L.

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USSR

GADZHIYEV, A. T., et al,   V sb.. 5-ya Mezhvuz. zoogeogr. konferentsiya
"Vliyanie antropogen. faktorov na formir. zoogeogr. kompleksov" Ch. 1.
(Fifth Joint Higher Education Institution Zoogeographic Conference on the
Effect of Anthropogenic Factors on the Formation of Zoogeographic Complexes.
Part I — collection of works), Kazan, 1970, pp 76-78 (from RZh-36, Medit-
sinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.69 by Yu. Dubrovskiy)

algericus. The nests of birds of the sparrow family in the forest belt
contain great numbers of Ornithonyssus sylvarum, Steatonyssus viator and
Dermanyssus passerinus. The emergence of new parasite cenoses provides
the conditions for new natural foci of disease.

2/2

TITLE--PROPERTIES OF EXCITED STATES OF SAMARIUM 147 AND PROMETHIUM 149 -U-

UNCLASSIFIED   PROCESSING DATE--27NOV70

AUTHOR-(04)-BEGZHANOV, R.B., GAFFAROV, D.G., ILKHAMDZHANOV, N., MUMINOV, A.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK UZB. SSR. SER. FIZ.-MAT. NAUK 1970, 14(2), 65-8

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--EXCITED STATE, SAMARIUM ISOTOPE, PROMETHIUM ISOTOPE, CASCADE, MAGNETIC MOMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0570

STEP NO--UR/0166/70/014/002/0065/0068

CIRC ACCESSION NO--AP0137655

UNCLASSIFIED

UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ANGULAR CORRELATIONS OF THE
CASCADE GAMMA TRANSITIONS AND THE MAGNETIC MOMENTS OF PRIME147 SM AND
PRIME149 PM EXCITED STATES WERE MEASURED WITH THE FAST SLOW COINCIDENCE
CIRCUIT, THE TIME RESOLN. OF WHICH WAS SIMILAR TO 5 NSEC. THE
MEASUREMENTS OF PRIME147 SM EXCITED STATES WERE PERFORMED WITH A
PRIME147 EU SOURCE, PREPD. BY 18-MEV P IRRADN. OF NATURAL SM; THE
MEASUREMENTS OF PRIME149 PM WERE MADE WITH A PRIME149 ND SOURCE, PREPD.
BY THERMAL N IRRADN. OF PRIME148 ND (ENRICHED UP TO 98PERCENT). THE
THEORETICAL AND EXPTL. VALUES OF MAGNETIC MOMENTS OF THESE EXCITED
STATES ARE COMPARED. THE VALUES OF THE QUADRUPOLE MAGNETIC MOMENTS
ENABLE CONCLUDING THE FORM OF PRIME147 SM AND PRIME149 PM NUCLEI. THE
NATURE OF THE EXCITED STATES OF TRANSIENT REGION NUCLEI (PRIME147 SM AND
PRIME149 PM) CAN BE EXPLAINED BY THE KISLINGER SORCUSEN PHONON MODEL, BY
TAKING INTO CONSIDERATION THE EFFECTS OF THE SUPERFLUIDITY IN SPHERICAL
NUCLEI, OF THE POLARIZATION OF THE CORE OF THE NUCLEI, AND THE QUASI
PARTICLE PHONON COUPLING.   FACILITY: INST. YAD. FIZ., TASHKENT,
USSR.

UNCLASSIFIED

USSR   UDC 678.744

SEMENOVA, L. N., and GAFUROV, B. L., Institute of Chemistry, Acad. Sc. UzSSR

"Synthesis and Investigation of Novel Ion Exchange Resins With Phosphorus
Containing Ionogenic Groups"

Tashkent, Uzbekskiy Khimicheskiy Zhurnal, No 4, 1973, pp 52-54

Abstract: The phosphorylation process of the copolymer of itaconic acid
with styrene was studied and water soluble polyelectrolytes were synthesized
containing both the weakly and medium acidic ionogenic groups. Optimal condi-
tions for the phosphorylation of the copolymer with phosphorus trichloride
have been established. The reduced viscosity of the aqueous solution of
phosphorylated copolymer expressed as a function of the concentration has the
shape of a curve characteristic of the polyelectrolytes. Potentiometric
titration of aqueous solutions of the copolymer shows that the synthesized
copolymer has two ionogenic groups with different acidity.

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1/2   029
UNCLASSIFIED
PROCESSING DATE--27NOV70
TITLE--EFFECT OF OXYGEN ON THE ELECTRICAL CONDUCTIVITY OF NICKEL NITRATE
FILLED, HEAT TREATED POLYACRYLONITRILE -U-
AUTHOR-(03)-MAGRUPOV, M.A., GUFUROV, KH.M., GAFUROV, I.

COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970, 14(1), 20-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--OXYGEN, ELECTRICAL CONDUCTIVITY, NITRATE, NICKEL COMPOUND,
ACRYLONTRILE, THERMAL EFFECT, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1958
STEP NO--UR/0291/70/014/001/0020/0025
CIRC ACCESSION NO--AP0123739
UNCLASSIFIED

CIRC ACCESSION NO--AP0123739   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. POLYACRYLONITRILE (I) FILLED WITH
0-55.5 WT.PERCENT NI(NO SUB3)SUB2 WAS ANNEALED IN VACUUM AT 220, 300, OR
400DEGREES. THE ELEC. COND. (SIGMA) AND THE ACTIVATION ENERGY (E) OF THE
ELEC. COND. OF THE ANNEALED I SAMPLES WERE DETD. AFTER HEATING THEM IN
AIR AT 101-240DEGREES. THERE IS AN INCREASE OF SIGMA AND A DECREASE OF
E (DETD. AT 20DEGREES IN AIR) WITH AN INCREASE IN NI(NO SUB3)SUB2
CONTENTS AND ANNEALING TEMP. HEATING IN AIR SAMPLES ANNEALED BELOW
300DEGREES (THE TEMP. OF NI(NO SUB3)SUB2 DECOMPN.) TO NIO WHICH ABSORBS
O) CAUSES LOWERING OF SIGMA AND E; FOR I ANNEALED ABOVE 300DEGREES,
SIGMA INCREASES AND E DECREASES.   FACILITY: TASHKENT. GOSUNIV.
IM. LENINA, TASHKENT, USSR.

