

3

USSR

UDC: 661.145:546.48:221

SHCHUL'MAN, V. M., POPOV, V. P., REDCHENKO, V. T., VARAND, V. L.,
ZEGZHA, T. V.

"A Thiocurea Method of Synthesizing Cadmium Sulfide for Phosphors"

Sb. nauch. tr. VNI Iyuminoforev i osobo chist. veshchestv (Col-
lected Scientific Works of the All-Union Scientific Research
Institute of Phosphors and Extra Pure Materials), 1971, vyp. 5,
pp.144-150 (from Khim. Khimiya, No 7, Apr 72, Abstract No 71175)

Translation: A thiocurea method was developed for synthesizing CdS in a solution
which is based on the reaction of CdS formed in aqueous solution of CdCl₂ by
addition of thiocurea (C₂H₄N₂S₂). The prepared CdS contains 10% or more of the
basic substances, and 10% or less of heavy metal impurities (Fe, Co, Ni and
Cu content). The cadmium sulfide synthesized by the authors is suitable
for making luminescent compounds of various grades. The diagram for synthesis
of cadmium sulfide is given. Bibliography of 13 titles. Summary.

1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--OXIDATION REDUCTION POTENTIALS OF FORMAMIDINE DISULFIDE THIOUREA
AND CERUM(IV) CERUM(III) SYSTEMS IN AQUEOUS ACETIC ACID SOLUTIONS -U-
AUTHOR-(04)-ZEGZHDA, I.V., LAVRENOVA, L.G., SHULMAN, V.M., USTYANTSEVA,
T.A.
COUNTRY OF INFO--USSR
SOURCE--ELEKTROKIMIYA 1970, 6(3), 442-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--REDOX REACTION, FORMIC ACID, THIOUREA, SULFIDE, PLATINUM
ELECTRODE, CERUM COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1994/0195 STEP NO--UR/0364/70/006/003/0442/0444
CIRC ACCESSION NO--APO114581
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0114581

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE REDOX POTENTIAL IN A CELL
CONTG. FORMAMIDINE DISULFIDE ((H SUB2 NC (NH)S) SUB2) THIOUREA AND N
HCL AND 0-90PERCENT ACOH WAS MEASURED AT 25DEGREES WITH A PT AND GLASS
ELECTRODES AND COMPARED WITH A CELL CONTG. CE PRIME4 POSITIVE:CE PRIME3
POSITIVE (AS SULFATES), N HCL, AND 0-80PERCENT ACOH. THE POTENTIAL OF
THE FORMAMIDINE DISULFIDE THIOUREA SYSTEM IS PRACTICALLY INDEPENDENT OF
THE SOLVENT COMPN. THE DATA FOR BOTH SYSTEMS ARE IN GOOD AGREEMENT WITH
THOSE OBTAINED WITH THE SCE AND PT ELECTRODES. FACILITY: INST.
NEORG. KHIM., NOVOSIBIRSK, USSR.

UNCLASSIFIED

1/2 032 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--METHODS FOR INCREASING THE RELIABILITY OF BOILING, LIQUID METAL
LOOPS -U-
AUTHOR-(02)-ZEIGARNIK, YU.A., LITVINOV, V.D.
COUNTRY OF INFO--USSR
SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(1), 222-4
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS
TOPIC TAGS--STAINLESS STEEL, ARGON, SODIUM, LIQUID METAL BOILING, NUCLEATE
BOILING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0769

STEP NO--UR/0294/70/008/001/0222/0224

CIRC ACCESSION NO--AP0107311

UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0107311

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STUDY WAS CONDUCTED ON LIQ. NA IN A CLOSED LOOP OF STAINLESS STEEL (3.54 MM INSIDE DIAM.) TUBES. EFFECTS OF TUBE SURFACE ROUGHNESS, INERT (AR) GAS FILING PRIOR TO EXPT., AND THE CONTINUOUS ADDN. OF AR GAS AT 5-30 M-SEC WAS EXAMD. RESULTS SHOWED THAT INITIATION OF NA BOILING WAS REDUCED FROM SUPERHEATS OF 150-80DEGREES TO 15-40DEGREES BY AR FLUSHING OF ROUGHENED TUBES PRIOR TO THE EXPT. BOILING WAS UNIFORM AS LONG AS AR GAS WAS PRESENT IN THE TUBE CAVITIES; WITH AR GAS EXHAUSTED NONUNIFORM PULSATING BOILING (CONVECTIVE HEATING) WAS OBSD. CONTINUOUS ADDNS. OF SMALL AMTS. (0.004-0.006 WT. PERCENT) OF AR PERMITTED THE NUCLEATE BOILING OF NA TO PROCEED SMOOTHLY WITHOUT NA LOSS AT HEATING RATES OF (150-500) TIMES 10 PRIME3 KCAL-M PRIME2 HR; THE PHENOMENON OCCURRING IS SIMILAR TO THAT OBSD. BY H. W. HOFFMAN AND A. I. KRAKOVIAK (1964) ON AN ATOMIZED K LOOP.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SYNTHESIS OF AMYLOXYGLYCOLIC ESTERS OF ALIPHATIC ACIDS -U-
AUTHOR-(03)-ZEINALOV, B.K., MEKHTIYEVA, F.A., KHROMUSHINA, E.I.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK AZERB. SSR 1969, 25(9), 23-6
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ORGANIC SYNTHESIS, GLYCOLLIC ACID, CARBOXYLIC ACID ESTER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1100 STEP NO--UR/0249/70/025/009/0023/0026
CIRC ACCESSION NO--AT0124755
UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124755

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE ESTERS RCO SUB2 CH SUB2 CH SUB2 OC SUB5 H SUB11 (I) WERE PREPD. BY A REACTION OF HOCH SUB2 CH SUB2 OC SUB5 H SUB11 (II) WITH ALIPHATIC ACIDS IN DRY PHME IN THE PRESENCE OF H SUB2 SO SUB4. NEW I (17) (R EQUALS H, ALKYL FROM ME TO C SUB17 H SUB33) WERE PREPD. IN 41-88PERCENT YIELD. THE PHYS. CONSTS. OF THE ESTERS ARE TABULATED.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--STRUCTURE OF THE CONDUCTION BAND AND MECHANISM OF ELECTRON
SCATTERING IN IN SUB0.5 GA SUB0.5 SB -U-
AUTHOR--(03)-ZEINALOV, S.A., ALIYEV, S.A., ALIYEV, M.I.
COUNTRY OF INFO--USSR 2
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 389-91
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--SEMICONDUCTOR BAND STRUCTURE, THERMAL EMF, SEMICONDUCTOR
CONDUCTIVITY, HALL CONSTANT, ELECTRON PHONON INTERACTION, ANTIMONIDE,
GALLIUM COMPOUND, INDIUM COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1987/1996 STEP NO--UR/0449/70/004/002/0389/0391
CIRC ACCESSION NO--AP0105070
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105070