UNCLASSIFIED

USSR

GAFUROV, M. U.

"Multidimensional Random Walk"

Nauch. tr. Tashkent. un-t (Scientific Works of Tashkent University), 1972, vyp. 402, pp 30-33 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V65)

Translation: For the d-dimensional random walk with identically distributed steps $\bar{x}_k$

$$P\{\bar{x}_k = \pm \bar{e}_j\} = p_j^{\pm} > 0, \quad \sum_{j=1}^{d} (p_j^{+} + p_j^{-}) = 1$$

$\bar{e}_j$ ($j = 1, \ldots, d$) are the unit vectors of the d-dimensional space, the necessary and sufficient condition of reflexivity is established for $d \leq 2$. For the time of first comparison of the sums,

$$S_n = \sum_{k=1}^{n} \bar{x}_k \quad \text{and} \quad S_n' = \sum_{k=1}^{n} \bar{x}_n' \quad (P\{x_k' = \pm\bar{e}_j\} = q_j^{\pm} > 0),$$

$$T' = \min\{k : 1 \leq k \leq \infty, \ S_k = \bar{S}_k'\},$$

1/2

USSR

GAFUROV, M. U., Nauch. tr. Tashkent. un-t, 1972, vyp 402, pp 30-33

the necessary and sufficient condition of nondegeneracy is established
$(P\{T' < \infty\} = 1)$.

2/2

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USSR

UDC 519.2

GAFUROV, M. U.

"Estimate of Convergence in Some F. Spitzer Theorems"

Nauchn. tr. Tashkent. un-t (Scientific Works of Tashkent University), 1972, vyp. 402, pp 34-38 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V66)

Translation: A study was made of the one-dimensional integral random walk described by the sums $S_0 = 0$, $S_n = \sum_{k=1}^{n} x_k$ $(n \geq 1)$ of the infinite random variables with the general distribution $p(x) = P\{x_k = x\}$. Let N_n be the number of positive S_k, $k = 1, \ldots, n$. In this paper the following limit theorems are established for the distributions N_n with estimates of the remainder terms.

Theorem 1. If $Mx_k = 0$ and for some $\varepsilon > 0$ $M|x_1|^{2+\varepsilon} < \infty$, then when $n \to \infty$

$$\frac{1}{\sqrt{n}} \sum P\{N_k = 0\} - \frac{2}{\sqrt{\pi}} e^{\alpha} = 0(1/\ln n) \left(\alpha = \sum_{k=1}^{\infty} (1/k)[(1/2) - P\{S_k > 0\}] \right)$$

1/2

USSR

GAFUROV, M. U., Nauchn. tr. Tashkent. un-t, 1972, vyp. 402, pp 34-38

$$\frac{1}{\sqrt{n}} \; \Sigma \; P \; \{N_k = k\} - (2/\sqrt{\pi})e^{-\alpha} = 0(1/\ln n).$$

Theorem 2. If for some $\varepsilon > 0$ $\Sigma \dfrac{P\{S_k > 0\}}{k^{1-\varepsilon}} < \infty$, then when $n \to \infty$

$$\sum_{k=0}^{n} P\{N_k = 0\} = ne^{-\sum_{k=1}^{\infty} \frac{P\{S_k > 0\}}{k}} + 0(n/\ln n),$$

$$P\{N_n = 0\} = e^{-\sum_{k=1}^{\infty} \frac{P\{S_k > 0\}}{k}} + 0(1/\ln n).$$

2/2

- 5 -

USSR   UDC 577.155

GAFUROV, N. N., and RASSKAZOV, V. A., Institute of Biologically Active Substances, Far Eastern Science Center, Academy of Sciences USSR, Vladivostok

"Some Properties of Mamushi Venom 5'-Nucleotidase"

Moscow, Biokhimiya, No 1, 1972, pp 184-187

Abstract: Preliminary study of phosphatase activity in venom from the eastern mamushi (Ancistrodon blomhiffi) revealed the presence of 5'-nucleotidase, 3'nucleotidase, and nonspecific phosphatase. Purified 5-nucleotidase was most active at pH 6.8 to 6.9. It was stable in storage, remaining active for 6 months at -4°C. Incubation at 60° for 15 minutes had little effect, but heating to 70°C for 15 minutes completely inactivated the enzyme. It was activated by Mg^{2+} ions and inhibited by Zn^{2+} ions. The enzyme specifically split nucleotide-5' phosphates but did not act on 3'-phosphatenucleotides, ATP, glucose-6-phosphate, or para-nitrophenylphosphate. It hydrolyzed 5'-ribo- and deoxyribonucleotides at approximately the same rate.

1/1

TITLE---SYNTHESIS OF POLYNITROAZOALKANOLS AND SOME OF THEIR DERIVATIVES -U-

AUTHOR-(03)-YEREMENKO, L.T., GAFUROV, R.G., KOREPIN, A.G.

COUNTRY OF INFO--USSR

SOURCE---IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 445-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS---ORGANIC NITRO COMPOUND, AZO COMPOUND, FLUORINATED ORGANIC
COMPOUND, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0743   STEP NO--UR/0062/70/000/002/0445/0447

CIRC ACCESSION NO--AP0124413
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0124413
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KEEPING 12 ML 40PERCENT FORMALIN
WITH 17 G 1,FLUORO,1,1,4,TRINITRO,4,AZABUTANE 3 HR AT 40DEGREES AND PH
6-7 (WITH ADDED NA SUB2 CO SUB3), THEN 24 HR AT 15-20DEGREES, GAVE,
AFTER ACIDIFICATION TO PH 2-3, 96PERCENT (O SUB2 N) SUB2 CFCH SUB2 CH
SUB2 N(NO SUB2)CH SUB2 OH (I), M. 37-8DEGREES. SIMILARLY WAS PREPD.
48PERCENT C(NO SUB2) SUB3 CH SUB2 N(NO SUB2)CH SUB2 OH (II), DECOMP.
75-6DEGREES, AND 95PERCENT (O SUB2 N) SUB3 C(CH SUB2) SUB2 N(NO SUB2)CH
SUB2 OH, M. 78-9DEGREES. I AND ACCL-ALCL SUB3 4 HR AT 50DEGREES GAVE
92PERCENT RN(NO SUB2)CH SUB2 CL (R EQUALS CF(NO SUB2) SUB2 CH SUB2 CH
SUB2), M. 44-5DEGREES. SIMILARLY WAS PREPD. 92PERCENT OF THE ANALOG
WITH R EQUALS FC(NO SUB2) SUB2 CH SUB2, M. 62-3DEGREES; 93PERCENT R
EQUALS (O SUB2 N) SUB3 CCH SUB2 CH SUB2 (III), M. 68-9DEGREES; AND
93PERCENT R EQUALS (O SUB2 N) SUB3 CCH SUB2, M. 55-6DEGREES. II KEPT 2
DAYS IN ACCL GAVE 100PERCENT RN(NO SUB2)CH SUB2 OAC (R EQUALS (O SUB2 N)
SUB3 CCH SUB2), M. 74-5DEGREES. III IN MECN TREATED WITH AGNO SUB3 0.5
HR GAVE 87PERCENT RN(NO SUB2)CH SUB2 ONO SUB2 (R EQUALS (O SUB2 N) SUB3
CCH SUB2 CH SUB2), M. 97-8DEGREES. SIMILARLY WAS PREPD. THE ANALOG WITH
R EQUALS (O SUB2 N) SUB3 CCH SUB2, M. 41-2DEGREES.   FACILITY:
INST. FIZ., MOSCOW, USSR.

TITLE--SYNTHESIS OF BIS,2,FLUORO,2,2DINITROETHYL,AMINE AND
   TRIS,2,FLUORO,2,2,DINITROETHYL AMINE -U-

AUTHOR-(04)-GAFUROV, F.G., SVIRIDOV, S.I., NATSIBULLIN, F.YA., YEREMENKO,
   L.T.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 383-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PROPULSION AND FUELS

TOPIC TAGS--CHEMICAL SYNTHESIS, FLUORINATED ORGANIC COMPOUND, AMINE,
   FLUORONITRO COMPOUND, AMMONIUM SALT, CHEMICAL DECOMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0822   STEP NO--UR/0062/70/000/002/0383/0387

CIRC ACCESSION NO--AP0119726
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0119726
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDING 39.8 G ((O SUB2 N) SUB2 CH
  SUB2 CH SUB2) NH AS THE DI,K SALT TO 200 G HNO SUB3 (D. 1.5) AND 50 G H
  SUB2 SO SUB4 (D. 1.84) AT NEGATIVE5 TO NEGATIVE10DEGREES, FOLLOWED AT
  0-5DEGREES BY 850 G H SUB2 SO SUB4, AND KEEPING THE MIXT. 1 HR GAVE A
  PPT., WHICH AFTER BEING WASHED WITH H SUB2 SO SUB4 OF GRADUALLY
  DECREASING CONCN. (FINALLY 5PERCENT) YIELDED O SUB2 NN(CH SUB2 CH(NO
  SUB2) SUB2) SUB2, DECOMPD. 100-10EGREES, WHICH IN MEOH WITH ALC. KOH 0.5
  HR GAVE THE DI,K SALT, DECOMPD. 128DEGREES; DI,NA SALT, PREPD.
  SIMILARLY, DECOMPD. 121DEGREES; DI,NH SUB4 SALT DECOMPD. 99DEGREES.
  THE DI,NA DALT IN H SUB2 O TREATED AT 0-5DEGREES WITH F DILD, WITH 20
  PARTS N GAVE 45PERCENT O SUB2 NN(CH SUB2 CF(NO SUB2) SUB2) SUB2 (I), M.
  86DEGREES. I FORMED FROM THE DI,NH SUB4 SALT IN 40PERCENT YIELD AND
  FROM THE DI,K SALT IN 44PERCENT YIELD. TO 15.4 G CH(NO SUB2) SUB2 CH
  SUB2 OH IN H SUB2 O WAS ADDED, AT 50DEGREES OVER 4 HR, 34 ML 5PERCENT NH
  SUB4 OH AT PH 7.5-8 TO YIELD NH(CH SUB2 CF(NO SUB2) SUB2) SUB2, M.
  42-3DEGREES, WHICH IN CONCD. H SUB2 SO SUB4 WITH HNO SUB3 (D. 1.5) AT
  ROOM TEMP. 2 HR GAVE 70PERCENT I. AQ. SOLN. OF ((O SUB2 N) SUB2 CKCH
  SUB2) SUB2 NCH SUB2 CH(NO SUB2) SUB2 TREATED WITH F,N GAVE 75PERCENT
  (CF(NO SUB2) SUB2 CH SUB2) SUB3 N, M. 78DEGREES.   FACILITY:
  INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

GAFUROV, R. G., SOGOMONYAN, YE. M., and YEREMENKO, L. T., Institute of Chemical Physics, Academy of Sciences USSR

"Synthesis of Nitroalkyl-N-nitrosoamines"

Abstract: The authors studied the N-nitrosation of different Mannich bases — nitroalkane derivatives — with nitrous acid and its acid halides. N-Nitroso-amines are obtained by the action of an $NaNO_2$ solution in concentrated H_2SO_4 on nitroalkylamines. N-Nitrosoamines counter synthesis is effected by the fluorination of the dipotassium salt of 3-nitroso-1,1,5,5-tetranitro-3-azapentane. Nitrosyl fluoride in an excellent N-nitrosating agent towards amines, forming the corresponding N-nitrosoamines. Nitrosyl chloride energetically nitrosates Mannich bases, but does not react with weakly basic amines in nonpolar organic solvents. All the resultant N-nitrosoamines are smoothly converted to N-nitroamines by the action of concentrated nitric acid, but are not oxidized by trifluoroperacetic acid. However, N-nitrosoamines are readily converted to N-nitroamines if the reaction medium contains concentrated H_2SO_4 along with the trifluoroperacetic acid.