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELEC. COND., THERMAL EMF. (ALPHA SUBO), MAGNETOTHERMAL EMF. (DELTA ALPHA INFINITY), AND THE HALL COEFF. WERE MEASURED IN TE DOPED IN SUBO.5 GA SUBO.5 SB (CONCN. OF CARRIERS, N EQUALS 3 TIMES 10 PRIME17-6 TIMES 10 PRIME18-CM PRIME3), 300DEGREEK. THE STRUCTURE OF THE CONDUCTION BAND (IS SMALLER THAN OR EQUAL TO N EQUALS 6 TIMES 10 PRIME18-CM PRIME3) AGREES WITH THE PREDICTION OF THE KANE THEORY (1957). BECAUSE THE EXPTL. POINTS ALPHA SUBO(N) AND DELTA ALPHA INFINITY (N) LIE WITH GOOD ACCURACY ON THE THEORETICAL CURVES CALCD. FOR THE SCATTERING OF ELECTRONS ON OPTICAL PHONONS, IT CAN BE CONCLUDED THAT THIS MECHANISM PREDOMINATES IN IN SUBO.5 GA SUBO.5 SB SOLID SOLN. CRYSTALS (AT 300DEGREEK AND 3 TIMES 10 PRIME17 IS SMALLER THAN N IS SMALLER THAN 6 TIMES 10 PRIME18-CM PRIME3). FACILITY: INST. FIZ., BAKU, USSR.

UNCLASSIFIED

USSR

UDC 669.71.472

ORLOV, A. I., KOPYTOV, YE. A., YELSHIN, V. V., ZEL'BERG, B. I.

"Study of the Possibility of Continuous Measurements of the Alumina Concentration in Cryolite-Alumina Melts by the Conductometric Method"

Obogashch. i metallurgiya polezh. iskopayemykh -- V sb (Beneficiation and Metallurgy of Minerals -- collection of works), Irkutsk, 1970, pp 109-110 (from RZn-Metallurgy, No 4, Apr 71, Abstract No 4G160)

Translation: The basis for the conductometric procedure is the principle of measuring the specific resistance of the cryolite-alumina melt by the magnitude of the voltage drop in the electrode-melt-electrode section with a defined value of the alternating current. The specific resistance varies significantly as a function of the physico-chemical state of the melt. For melts with a cryolite ratio of 1.7, a dependence of the variation of the specific resistance as a function of the Al_2O_3 concentration is observed for frequencies of 250-3,000 hertz. With an increase in the melt temperature, the extremum shifts toward the low-concentration side. With an increase in alternating current frequency from 250 to 3,000 hertz, the specific resistance decreases under other equal conditions. With an increase in the cryolite ratio from 1.7 to 2.85, the conductivity of the melt increases.

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USSR

UDC 621.43.052.001.5

SOBOL', V. N., ZEL'DES, N. I., Candidates of Technical Sciences, FOGREBNYAK,
V. V., and SKAZHENIK, A. M., Engineers

"Strong Supercharging of the 10D100 Engine by Gas Turbine Compressor"

Leningrad, Energomashinostroyeniye, No 7, July 72, pp 17-18

Abstract: An analysis is presented of modifications and improvements to a gas turbine compressor TK-34, intended to increase its efficiency in a forced regime up to the value of pressure rise ratio $\pi = 2.1$. The theoretical results were substantiated by tests conducted on modified serial TK-34 turbo-compressors. They show that a reduction is obtained in specific effective fuel consumption.

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USSR

UDC 621.515.018

MOSKALENKO, A. S., ZEL'DES, N. L.

"Results of Experimental Investigation of the Effect of Water Fed to a Centrifugal Compressor on the Compressor Parameters"

Samoletostr. i tekhn. vozd. flota. Resp. nazhved. nauchno-tekhn. sb. (Air-
craft Construction and Air Fleet Engineering. Republic Interdepartmental
Scientific and Technical Collection), 1970, vyp. 22, pp 36-46 (from RZh-
Turbostroyeniye, No 1, Jan 71, Abstract No 1.49.111)

Translation: Injection of water into a compressor intake for evaporative air cooling greatly decreases the air temperature at the compressor output. Thus, for a water flow rate on the order of 0.025, the air temperature at the compressor output decreases by approximately 43°C with an ambient temperature of 11.8-13.1°C and a relative ambient humidity of $\phi = 41-42$. During testing of the compressor there was complete evaporation of the injected moisture to the saturation state for different rpm and different positions of the baffle plate. Evaporative air cooling during the compression process in a centrifugal compressor during operation with $n = \text{const}$ decreases the power consumed by the compressor. Evaporative cooling leads to an increase in the degree of increase in pressure and an increased air flow rate. On introduction of evaporative cooling, the compressor characteristic is shifted somewhat toward the region of higher flow rates in connection with the increase in air density at the impeller output.

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Acc. Nr: **AP0043765**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 3, pp 794-795

OBSERVATION OF AN EXTENDED LIGHT SPARK

B. Ya. Zolotarevich, B. F. Malchenko, Pilipetskiy, N. F.

An extended light spark was observed in argon in the field of laser radiation focused by a conical lens. Breakdown developed along the extended axial caustics. Some possible applications of conical focussing of light beams, including those involved in breakdown formation, are indicated.

REEL/FRAME
19770172

21

Acoustical and Ultrasonic

USSR

UDC 534.26:551.26

ZEL'DIS, V. I., LEYKIN, I. A., ROZENBERG, A. D., and RUSKEVICH, V. G., Institute of Radio Physics and Electronics, Academy of Sciences, Ukrainian SSR

"A Study of the Amplitude Characteristics of Sound Signals Scattered by a Rough Water Surface"

Moscow, Akusticheskiy Zhurnal, Vol 19, No 2, Mar-Apr 73, pp 170-177

Abstract: The results are presented of an experimental investigation of the amplitude characteristics of a back-scattered hydroacoustic signal within the range of 15 to 150 kHz and with slip angles from 10 to 50°. With the aim of additional verification of the basic propositions of the theory of resonance scattering, based upon the theory of small perturbations, the investigation was conducted in a tank and on the open sea. Detailed measurements were taken of the characteristics of the scattering surface under swell conditions of up to 5 points [very rough sea]; this permitted the data of acoustic measurements to be compared with calculation results. A good explanation of the obtained results can be provided within the framework of the theory of resonance scattering. 6 figures. 7 references.