1/1

TITLE--SYNTHESIS OF PRIMARY N,FLUORODINITROALKYL N,NITRAMINES -U-

AUTHOR-(03)-GAFUROV, R.G., KOREPIN, A.G., YEREMENKO, I.T.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 442-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, FLUORINATED ORGANIC COMPOUND, AMINE,
FLUORONITRO COMPOUND, CHEMICAL DECOMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0848   STEP NO--UR/0062/70/000/002/0442/0443

CIRC ACCESSION NO--AP0119752
                          UNCLASSIFIED

2/3   018   UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0119752
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDG. SLOWLY 7.5 ML HNO SUB3 (D.
1.51) TO 2.1 G FC(NO SUB2) SUB2 (CH SUB2) SUB2 NHAC IN AC SUB2 O AT
ODEGREES AND KEEPING 5 HR AT 15DEGREES GAVE 76PERCENT FC(NO SUB2) SUB2
(CH SUB2) SUB2 N (NO SUB2) AC (IA), M.   63-4PERCENT. KI AND (O SUB2 N)
SUB3 CCH SUB2 NHAC IN 12 HR IN 85PERCENT MEOH GAVE 97PERCENT ACNHCH SUB2
(NO SUB2) SUB2 K (I), DECOMP. 226DEGREES, WHICH, SUSPENDED IN H SUB2 O
AT ODEGREES AND TREATED 3 HR WITH 1:45F, N, GAVE 92.8PERCENT FC(NO SUB2)
SUB2 NEGATIVE CH SUB2 NHAC (II), M. 57-8DEGREES, WHILE REACTION OF THE K
SALT WITH AQ.   H SUB2 SO SUB4 AT PH 2 AT ODEGREES GAVE HC (NO SUB2)
SUB2 CH SUB2 NHAC (III). M. 58-9DEGREES.   I AND BR,CH SUB2 CL SUB2 GAVE
KBR AND 100DEGREES BRC (NO SUB2) SUB2 CH SUB2 NHAC, M.   111-12DEGREES.
NITRATION IN AC SUB2 O OF II GAVE IN 10 HR 46PERCENT FC (NO SUB2) 2
NEGATIVE CH SUB2 N (NO SUB2) AC, M. 36.5-7.5DEGREES. SIMILARLY, III
GAVE 45PERCENT HC (NO SUB2) SUB2 CH SUB2 N (NO SUB2) AC, M. 73-4DEGREES.
IA AND 12PERCENT NH SUB4 OH AT ODEGREES UNTIL DISSOLVED, THEN TREATED
WITH HCI TO PH 3 GAVE 96PERCENT RNHNO SUB2 (R EQUALS CF (NO SUB2) SUB2
(CH SUB2) SUB2), M. 56-7DEGREES. SIMILARLY WAS PREPD.   62PERCENT FC
(NO SUB2) SUB2 CH SUB2 ANALOG, DECOMP. 30DEGREES, WHICH WAS UNSTABLE IN
STORAGE. THE LATTER KEPT WITH 27PERCENT FORMALIN 6 HR AT 0-5DEGREES
GAVE 82PERCENT 1,FLUORO,1,1,3,TRINITRO,3,AZA,4,BUTANOL., M. 56-7DEGREES.

                         UNCLASSIFIED

3/3   018   UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0119752
ABSTRACT/EXTRACT--THUS, IF THE R GROUP IN RNHAC HAS A STRONG I EFFECT, THE
  DEGREE OF AMMUNIZATION OF THE N ATOM BECOMES HIGH ENOUGH TO LOWER ITS
  REACTIVITY WITH ELECTROPHILIC AGENTS, WHILE INTRODUCTION OF F INTO THE
  ADJACENT POSITION LOWERS THE I EFFECT OF R, MAKING POSSIBLE N,
  NITRATION.   FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

Polymers and Polymerization

IBRAGIMOV, F., GAFUROV, T. G., and SIDEL'KOVSKAYA, F. P., Scientific Research
Institute of Chemistry and Technology of Cotton Cellulose

"Unsaturated Alcohols. 2-[3-(Pyrrolidonyl- and Piperidonyl-1)-2-hydroxypropoxy]
ethyl esters of Acrylic and Methacrylic Acids"

Abstract: Reaction of 2-(2,3-epoxypropylhydroxy)ethyl esters of acrylic and
methacrylic acids with pyrrolidone-2 and piperidone-2 gave their 2-[3-(pyrro-
lidonyl)-1)- and 3-(piperidonyl-1)-2-hydroxypropoxy] ethyl esters. To 0.2 g-
mole of 2-hydroxyethyl ester of acrylic acid in 30 ml xylene, 0.2 g-atom of
sodium was added with energetic stirring and cooling. Then 0.2 g-mole of
epichlorohydrin was added dropwise at 30-35° and stirred for 4 hrs. After
cooling, the product was extracted with ether and distilled, yielding 2-(2,3-
epoxypropyloxy)-ethyl ester of acrylic acid (I), b. p. 25-26°/18 mm, d_4^{20}
1.0594, n_D^{20} 1.4675. 2-(2,3-epoxypropoxy)ethyl ester of metacrylic acid was
obtained analogously, b.p. 31-32°/15 mm, d_4^{20} 1.1082, n_D^{20} 1.4721. Reacting (I)

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USSR

IBRAGIMOV, F., et al., Zhurnal Organicheskoy Khimii, Vol 7, No 9, Sep 71, pp
1984-1986

with pyrrolidone-2 in dioxane at 90-95° gave 2-{3-(pyrrolidonyl-1)-2-hydroxy-
propoxy)ethyl ester of acrylic acid, b. p. 123-128°/12 mm, d_4^{20} 1.1120, n_D^{20}
1.4862.

2/2

1/2   029   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--SYNTHESIS AND INFRARED SPECTROSCOPIC STUDIES OF CELLULOSE MODIFIED
   WITH 2,MERCAPTOBENZOTHIAZOLE DERIVATIVES -U-
AUTHOR-(05)-GRIGORYAN, G.L., TULYAGANOV, M.M., GAFUROV, T.G., ADYLOV, A.,
   TASHPULATOV, YU.T.
COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 753-60

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, IR SPECTRUM, SPECTROSCOPIC ANALYSIS,
   CELLULOSE, MERCAPTAN, BENZENE DERIVATIVE, EPICHLOROHYDRIN, CHEMICAL
   REACTION MECHANISM, CHEMICAL BONDING, THIAZOLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1228   STEP NO--UR/0459/70/012/004/0753/0760

CIRC ACCESSION NO--AP0134902
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0134902
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.
  3,(3,CHLORO,2,HYDROXYPROPYL)BENZOTHIAZOLE,2,THIONE (I) AND
  2,(2,3,EPOXYPROPYLTHIO)BENZOTHIAZOLE (II) WERE PREPE. FROM
  2,MERCAPTOBENZOTHIAZOLE (CAPTAX) (III) AND EPICHLOROHYDRIN.   A REACTION
  MECHANISM IS PROPOSED. CELLULOSE (IV) WAS MODIFIED WITH I, II, AND A
  1:1 III,OCN(CH SUB2) SUB6 NCO ADDUCT AT 150DEGREES TO GIVE S AND N
  CONTG. PRODUCTS. SPECTRAL DATA SHOWED THAT THE MODIFYING AGENTS WERE
  CHEM. BOUND TO IV.   FACILITY: NAUCH.-ISSLED. INST. KHIM.
  TEKHNOL. KHLOP. TSELLYUL., TASHKENT, USSR.

UNCLASSIFIED

TITLE--SYNTHESIS OF BENZOTHIAZOL 2 YLTHIO CELLULOSE -U-

AUTHOR-(03)-GRIGORYAN, G.L., TULYAGANOV, M.M., GAFUROV, T.G.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(3), 200-1

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--THIAZOLE, CHLORINATED ORGANIC COMPOUND, BENZENE DERIVATIVE,
  CELLULOSE RESIN, EXCHANGE REACTION, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0668   STEP NO--UR/0460/70/012/003/0200/0201

CIRC ACCESSION NO--AP0124340
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0124340

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE REACTION OF CHLORINATED
CELLULOSE WITH KSR (R IS 2 BENZOTHIAZOLYL) GIVES THE TITLE COMPD. (I).
THE REACTION PROCEEDS TO COMPLETION IN HCONME SUB2 SOLN. AT 150DEGREES
IN 3 HR. IN WATER IN 6 HR AT 100DEGREES, ONLY SIMILAR TO 50PERCENT
REPLACEMENT OF CL WITH SR WAS ACHEIVED; HOWEVER, THE PRODUCT HAD LIGHTER
COLOR THAN THAT PREPD. IN HCO NME SUB2.   FACILITY: NAUCH.
ISSLED. INST. KHIM. TEKHNOL. KHLOP. TSELLYUL., TASHKENT, USSR.

UNCLASSIFIED

1/2   041   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--CONFORMATIONAL TRANSITIONS DURING THE DEFORMATION OF ORIENTED
   POLYETHYLENE FIBERS -U-
AUTHOR-(02)-GAFUROV, U.G., NOVAK, I.I.

COUNTRY OF INFO--USSR

SOURCE--MEKH. POLIM. 1970, 6(1), 170-2

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELASTIC DEFORMATION, POLYETHYLENE, SYNTHETIC FIBER, IR
   SPECTRUM, ISOMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0344   STEP NO--UR/0374/70/006/001/0170/0172

CIRC ACCESSION NO--AP0111538
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0111538

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. CHANGES IN THE CONTENT OF COILED
ISOMERS DURING ELASTIC DEFORMATION OF ORIENTED LOW PRESSURE POLYETHYLENE
(I) FIBERS WERE STUDIED BY IR SPECTROSCOPY AT 1200-400 CM PRIME
NEGATIVE1.   ABSORPTION BAND MAX. AT 1270, 1305, 1350, AND 1379 CM PRIME
NEGATIVE1 INDICATED A LINEAR DECREASE IN THE CONTENT OF ALL COILED
GAUCHE ISOMERS IN THE AMORPHOUS REGION OF I. THE RELATIVE CONTENT OF
GAUCHE AND TRANS CONFORMATIONS WAS EVALUATED AS A FUNCTION OF TEMP. AND
DEFORMATION FROM STATISTICAL CONSIDERATIONS. THE DATA AGREED WITH THE
RESULTS OF EARLIER STUDIES.

UNCLASSIFIED

USSR

UDC 77

GAFUROVA, N. S.

"Joint Aging of Photographic Emulsions With Different Degrees of Dispersion of Silver Halide Crystals"

Translation: The change in fogging with time of aging for mixtures of coarse-grained ($x = 0.75$ μ^2) emulsions and fine-grained ($x = 0.015$ μ^2) emulsions aged separately or jointly (with separate initial aging of one or both emulsions or with its exclusion) is investigated. It was observed that the presence of un-aged fine-grained emulsions in a mixture before the beginning of aging, independent of how the coarse-grained emulsion was aged before mixing, leads to a decrease in fogging (the major contribution to which is made by the coarse-grained emulsion), especially in extended aging. With the aging of fine-grained

1/1

GAFUROVA, N. S., Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda
fotogr. chuvstvitel'nosti, no place of publication given, Vneshtorgizdat, no
year given, pp 337-340

crystals there is evidently aging due to surface sensitivity centers which arise
or already exist in the coarse-grained crystals. The presence of sta-salt
sharply retards the defogging action of small-grained emulsions in the mixture,
and the presence of KCNS somewhat accelerates it. A. L. Kartuzhanskiy.