1/1

1/2 026 UNCLASSIFIED PROCESSING DATE--230C170
TITLE--THEORY OF SPONTANEOUS PARAMETRIC SCATTERING OF LIGHT -U-

AUTHOR--ZELDOVICH, B.YA. 2

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 4, PP 1348-1358

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--QUANTUM THEORY, LIGHT SCATTERING, ABSORPTION COEFFICIENT,
OPTIC SPECTRUM, PARAMETRIC FUNCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1493

STEP NO--UR/0056/70/058/004/1348/1358

CIRC ACCESSION NO--AP0106249

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106249

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A QUANTUM THEORY FOR SPONTANEOUS
PARAMETRIC THREE AND FOUR PHOTON LIGHT SCATTERING IS DEVELOPED, I.E. A
THEORY FOR DECAY OF QUANTA IN A NONLINEAR MEDIUM IN PROCESSES OF THE
TYPE Ω_{SUB3} YIELDS Ω_{SUB1} PLUS Ω_{SUB2} AND Ω_{SUB3} PLUS
 Ω_{SUB3} YIELDS Ω_{SUB1} PLUS Ω_{SUB2} . THE CASE OF ARBITRARY
ABSORPTION COEFFICIENTS OF THE FIELDS FOR ALL THREE FREQUENCIES Ω_{SUB1} ,
 Ω_{SUB2} , Ω_{SUB3} IS CONSIDERED. IT IS SHOWN THAT THE
INTENSITY OF LIGHT SCATTERED IN A GIVEN DIRECTION AND INTEGRATED OVER
THE FREQUENCIES, $D(\Omega_{SUB1})$, IS DEFINED BY A SIMPLE INCOHERENT
SUM OF CONTRIBUTIONS FROM ALL POINTS OF THE SCATTERING VOLUME AND DOES
NOT DEPEND ON THE ABSORPTION FOR THE BALLAST FREQUENCY Ω_{SUB2} . THE
SPECTRAL DISTRIBUTION OF PHOTONS Ω_{SUB1} SCATTERED IN A GIVEN
DIRECTION IS FOUND IN THE CASE OF COMBINED ACTION OF ALL SUCH FACTORS
WHICH BROADEN THE SPECTRUM, SUCH AS ABSORPTION FOR Ω_{SUB1} , Ω_{SUB2} ,
 Ω_{SUB3} , SPATIAL RESTRICTION, NONMONOCHROMATICITY AND
SPATIAL INCOHERENCE OF THE PUMPING BEAM Ω_{SUB3} . FACILITY:
INST. TEORETICHESKOY I EKSPERIMENTAL'NOY FIZIKI.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--THE INTERACTION OF MATTER AND RADIATION IN THE HOT MODEL OF THE
UNIVERSE -U-
AUTHOR--(02)-SUNIAEV, R.A., ZELDOVICH, L.B. 2
COUNTRY OF INFO--USSR
SOURCE--ASTROPHYSICS AND SPACE SCIENCE, VOL. 7, APR. 1970, P. 20-30
DATE PUBLISHED----APR 70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--HOT MODEL, SPACE MATTER, RADIATION SPECTRUM, ASTROPHYSICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0261 STEP NO--NE/0000/70/007/000/0020/0030
CIRC ACCESSION NO--AP0126033
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0126033

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL DEMONSTRATION THAT THE HEATING OF THE PRIMEVAL PLASMA BEFORE THE EPOCH OF RECOMBINATION RESULTS IN DISTORTIONS IN THE RAYLEIGH JEANS REGION OF THE MICROWAVE RELIC RADIATION SPECTRUM. IT IS POINTED OUT THAT PRESENT OBSERVATIONAL DATA ALLOW THE ESTIMATION OF ENERGY INJECTION LIMITS WITH CERTAIN LIMITS FOR THE AMOUNT OF ANTIMATTER IN THE UNIVERSE, FOR THE PARAMETERS OF PRIMEVAL TURBULENCE AND FOR THE ADIABATIC FLUCTUATION SPECTRUM OF SMALL MASSES.
FACILITY: AKADEMIIA NAUK SSSR, INSTITUT PRIKLADNOI MATEMATIKI, MOSCOW, USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--SMALL SCALE FLUCTUATIONS OF RELIC RADIATION -U-
AUTHOR--(02)-SUNIAEV, R.A., ZELDOVICH, L.B.
COUNTRY OF INFO--USSR
SOURCE--ASTROPHYSICS AND SPACE SCIENCE, VOL. 7, APR. 1970, P. 3-19
DATE PUBLISHED---APR 70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--GALAXY, ASTROPHYSICS, ADIABATIC PROCESS, HEATING

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0260 STEP NO--NE/0000/70/007/000/0003/0019
CIRC ACCESSION NO--AP0126032
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0126032

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL DEMONSTRATION OF THE INCONSISTENCY OF THE ADIABATIC RELATION ASSUMED BY SILK (1967, 1968) TO EXIST BETWEEN THE DENSITY PERTURBATIONS IN THE INITIAL PLASMA AND THE RADIATION TEMPERATURE FLUCTUATIONS AT THE MOMENT OF A PLASMA RECOMBINATION WHICH LED, ACCORDING TO THE ISOTROPIC COSMOLOGICAL MODEL, TO THE FORMATION OF GALAXIES. CALCULATIONS INDICATE THAT THE EXPECTED TEMPERATURE FLUCTUATIONS SHOULD BE SMALLER THAN THE ONES IMPLIED BY THIS ADIABATIC RELATION. FLUCTUATIONS OF THE RELIC RADIATION DUE TO SECONDARY HEATING OF THE INTERGALACTIC GAS ARE ALSO ESTIMATED.
FACILITY: AKADEMIIA NAUK SSSR, INSTITUT PRIKLADNOI MATEMATIKI, MOSCOW, USSR.

UNCLASSIFIED

1/3 045 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--INCREASE IN THE INTENSITY OF SOLAR PROTONS MEASURED ON THE 'PROTON
3' ARTIFICIAL EARTH SATELLITE -U-
AUTHOR-(04)-ZELDOVICH, M.A., KOVRIZHNYKH, O.M., MADEYEV, M.O., SAVENKO,
I.A.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, VESTNIK MOSKOVSKOGO UNIVERSITETA, FIZIKA, ASTRONOMIYA, NO
2, 1970, PP 229-230
DATE PUBLISHED-----70

SUBJECT AREAS--SPACE TECHNOLOGY, PHYSICS, ASTRONOMY, ASTROPHYSICS,
ATMOSPHERIC SCIENCES
TOPIC TAGS--PROTON, SOLAR FLARE, RADIO EMISSION, SPACECRAFT CARRIED
EQUIPMENT, QUARK, PRIMARY COSMIC RAY, PROPORTIONAL COUNTER, TELESCOPE,
SPECTRUM, SOLAR RADIATION BURST, SOLAR RADIATION INTENSITY, RADIATION
MEASURING INSTRUMENT/(U)SEZ 13 INSTRUMENT, (U)PROTON 3 SCIENTIFIC
SATELLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/0860