2/2

USSR   UDC 669.295   1

GEGER, V. E., CHEPRASOV, I. M., DMITRIYEV, V. N., FEDOTOV, Ye. I.,
GAFUROVA, N. Sh.

"The Mechanism of the Interaction of Titanium Tetrachloride with Magnesium"

Ordzhonikidze, Isvestiya Vysshikh Uchebnykh Savedeniy, Tsvetnaya
Metallurgiya, No 4, 1972, pp 59-63.

Abstract: The mechanism of magnesium-thermal reduction of titanium is
studied by quick cooling of the reaction products. The discovery of sponge
titanium on the cover of a commercial reactor in specially cooled recesses
and analysis of the structure of the sponge indicate that the sponge struc-
ture of titanium is a result of secondary processes occurring following
the chemical reactions. The appearance of the primary peculiarities of
thermal combustion during magnesium thermal reduction of titanium allows
us to look upon the occurrence of this process from the standpoint of the
theory of combustion.

1/1

USSR

UDC 681.3.001.019.3

KOLIN, K. K., GAGANOV, P. G.

"Evaluating the Resistance of Digital Computers to Malfunctions"

Translation: Several method of evaluating the program resistance of electronic computers to short-term malfunctions during reliability tests are analyzed. Criteria are presented allowing quantitative analysis of the statility, resistance, and reliability of operation of the digital computer to be evaluated, taking into account the availability of means for instrument and programmed monitoring. A method is suggested for performing tests and processing the results . Seven biblio. refs.

1/1

USSR

UDC: 519.2

GAGANOV, V. A.

"On Estimates of Factorial Moments of the Number of Inter-
sections of the Zero Level by a Gaussian Stationary Process"

Vestn. Leningr. un-ta (Leningrad University Herald), 1973,
No 1, pp 136-138 (from RZh-Kibernetika, No 5, May 73, abstract
No 5V127 by the author)

Translation: It is known that the m-th factorial moment of
the number of intersections of the zero level by a Gaussian
stationary process is bounded from above with accuracy to a
constant factor by the multiple integral

$$J_m = \int (m) \int_D \prod_{i=2}^{m} (\tau_i + \tau_{i-1})^{-\frac{\beta}{2}} \prod_{i=1}^{m} \tau_i^{\frac{\beta}{2}-1} d\tau_i$$

where

$$D = \left\{ \tau_i \geqslant 0, \; i = 1, \ldots, m, \; \sum_{i=1}^{m} \tau_i < 1 \right\}, \quad 0 < \beta < 2.$$

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GAGANOV, V. A., Vestn. Leningr. un-ta, 1973, No 1, pp 136-138

In this paper calculation of the integral J_m is reduced to computing the sum of a series of multiplicity $[m/2]$. Some of the properties of Meyer's G-function were utilized.

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1/2   022   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--LOW PRESSURE ARC DISCHARGE STABILIZED BY A PLASMA JET -U-

AUTHOR-(03)-GAGANOV, YU.I., NIKOLAYEV, A.V., RYKALIN, N.N.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, FIZIKA I KHIMIYA OBRABOTKI MATERIALOV, NO 1, JAN-FEB 70,
PP 23-26
DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LOW PRESSURE EFFECT, ARC DISCHARGE, PLASMA JET

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1665   STEP NO--UR/0472/70/000/001/0023/0026

CIRC ACCESSION NO--AP0136926
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0136926
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE RESULTS OF AN EXPERIMENTAL
STUDY OF THE ENERGY CHARACTERISTICS OF A DC ARC AT 5-10 TORR, STABILIZED
BY AN ARGON PLASMA JET, ARE STUDIED. THE ARC WAS EXCITED BETWEEN A
COPPER CATHODE AND ANODE (50 AND 100 MM DIAMETER, RESPECTIVELY). IT WAS
FOUND THAT THE REGION OF STABLE ARCING UNDER LOW PRESSURE WITH A
DIFFUSIVE CATHODE SPOT DEPENDS ON THE AMPERAGE USED, THE CRITICAL RANGE
OF WHICH IS 180-200 A.   FACILITY: INSTITUTE OF METALLURGY, USSR
ACADEMY OF SCIENCES.

UNCLASSIFIED

USSR   UDC 621.791.75.001:537.523.5

GAGANOV, YU. I., NIKOLAYEV, A. V., RYKALIN, N. N., Moscow;
Institute of Metallurgy, USSR Academy of Sciences

"Low-Pressure Arc Discharge Stabilized by a Plasma Jet"

Abstract: The results of an experimental study of the energy
characteristics of a dc arc at 5-10 torr, stabilized by an argon
plasma jet, are studied. The arc was excited between a copper
cathode and anode (50 and 100 mm diameter, respectively). It
was found that the region of stable arcing under low pressure
with a diffusive cathode spot depends on the amperage used, the
critical range of which is 180-200 a.

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1/2   045,   UNCLASSIFIED   PROCESSING DATE--11DEC70
TITLE--ON THE CHARGE COMPOSITION OF COSMIC RAY HEAVY NUCLEI WITH Z GREATER
   THAN 26 -U-
AUTHOR-(03)-IVANOVA, N.S., KULIKOV, V.N., GAGARIN, I.F.