STEP NO--UR/0188/70/000/002/0229/0230

CIRC ACCESSION NO--AP0126529

UNCLASSIFIED

2/3 045

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--APO126529

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SEZ-13 INSTRUMENT CARRIED ABOARD THE "PROTON 3" INSTRUMENT ON 7 JULY 1966 REGISTERED AN INCREASE IN PROTON INTENSITY IN THE ENERGY RANGE 100 TO 1,000 MEV. THE INTEGRAL SPECTRUM OF SOLAR PROTONS HAS THE FORM N SIMILAR TO E PRIME NEGATIVE 1.5. AN OPTICAL FLARE OF THE IMPORTANCE 2B ON THAT DATE LASTED ABOUT TWO HOURS. THIS FLARE WAS ACCOMPANIED BY AN X RAY BURST AND TYPES II AND IV RADIO EMISSION. THIS ARTICLE GIVES THE RESULTS OF MEASUREMENTS OF THE BURST OF SOLAR PROTONS ON 7 JULY 1966 WITH INSTRUMENTATION CARRIED ABOARD "PROTON 3". THIS SATELLITE WAS LAUNCHED ON 6 JULY 1966 IN A CIRCUMTERRESTRIAL ORBIT WITH AN APOGG OF 630 KM, APOGEE OF 190 KM AND ORBITAL INCLINATION OF 64DEGREES. THE SATELLITE CARRIED NO INSTRUMENT SPECIALLY DESIGNED FOR MEASURING LOW ENERGY PROTONS. ACCORDINGLY, DATA ON THE BURST OF 7 JULY WAS OBTAINED AS A RESULT OF MEASUREMENTS WITH THE SEZ-13 INSTRUMENT, WHOSE BASIC PURPOSE WAS A SEARCH FOR QUARKS IN PRIMARY COSMIC RAYS BEYOND THE LIMITS OF THE ATMOSPHERE. THE SEZ-13 INSTRUMENT CONSISTS OF 12 PROPORTIONAL COUNTERS FORMING A TELESCOPE. THE PROTONS COULD ENTER THE TELESCOPE ANGLE OF VIEW FROM TWO OPPOSITE DIRECTIONS. A LATITUDINAL INTENSITY VARIATION WAS OBSERVED BECAUSE THE SATELLITE INTERSECTED GEOGRAPHIC LATITUDES FROM 0 TO 64DEGREES. IT WAS CONFIRMED THAT THE SPECTRUM OF SOLAR PROTONS HAS THE FORM N SIMILAR TO E PRIME NEGATIVE 1.5.

UNCLASSIFIED

3/3 045

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0126529

ABSTRACT/EXTRACT--PRELIMINARY DATA INDICATE THAT THE INTENSITY OF GALACTIC COSMIC RAYS WITH ENERGIES IS GREATER THAN 1,000 MEV AND WITH ENERGIES IS GREATER THAN 10,000 MEV IS 0.64 PARTICLE CM PRIME NEGATIVE1. SEC PRIME NEGATIVE1. STERAD PRIME NEGATIVE1 AND 0.127 PARTICLE CM PRIME NEGATIVE2. SEC PRIME NEGATIVE1. STERAD PRIME NEGATIVE1. THESE INTENSITIES CAN BE SOMEWHAT EXAGGERATED BECAUSE NO ALLOWANCE WAS MADE FOR SECONDARY RADIATION FORMING DURING THE ABSORPTION OF HIGH ENERGY GALACTIC COSMIC RAYS IN THE MATERIAL OF THE SATELLITE. FACILITY: NUCLEAR PHYSICS SCIENTIFIC RESEARCH INSTITUTE, MOSCOW UNIVERSITY.

UNCLASSIFIED

ZEL'DOVICH, S. M.

In this article a study was made of the possibility of increasing the accuracy of a three-stage gyrostabilizer taking into account viscous friction from the position of stability of the indicating

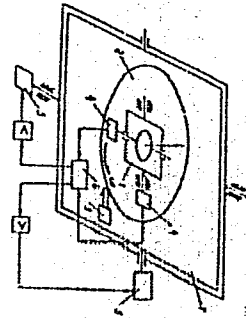


Figure 1.

gyrostabilizers is the method of forcing rotation of the sensitive element around the kinetic moment vector (see the bibliography). As the studies indicate, the increase in angular velocity of forced rotation has a positive effect on the efficiency of the method.

One of the effective means of improving the accuracy of indicating gyrostabilizers is the method of forcing rotation of the sensitive element around the kinetic moment vector (see the bibliography). As the studies indicate, the increase in angular velocity of forced rotation has a positive effect on the efficiency of the method.

STABILITY OF AN INDICATING GYROSTABILIZER ON ROTATION OF A THREE-STAGE GYROSCOPE
Article by S. M. Zel'dovich, I. M. Orlov, Leningrad, Institute of Precision Mechanics and Optics, Leningrad, Issledyeniya Vuzov, Zil'Povereniya, No. 1, Moscow, No. 6, 1973, submitted 10 September 1972, pp. 87-92.

RFC 531,393

So: JPRS 60001
11 SEP 73

(1)

CAROL

USSR

UDC 669.15-194:669.25:669.01

ZEL'DOVICH, V. I., SAMOYLOVA, Ye. S., and DOROSHENKO, A. V. (Deceased),
Institute of Metal Physics, Ukrainian National Center of the Academy of
Sciences USSR

"Phase Transformations in the Vicalloy 1 Alloy"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 1, 1973, pp 125-133

Abstract: Phase transformations in Vicalloy 1 alloy on heating at temperatures over 500°C and on cooling were investigated by methods of dilatometric, magnetostructural, neutronographic, and X-ray-structural analyses. A complex sequence of transformations on heating of the alloy was found which includes ordering and disordering of α - and γ -phases and disproportionation of components between phases. The temperature intervals of the "fundamental" processes of $\alpha \rightarrow \gamma$ transformations and of ordering and disordering of α - and γ -phases were determined. The development of γ -phase on continuous heating of the alloy can be divided into three stages. In the temperature interval of the second stage of $\alpha \rightarrow \gamma$ transformation, an α -phase disorder takes place accompanied by an increase in volume. The sign difference of the volume effect of α -phase ordering at 400 and 700°C is explained by the decrease of the coefficient of thermal expansion when ordering. The presented schema of 1/2

USSR

ZEL'DOVICH, V. I., et al., Fizika Metallov i Metallovedeniye, Vol 35, No 1, 1
1973, pp 125-133

phase transformations in Vicalloy 1 on continuous heating can be applied for
the analysis of $\alpha \rightarrow$ transformation in other alloys on Fe-base, in which
this transformation takes place with the assistance of diffusion processes.
Five figures, fifteen bibliographic references.

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USSR

UDC 539.184

ZEL'DOVICH, Ya. B.

"Scattering and Radiation by a Quantum System in a Powerful Electromagnetic Field"

Moscow, Uspekhi Fizicheskikh Nauk, Vol 110, No 1, May 73, pp 139 - 151

Abstract: This report was presented at the Conference on Strong Electromagnetic Fields (Hungary, Balaton, September 1972).