COUNTRY OF INFO--USSR, HUNGARY

SOURCE--INTERNATIONAL CONFERENCE ON COSMIC RAYS, 11TH, BUDAPEST, HUNGARY,
   AUGUST 25-SEPTEMBER 4, 1969, PROCEEDINGS. VOLUME 1 ORIGIN AND GALACTIC
DATE PUBLISHED-------70

SUBJECT AREAS--SPACE TECHNOLOGY, ATMOSPHERIC SCIENCES

TOPIC TAGS--COSMIC RAY, HEAVY NUCLEUS, EMULSION, MAGNETOSPHERE, SPACECRAFT
   CARRIED EQUIPMENT/(U)ZOND 5 CIRCUMLUNAR PROBE, (U)SOYUZ 5 MANNED
   SPACECRAFT, (U)COSMOS 213 SATELLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605061/B04 STEP NO--HU/2506/70/029/000/0391/0394

CIRC ACCESSION NO--AT0144427
                          UNCLASSIFIED

CIRC ACCESSION NO--AT0144427

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE CHARGE
COMPOSITION OF HEAVY PRIMARY PARTICLES WITH Z GREATER THAN 26 IN
EMULSION STACKS EXPOSED CN SATELLITES AT AN ALTITUDE OF 300 KM (COSMOS
213 AND SOYUZ 5) AS WELL AS OUTSIDE THE EARTH'S MAGNETOSPHERE (ZOND 5).
THE EXPOSED STACKS MAKE IT POSSIBLE TO INVESTIGATE THE IONIZATION OF
HEAVY PARTICLES WITHIN A RNGE OF ABOUT 10 CM IN EMULSION. PRELIMINARY
DATA ARE PRESENTED ON THE FLUX OF NUCLEI WITH Z GREATER THAN OR EQUAL TO
26 AND ON THE RELATIVE ABUNDANCE (WITH RESPECT TO THE FE GROUP) OF HEAVY
PRIMARY PARTICLES WITH Z GREATER THAN OR EQUAL TO 30, Z GREATER THAN OR
EQUAL TO 40, ETC.   FACILITY: AKADEMIIA NAUK SSSR,
FIZIKO-TEKHNICHESKII INSTITUT, LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr: AP0040950

G

Planning Work in Standardization at Machine-Building Factories of Kuzbas. P. V. Gagarin. "Standarty i kachestvo", 1970, No. 1.

The article discusses the routine of planning the efforts in standardization and presents the formats to be filled in plan preparation. 1

REEL/FRAME
19750689

1/2   014   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--KINETICS OF PROPYLENE OXIDATION ON A BISMUTHMOLYBDENUM CATALYST -U-

AUTHOR-(04)-GORSHKOV, A.P., GAGARIN, S.G., KULCHIN, I.K., MARGOLIS, L.YA.

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(1), 59-63

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--CHEMICAL REACTION KINETICS, PROPYLENE, CATALYTIC OXIDATION,
  FORMALDEHYDE, CHEMICAL LABELLING, CHEMICAL REACTION MECHANISM, CHEMICAL
  REACTION RATE, CARBON ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1965   STEP NO--UR/0204/70/010/001/0059/0063

CIRC ACCESSION NO--AP0112929
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0112929
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MECHANISMS OF THE OXIDN. OF H SUB2
CU, ACH, ACROLEIN, AND PROPYLENE WERE STUDIED BY USING PRIME14 C LABELED
COMPDS. THE OXIDNS. WERE CARRIED OUT AT 460DEGREES ON A BI-MO
CATALYST. RATE CONSTS. OF THE INDIVIDUAL REACTIONS ARE GIVEN.
MECHANISMS ARE PROPOSED FOR THE OXIDN. OF PROPYLENE.   FACILITY:
INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

PUBLICATIONS

USSR

GAGARIN, Yu. and LEBEDEV, V.

Psikhologiya i Kosmos (Phychology and the Cosmos)

Moscow, "Molodaya Gvardiya," 2d edition, 1971, 341 pp

Translation: Annotation: Having taken the step into the uncertainty of the Universe, Yuriy Gagarin has stepped into immortality. The grandeur of his daring exploit will be realized many times in the future and in new ways. Many generations will be raised with his life being used as an example. Books and poems will be written and songs composed about Gagarin.
    And always people will be asking: what sort of a man was he?
    Whoever has had the good fortune to know Yuriy Gagarin, will forever remember the charming image of a wise, courageous, honest, modest man, a loyal comrade, and a true Communist. And not just simply remember, for Gagarin infected all who came in contact with him with his love of life, purposefull-ness, and creativeness.
    Yuriy Gagarin was indisputably one of the finest people of our time, and it was for this reason that he had the honor of being the first to rise to the stars and the first to travel the Cosmic routes.
    This book is about Man in the Cosmos. It was fated to become the living
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USSR

GAGARIN, Yu. and LEBEDEV, V., Molodaya Gvardiya," 2d edition, 1971, 341 pp

testament of the first Cosmonaut in the World. Turiy Gagarin placed his
author's signature on the cover on 25 March 1968; a day later he was gone.
    In his book Gagarin speaks of the Cosmos and courage, the horizons of
science and human daring. In these pages are his quests and doubts, and his
dreams of the future.

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Acc. Nr.: AN0051325   GAGARIN Yu. A   Ref. Code: UR 90/2

FROM: FBIS, Daily Report, Soviet Union, 15 April 1970, Vol. III,
No. 73, p. d 6-8

USSR

PROTON SCIENTIFIC LABORATORIES AID MEASUREMENT EXPERIMENTS

Moscow PRAVDA 12 Apr 70 p 3 L

[Interview with Moscow University Scientific Research Institute of Nuclear
Physics Laboratory Chief I.A. Savenko: "Proton--Explorer of the Universe"]

[Text] The era of man's conquest of space, which began with Yu. A. Gagarin's
first space flight, opened broad prospects to modern science to understanding
the secrets of the universe. In recent years space research has been accomplished
with the aid of many automatic apparatuses and manned craft, the results of
which are of considerable scientific and practical significance.

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Among the explorers of the universe an eminent place belongs to the Proton scientific laboratories. The first of these, weighing 12.2 tons, was launched about 5 years ago. For the first time it carried a multiton scientific apparatus for cosmic ray research beyond the limits of the atmosphere. Then followed the launching into earth orbit of stations Proton 2, 3, and, finally, 4, whose weight amounted to some 17 tons.

A PRAVDA correspondent asked Moscow University Scientific Research Institute of Nuclear Physics Laboratory Chief I.A. Savenko to answer questions connected with research in the Proton program.