Although there are several methods of describing the interaction of atoms, molecules, and radiation, the most straightforward, systematic, and simple method at present is the use of the concepts of quasi energy and quasi-energy states. This article gives a brief history of the development of this concept, its mathematical expression, and its use in calculation. It is particularly useful in describing such quantum mechanical systems in the presence of a strong time-dependent potential such as a classical electromagnetic wave. The article covers the use of quasi-energy concepts in describing system evolution, natural state radiation, two-level systems, spontaneous transitions, and the linear Stark effect. The purpose is to demonstrate the methodological advantages of the quasi-energy method.

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USSR

ZEL'DOVICH, Ya. B.

UDC: 536.46+662.311

"The Theory of Powder Combustion in Gas Flow"

Novosibirsk, Fizika Goreniya i Vzryva, vol 7, No 4, December 1971, pp 463-476

Abstract: In this review of the theory of powder combustion in gas flow, the practical value of which is important in the internal ballistics of powder rockets, the author begins with a summary of its history. This begins with the experiments of Pobedonostsev, performed in 1937, which developed the important generalization that the nature of the combustion and the maximum pressure in the combustion chamber are functions of the ratio of the powder surface to the free cross section of the chamber on which the velocity of the gases in the chamber depends. The effect of this criterion of Pobedonostsev, designated by P, was developed further by several researchers, the author of this article among them, who showed that the flow of the combustion products increased the combustion rate of the powder. This phenomenon, discovered by O. I. Leypunskiy in 1942, is termed "blow-up" (razduvaniye) in Russian and described in other countries as "erosion combustion." According to modern concepts, the flow of the combustion products over

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USSR

UDC: 536.46+662.311

ZEL'DOVICH, Ya. B., Fizika Goreniya i Vzryva, vol 7, No 4, Dec 71, pp 463-476

the powder surface substantially influences the thermal and mass transfers in the gas layer near the surface. In this article the author expatiates on a theoretical approach he proposed in 1944, involving the general characteristics of turbulent flow, by which the relative combustion velocity can be found as a function of the Pobedonostsev criterion P . He concludes by emphasizing the roles of O. I. Leypunskiy, G. A. Barskiy, M. A. Rivin, and D. A. Frank-Kamenetskiy in the early stages of development of the theory of powder combustion, and he thanks V. B. Librovich for his assistance in preparing the article. It is noted that part of the material for the article was taken from the Proceedings of the Institute of Chemical Physics, USSR Academy of Sciences, for the year of 1944.

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- 61 -

USSR

UDC 621.375.82

BABENKO, V. A., ZEL'DOVICH, B. YA., MALYSHEV, V. I., and SYCHEV, A. A.

"Radiation Spectrum of Giant Laser Pulse With Allowance for Self-Frequency Modulation"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2(14), Moscow, "Sov. Radio," 1973, pp 19-24 (English summary) (from RZh-Fizika, No 10, Oct 73, Abstract No 10D820 from authors' abstract)

Translation: The article deals with a theoretical consideration of the broadening of the spectrum of a giant laser pulse due to the dependence of the refractive index of the matrix of the active medium on the light intensity. A calculation is performed for the integral effect for the entire giant pulse, assuming that the initial radiation is a Gaussian random process. Experiments are performed, the results of which agree with the theoretical estimates. Bibliography with eight titles.

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PHYSICS

Electricity & Magnetism

USSR

UDC: None

ZNELOVICH, Ya. B.

"Amplifying Cylindrical Electromagnetic Waves With Reflection from a Rotating Body"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol. 62, No 6, 1972, pp 2076-2081

Abstract: This paper is based on an earlier article by the same author, written as a letter to the journal named above (14, 1971, p 270), reporting the amplification effect on waves reflected from a rotating body. The purpose of the present paper is to clarify the physical nature of the phenomenon, to prove theoretically the existence of the effect, to consider the effect from the viewpoint of the gravitational interaction of the waves with the collapsing body, and to estimate quantitatively the electromagnetic waves interacting with a poorly conducting cylinder. The author begins his analysis with expressions for a cylindrical wave with specified multipolarity and for the incident wave. It is assumed that the incident wave energy is completely absorbed by the rotating body and that the effect also occurs when the interaction of the waves with the rotating body is connected with the gravitational field of the latter and is independent of the dissipative processes

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USSR

UDC: None

ZEL'DOVICH, Ya. B., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 6, 1972, pp 2076-2081

in the material of the body. The author expresses his gratitude to A. A. Andronov, A. V. Gaponov-Grekhov, G. A. Grinberg, Ye. M. Lifshits, P. L. Kapitsa, L. A. Ostrovskiy, and A. A. Starobinskiy for their advice. He is associated with the Institute of Applied Mathematics, USSR Academy of Sciences.

2/2

- 1 -

USSR

ZEL'DOVICH, Ya. B.; LEVICH, Ye. V.; SYUNYAYEV, R. A. (Institute of Applied Mathematics, USSR Academy of Sciences)

"Stimulated Compton Interaction between Maxwellian Electrons and Spectrally Narrow Radiation"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; April, 1972; pp 1392-1408

Abstract: Effects related to stimulated Compton scattering of high-intensity radiation by free electrons (electron heating, distortion of the radiation spectrum, stimulated light pressure) diminish with a decrease of the spectral width and angular aperture of the radiation beam. The integral kinetic equation (its nucleus has been found) permits one to determine the electron heating rate and to find an analytic solution of the evolution of intense spectral lines during stimulated Compton interaction for arbitrary spectral widths and angular apertures of the radiation beam.

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USSR

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ZELDOVICH, YA. B., LEVICH, YE. V., Institute of Applied Mathematics of the Academy of Sciences USSR

"Plasma Heating by Colliding Beams of Coherent Radiation"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 11, No 10, 20 May 1970, pp 497-500

Abstract: The use of colliding beams of coherent radiation to heat a plasma is proposed. One or both of the beams is assumed to be spectrally broad, $\Delta v/v \geq v/c$, where v is the thermal velocity of the electrons. It is noted that light with this Δv cannot, strictly speaking, be called coherent but the required intensity can be achieved only by broadening coherent radiation in some manner, since electrons under such a spectrum have a Maxwell distribution in terms of the magnitude of the longitudinal velocity due to interaction with light without the participation of collisions. It is shown that the rate of heating is then proportional to the product of the intensities of the two beams and independent of the nuclear charge and plasma density. A numerical example is given showing that if the beam intensity is high and the plasma has a low density and a small nuclear

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USSR

ZEL'DOVICH, YA. B., et al, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 11, No 10, 20 May 1970, pp 497-500

charge, the proposed heating method can be considerably more effective than ordinary methods. In the example given the total energy of each beam was 50 joule, the focusing cross section was 10^{-5} cm², the current density was $5 \cdot 10^7$ w/cm², and the carrier frequency was approximately $3 \cdot 10^{14}$ hertz.