Question: Why do the Proton stations' carry such considerable weight?

For many years various methods have been used to study cosmic rays, which are currents of charged particles--protons and heavier atomic nuclei. Cosmic particles acquire energy--from scores of millions to hundreds of billions of electron-volts. Breaking into the terrestrial atmosphere, they encounter nuclear atoms of the air. Here the complex nuclei are broken down into their component nucleons (protons and neutrons). Secondary particles of a different nature are now propagated. In these processes the cosmic ray primary particles expend their energy. As a result, a sharp reduction in the current of cosmic rays and a considerable change in their composition takes place. Thus, at sea level the strength of the current of high-energy particles is approximately 10,000 times less than at the upper limits of the atmosphere.

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In order to reduce to some extent the absorbent effect of the surrounding air the study of cosmic rays is conducted at high mountain stations, where the strength of high-energy particles is approximately 10 times greater than at sea level. The most complex apparatus is used for this. But even installations with a sensor working area of dozens of square meters cannot compensate for the absorption of particles in the earth's atmosphere. Hence, in order to study primary cosmic rays, for a long time scientists have used various means of aeronautics--probe ballons and high aerostats--with whose aid comparatively light scientific apparatus is raised to the upper layers of the atmosphere. However, this equipment has proved to be unsuitable for the study of particles of very high energy. The fact is that for physicists the recording of a cosmic ray particle is not enough. It is necessary to know what energy it acquires.

A new method of studying high-energy particles of cosmic rays, devised in the Soviet Union, has helped the solution of the problem. The basis of this method, proposed in 1954 by Doctor of Physico-Mathematical Sciences N.L. Prigorovoy, is the principle of measuring the energy of an individual particle with the aid of the so-called ionized calorimeter. It is connected with various apparatus which permit the study of the physical characteristics of the primary particle itself and also the peculiarity of its interaction with atomic nuclei.

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In an ionized calorimeter the energy of a primary particle is measured by its complete
absorption in a thick layer of matter. Hence all installations which use this
method are very heavy. Their weight amounts to many tons. But Soviet space technology
permits very heavy satellites to be launched into an earth orbit.

The ionized calorimeter method was also the basis of the first experiments with
particles of primary cosmic rays of ultrahigh energy directly in outer space.
This explains the great weight of the Proton series space stations.

Question: What main scientific results have been obtained by these stations?

Answer: In research into cosmic rays, the Proton satellites studied for the first
time by direct methods the energy distribution of cosmic ray particles in the
field of energies ranging from tens of billions of electron-volts to 100 trillion
electron-volts. This energy gap is the most "difficult" to study, and, prior to
the experiments on the Proton stations, information on it was of an approximate
nature.

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Research was then continued on the Proton 4 space station. Thanks to the use of
heavier and improved scientific apparatus, it was possible to extend the range of
measurements to 1 quadrillion electron-volts.

For the first time an attempt was also made on the Proton satellite to study by
direct methods the chemical composition of primary cosmic rays in the range of
energies above 2 trillion electron-volts. Research showed that with the growth in
the energy of particles, the Proton stream subsides faster that the heavy nucleus
stream. This conclusion "conflicts" with the widespread view of the constancy
of cosmic rays' chemical composition.

Streams of electrons of nongalactic origin, which have energies of hundreds of
millions of electron-volts were discovered. In addition, for the first time in the
USSR the Proton stations measured the sky's "luminance" in a gamma-ray range of
energies of tens and hundreds of millions of electron-volts. These measurements
have served as a point of departure in our investigation of the universe in the
gamma-astronomy sphere.

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Measurements were also made on the Proton space stations of one of the fundamental parameters which characterize the collision of particles with atomic nuclei--an effective cross section of the interaction of protons and of protons with carbon nuclei. Effective cross section is a concept which is used in nuclear physics to designate the probability of the interaction (meeting) of nuclei. Here one nucleus acts as a bombarding particle (cosmic radiation), and another as the target (the absorbing surface of the device on the proton).

High accuracy was achieved in the measurements because they were made outside the atmosphere. The fact of the growth of the effective cross section of inelastic interaction in proportion to an increase in the energy of the protons which fly into the nucleus has been established. Meanwhile, according to concepts which had previously been formed, the probability of the interaction of protons at superhigh energies should remain constant in a broad range of energies.
Question: Will you tell us about the prospects of cosmic ray research on heavy scientific stations.

Answer: Two main factors determine the research prospects--scientific problems and technical potential. If one speaks of the physics of high-energy cosmic rays, for which heavy scientific stations are necessary, the comprehensive results obtained on the Proton stations are determining our scientific tasks to a considerable extent.

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The discovered growth of the effective cross section of interaction with the growth of the energy of protons is of great significance for the theory of elementary particles. However, the question arises: to what energies of colliding particles will this growth continue? How does the effective cross section of inelastic interaction depend on the target nucleus' atomic weight and on the primary particle's nature?

We have yet to elucidate the mechanism of the enrichment of cosmic rays of high energies with heavy nuclei. For this it is essential to make a detailed study of the chemical composition and the energy distribution of particles of energies of trillions and tens of trillions of electron-volts. An important task is to elucidate the mechanisms of the generation and seizure by the earth's magnetic field of the electrons of high energy which were discovered by the Protons.

Orbital scientific stations with qualified personnel on board will appear in the immediate future. Under these conditions it will be possible to carry out research with scientific apparatus, including ionized calorimeters, spark chambers, and nuclear photographic emulsions. It will be possible to "see" every primary particle and to visually observe the results of its interaction with atomic nuclei.

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These methods will make possible more convincing research of the composition of
primary cosmic rays in the range of superhigh energies. Under conditions close to
those in laboratories they will make it possible to study the processes of the inter-
action of particles of those energies which will not be achieved in the immediate
decade in accelerators which being built and those planned.

Prospects are being disclosed of studying the characteristics of the interaction of
complex nuclei at high and superhigh energies, and this will place at scientists'
disposal material which it is impossible to obtain by any other method.

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