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USSR

ZEL'DOVICH, YA. B. and ILLARIONOV, A. F., Institute of Applied Mathematics,
Academy of Sciences USSR

"Scattering of a Strong Wave by an Electron in a Magnetic Field"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 3,
Sep 71, pp 880-885

Abstract: The authors examine the question of electron scattering of plasma of a strong electromagnetic wave, circularly polarized and propagating along a constant magnetic field. By allowing for the reaction of radiation, they find the dependence of the scattering cross section on the amplitude of the wave and the magnitude of the magnetic field. They cite the conditions for propagation of a wave in plasma. They see a certain analogy between the computation made in this article and the familiar academic derivation of the formula for the frequency of vibrations of a pendulum by examining the rotation equivalent to two perpendicular vibrations with a phase difference of $\pi/2$. The authors formulate the problem and give the results mathematically and graphically. Then they give the equation of motion and find characteristic resonance curves. Finally they describe the propagation of a strong wave in a plasma using a mathematical treatment. The article contains 1 illustration and 6 bibliographic entries.

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USSR

ZEL'DOVICH, YA. B., and OVCHINNIKOV, A. A., The Physico-Chemical Institute
Imeni L. YA. Karpov

"Repopulation of Highly Excited Vibrational Levels in a Cold Lattice"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol
13, No 11, 5 Jun 71, pp 636-639

Abstract: This article looks at a molecular crystal consisting of diatomic molecules. In an earlier article one of the authors studied the influence of anharmonicity on the lifetime of highly excited vibrational levels in molecular crystals. Here the authors examine another aspect of this problem: that is, the assumption that the total number of vibrational quanta are approximately preserved and the stationary state is sought at a given lattice temperature and a given value of N . The authors use the molecular distribution by vibrational states as the topic of the research. Due to anharmonicity the energy of the two-quantum state is less than that of two single-quantum states. This being true also for higher states, the authors express this through several detailed equations and give a graphic illustration. They note that the effect is most strongly manifested at low temperatures in molecular crystals consisting of diatomic molecules

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USSR

ZEL'DOVICH, YA. B., and OVCHINNIKOV, A. A., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 13, No 11, 5 Jun 71, pp 636-639

of N_2 , H_2 , O_2 , and NO. Of interest also are HCl types of these crystals in which the single-quantum levels are much easier to excite. All the conclusions reached in this article, with some modification, are applicable to gases and liquids as well. However, the temperature in these cases must be sufficiently low. One figure, 11 equations, bibliography of 5 titles.

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USSR

DOROSHKEVICH, A. G., ZEL'DOVICH, Ya. B., and NOVIKOV, L. D., Institute of Applied Mathematics of the USSR Academy of Sciences

"Perturbations in an Anisotropic Homogeneous Universe"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 60, No 1, 1971, pp 3-8

Abstract: It has been shown that for anisotropic solutions of the Einstein equations close to a singularity the effect of matter on the space-time metric close to the singularity disappears. The cosmological problem of the growth of density perturbations in expanding matter, which is, on the average, at rest relative to a synchronous reference frame, and also variations in the amplitude of gravitational and acoustical waves are examined in the paper. Its aim is to show that the growth of perturbations in the density of matter in an anisotropic expanding universe is a kinetic effect caused by the motion of matter in a gravitational field that is described by solution of equations of gravity for empty space. An attempt is made to find the laws of the growth of perturbations in the density of matter. The nonrelativistic motion of matter is considered. It is shown that in
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USSR

DOROSHKEVICH, A. G., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 60, No 1, 1971, pp 3-8

anisotropic models of the universe perturbations grow at a rate that is three-five times greater than in an isotropic model.

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1/2 041 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--GRAVITATIONAL COMPRESSION OF A SPHERICAL CLOUD -U-
AUTHOR--(02)-ZELDOVICH, YA.B., KAZHDAN, YA.M.
COUNTRY OF INFO--USSR
SOURCE--ASTROFIZIKA, VOL. 6, FEB. 1970, P. 109-122
DATE PUBLISHED----FEB 70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--GAS DYNAMICS, GRAVITATION, SHOCK WAVE REFLECTION, ASTROPHYSICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/1758 STEP NO--UR/0388/70/006/000/0109/0122
CIRC ACCESSION NO--AP0125374
UNCLASSIFIED

PROCESSING DATE--23OCT70

UNCLASSIFIED

2/2 041


CIRC ACCESSION NO--AP0125374

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

ABSTRACT. INVESTIGATION OF TWO PROBLEMS OF GAS DYNAMICS UNDER THE ACTION OF GRAVITATION: (1) THE COMPRESSION OF A GAS OF FINITE PRESSURE AND SPHERICALLY UNIFORM INITIAL DENSITY DISTRIBUTION, AND (2) THE COMPRESSION OF A COLD GAS OF NONUNIFORM INITIAL DISTRIBUTION. THE ASYMPTOTIC FEATURES OF GAS MOTION ARE DETERMINED FOR THE FIRST PROBLEM IN THE NEIGHBORHOOD OF THE CENTER AND NEAR THE RAREFACTION WAVE BOUNDARY PROPAGATING TOWARD THE CENTER AT TIMES CLOSE TO THE INSTANT OF THE RAREFACTION WAVE'S FOCUSING WHEN THE INITIAL DENSITY TENDS TO ZERO. THE FINITE STATE OF THE GAS AT TIMES TENDING TO INFINITY IS ALSO STUDIED. IN THE SECOND PROBLEM, THE GAS NEAR THE CENTER IS STUDIED AFTER REFLECTION OF THE SHOCK WAVE.

FACILITY: AKADEMIIA NAUK SSSR; INSTITUT PRIKLADNOI MATEMATIKI, MOSCOW, USSR.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--THE INTERACTION OF MATTER AND RADIATION IN THE HOT MODEL OF THE
UNIVERSE. II -U-
AUTHOR-(02)-SUNYAEV, R.A., ZELDOVICH, YA.B. 
COUNTRY OF INFO--USSR
SOURCE--ASTROPHYS. SPACE SCI. (NETHERLANDS), VOL 7, NO. 1, P. 20-30 (APRIL
1970)
DATE PUBLISHED----APR70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, PHYSICS
TOPIC TAGS--COSMOLOGY, SPACE MATTER, SPACE RADIATION, ASTROPHYSICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/0536 STEP NO--NE/0000/70/007/001/0020/0030
CIRC ACCESSION NO--AP0135999
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 029

CIRC ACCESSION NO--AP0135999

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR PT. I SEE ABSTR. A47611 OF 1969. HEATING OF THE PRIMAVAL PLASMA PRIOR TO THE EPOCH OF RECOMBINATION RESULTS IN DISTORTIONS IN THE RAYLEIGH JEANS REGIONS OF MICROWAVE RELIC RADIATION SPECTRUM (λ IS SIMILAR TO 1-60 CM. OR MORE EXACTLY λ EQUALS 2.5Ω PRIME SEVEN EIGHTHS NEGATIVE CM). THE PRESENT OBSERVATIONAL DATA ALLOW LIMITS TO BE SET TO SUCH ENERGY INJECTION FROM WHICH FOLLOW UPPER LIMITS TO: (A) THE AMOUNT OF ANTIMATTER IN THE UNIVERSE; (B) THE PARAMETERS OF PRIMAVAL TURBULENCE; AND (C) THE ADIABATIC FLUCTUATION SPECTRUM FOR SMALL MASSES IN IS LESS THAN $10^{11} M$ TIMES THE MASS OF THE SUN). IF THE HEATING TAKES PLACE PRIOR TO THE EPOCH T EQUALS $10^{10} \Omega$ TWELVE FIFTHS SEC (AND IN PARTICULAR AT THE ANNIHILATION OF ELECTRON POSITRON PAIRS AT T SIMILAR TO 10^8 MINUS 10^6 SEC), T IS LESS THAN 300 SEC; NO OBSERVABLE DISTORTIONS ARE EXPECTED IN THE RELIC RADIATION SPECTRUM. HERE Ω EQUALS ρ -PERIT IS THE DIMENSIONLESS AVERAGE DENSITY OF MATTER IN THE UNIVERSE.

FACILITY: ACAD. SCI., USSR, MOSCOW.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--EVOLUTION OF RADIO SOURCES AT LARGE RED SHIFTS -U-
AUTHOR-(03)-DOROSHKEVICH, A.G., LONGAIR, M.S., ZELDOVICH, YA.B.
COUNTRY OF INFO--USSR
SOURCE--MON, NOTIC, ROY. ASTRON. SOC.; 147: 139-48, 1970
DATE PUBLISHED-----70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--RADIO WAVE PROPAGATION, MODEL, COSMOLOGY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605018/F07 STEP NO--UK/0000/70/147/000/0139/0148
CIRC ACCESSION NO--AP0140888
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140888

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EVOLUTIONARY COSMOLOGICAL MODELS IN WHICH THE RADIO SOURCE POPULATION CAN EXTEND TO LARGE REDSHIFTS ARE DISCUSSED. MODELS INCORPORATING EXPONENTIAL AND POWER LAW FORMS OF EVOLUTION OF THE AVERAGE PROPERTIES OF RADIO SOURCES WITH COSMOLOGICAL EPOCH HAVE BEEN COMPUTED FOR WORLD MODELS WITH Λ EQUALS 0, Ω EQUALS 1 AND Ω EQUALS 0. THESE ARE COMPARED WITH THE LATEST OBSERVATIONAL DATA AND PREVIOUS ANALYSES OF THE SOURCE COUNTS. IT IS SHOWN THAT EXPONENTIAL MODELS ARE COMPATIBLE WITH THE OBSERVATIONS AND DO NOT REQUIRE A SHARP CUTOFF IN THE RADIO SOURCE DISTRIBUTION AT LARGE REDSHIFTS. THE LUMINOSITY FUNCTION OF RADIO SOURCES AT LARGE REDSHIFTS MUST EXHIBIT A MARKED MAXIMUM MINIMUM BEHAVIOUR. THE PHYSICAL INTERPRETATION OF DIFFERENT LAWS OF COSMOLOGICAL EVOLUTION IS DISCUSSED.

FACILITY: INST. OF APPLIED MATHEMATICS, MOSCOW.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--SMALL SCALE FLUCTUATIONS OF RELIC RADIATION -U-
AUTHOR--(02)-SUNYAEV, R.S.A.; ZELDOVICH, YA.B. 2
COUNTRY OF INFO--USSR
SOURCE--ASTROPHYS. SPACE SCI. (NETHERLANDS), VOL. 7, NO. 1, P. 3-19 (APRIL 1970)
DATE PUBLISHED--APR 70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--COSMOLOGY, GALAXY, SPACE RADIATION
CENTRAL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0551 STEP NO--NE/0000/70/007/001/0003/0019
CIRC ACCESSION NO--AP0136014
UNCLASSIFIED

272 021

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0136014

ABSTRACT/EXTRACT--(U) OF-O- ABSTRACT. PERTURBATION OF THE MATTER DENSITY IN A HOMOGENEOUS AND ISOTROPIC COSMOLOGICAL MODEL WHICH LEADS TO THE FORMATION OF GALAXIES SHOULD, AT LATER STAGES OF EVOLUTION, CAUSE SPATIAL FLUCTUATIONS OF RELIC RADIATION. SILK (SEE ABSTR. A36977 OF 1968) ASSUMED THAT AN ADIABATIC CONNECTION EXISTED BETWEEN THE DENSITY PERTURBATIONS AT THE MOMENT OF RECOMBINATION OF THE INITIAL PLASMA AND FLUCTUATIONS OF THE OBSERVED TEMPERATURE OF RADIATION $\Delta T/T$ EQUALS $\Delta \rho/\rho$ SUBM-3 ρ/ρ SUBM. IT IS SHOWN IN THIS ARTICLE THAT SUCH A SIMPLE CONNECTION IS NOT APPLICABLE DUE TO: (1) THE LONG TIME OF RECOMBINATION; (2) THE FACT THAT WHEN REGIONS WITHIN SMALLER THAN 10 PRINEIS R SUBRASS OF THE SUN BECOME TRANSPARENT FOR RADIATION, THE OPTICAL DEPTH TO THE OBSERVER IS STILL LARGE DUE TO THOMPSON SCATTERING; (3) THE SPASMODIC INCREASE OF $\Delta \rho/\rho$ SUBM- ρ/ρ SUBM IN RECOMBINATION. AS A RESULT THE EXPECTED TEMPERATURE FLUCTUATIONS OF RELIC RADIATION SHOULD BE SMALLER THAN ADIABATIC FLUCTUATIONS. IN THIS ARTICLE THE VALUE OF $\Delta T/T$ ARISING FROM SCATTERING OF RADIATION ON MOVING ELECTRONS IS CALCULATED; THE VELOCITY FIELD IS GENERATED BY ADIABATIC OR ENTROPY DENSITY PERTURBATIONS. FACILITY: AOAC. SCI. USSR., MOSCOW.

UNCLASSIFIED

1/2 C43

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--OCCURRENCE OF A DETONATION IN A NONUNIFORMLY HEATED GAS -U-

AUTHOR--(04)--ZELDOVICH, YA.B., LIBROVICH, V.B., MAKHYILADZE, G.M.,
SIVASHIASKY, G.I.

COUNTRY OF INFO--USSR

SOURCE--PMTF, ZHURNAL PRIKLADNOI MEKHANIKI I TEKHNIЧЕСKOI FIZIKI,
MAR.-APR. 1970, P. 76-84
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, ORDNANCE

TOPIC TAGS--DETONATION, SHOCK WAVE, CHEMICAL REACTION, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1402

STEP NO--UR/0207/70/000/000/0076/0084

CIRC ACCESSION NO--AP0133354

UNCLASSIFIED

2/2 043

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0133354

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NUMERICAL SOLUTION OF THE PROBLEM OF THE OCCURRENCE OF A DETONATION IN A NONUNIFORMLY HEATED GAS CAPABLE OF CHEMICAL REACTION. IT IS SHOWN THAT THREE DIFFERENT REACTION REGIMES ARE POSSIBLE IN THIS CASE. IF THE TEMPERATURE DISTRIBUTION GIVEN AT THE INITIAL MOMENT IS SUCH THAT THE GAS IS HEATED ALMOST UNIFORMLY, THE REACTION OCCURS IN A THERMAL EXPLOSION REGIME. IN THE CASE OF A VERY STEEP INITIAL TEMPERATURE PROFILE A SHOCK WAVE WHICH SEPARATES FROM THE REACTION WAVE ARISES. FINALLY, THERE IS A TEMPERATURE DISTRIBUTION SUCH THAT THE SHOCK WAVE WHICH FORMS IS CAPABLE OF CAUSING A REACTION, AND A SWITCHOVER TO A STEADY DETONATION REGIME OCCURS.

UNCLASSIFIED

Acc. Nr:

AP0050639

Abstracting Service:
CHEMICAL ABST. 5-70

Ref. Code:

CR 0030

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103807; Periodic law and modern physics. Zel'dovich, Ya. B. (USSR). *Vestn. Akad. Nauk SSSR* 1970, 40(11), 30-9 (Russ). A review which discusses the application of 3 key events (the planetary model of the atom, quantum theory, and the exclusion principle) to the development of a periodic law for modern physics. The possible path of evolution of elements in the universe and Gell-Mann's theory of sub-elementary particles and Russian attempts to verify their existence are also discussed.

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REEL/FRAME
19810635

21

14

USSR

ZEL'DOVICH, YA. B. and LEVICH, YE. V., Institute of Applied Mathematics of the Academy of Sciences USSR

"Stationary State of Electrons in a Nonequilibrium Radiation Field"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 11, No. 1, 5 Jan 70, pp 57-60

Abstract: The stationary state of a system of free nonrelativistic electrons in a nonequilibrium radiation field is calculated. It is assumed that the electrons scatter radiation by a Compton mechanism. The radiation field is assumed to be isotropic and it is further assumed that the radiation density is high and the electron concentration is low. Under these conditions the electrons are considered as a heavy admixture and the effect of collisions between one another and with nuclei is neglected. It is shown that the stationary distribution of electrons with respect to momentum is Gaussian and coincides with the Maxwell distribution with respect to energy. The effective electron temperature is expressed in terms of the radiation spectrum. The essence of this result is that for small momentum transfers in an elementary act of interaction, the motion of electrons in momentum space is Brownian. Electrons in intergalactic space are discussed as an example.

1/1

Nuclear Physics

USSR

BISNOVATYY-KOGAN, G. S., ZEL'DOVICH, Ya. B. and SYNYAYEV, R. A.

"Equilibrium Concentration of Positrons in Optically Thin Relativistic Plasma"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki (Letters to the Journal of Experimental And Theoretical Physics), Vol 12, No 2, 20 July 1970, pp 64-67

Abstract: Physical processes are described for a low-density plasma in which radiation is emitted freely. The positron concentration is determined by the equilibrium processes of pair formation, by collisions of e^- and e^+ with nuclei and each other (without photon emission), and annihilation of electrons and positrons (with photon emission). The principal result is that there is no equilibrium states at temperatures above 20 mev, which is the upper temperature limit of an optically thin relativistic plasma. Relations are given for the second-order annihilation process, the number of annihilations per unit volume per unit time for a Maxwellian distribution of electrons and positrons, and pair formation by charged-particle collisions.

Comparisons are made with processes in astrophysical radio sources in which there are no stationary states, little equilibrium, large temperature variations, and the positron concentration depends on the pumping energy. From energy considerations, pair generation is always much less than synchrotron radiation. In
1/2

USSR

BISNOVATYY-KOGAN, G. S., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 12, No 2, 20 July 1970, pp 64-67

the presence of a magnetic field positrons remain localized, while photons leave an optically thin region, when $r < 1$. A relativistic plasma of identical particles can exist for extended periods, and energy losses are compensated by radiation, shock waves and varying magnetic fields, as in the radio source regions of pulsars and quasars. Calculations made apply to plasmas having lifetimes longer than the time required for equilibrium to become established.

The authors thank A. Z. Dolginov for stimulating discussions. Orig. art. has 3 refs.

USSR

UDC 523.038

VAYNSHTEYN, S. I., ZEL'DOVICH, Ya. B., Siberian Institute of Earth Magnetism, the Ionosphere, and Propagation of Radio Waves of the Siberian Department of the Academy of Sciences USSR, Irkutsk; Institute of Applied Mathematics of the Academy of Sciences USSR

"On the Origin of Magnetic Fields in Astrophysics (Turbulent Mechanism of the 'Dynamo')"

Moscow, Uspekhi Fizicheskikh Nauk, No. 3, Mar 72, pp 431-457

Abstract: The generation of magnetic fields under astrophysical conditions is discussed. Particular attention is given to "dynamo" mechanisms; i.e., mechanisms in which the magnetic field energy is drawn from the kinetic energy of the plasma. The major role of turbulent mechanisms of the dynamo is emphasized. The problem of the dynamo is divided into two parts: (1) the generation of regular magnetic fields (i.e., a dynamo of fields of scales of the actual cosmic objects by turbulent pulsations) and (2) generation of chaotic fields. Existing theories on the generation of regular fields are surveyed, with emphasis on the works of Steenbeck and Parker, and the generalization of available results to large magnetic Reynolds numbers characteristic of cosmic plasma is discussed. Also surveyed are existing theories in the dynamics of chaotic fields, and results are derived

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USSR

VAYNSHEYN, S. I., ZEL'DOVICH, Ya. B., Uspekhi Fizicheskikh Nauk, No 3, Mar 72, pp 431-457

concerning a turbulent dynamo in the presence of acoustical turbulence. An analogy is made with the problem of the excitation of vortices in the field of acoustical turbulence. The problem of dynamo turbulence in the field of "Kolmogorov" turbulence is discussed along with the problem of a steady-state field due to a nonlinear effect. It is shown that gyrotropy appears in the presence of a nonweak field, the action of which is opposite to the action of ordinary rotational gyrotropy. This gyrotropy is called magnetic and can cause nonlinear stabilization of the magnetic field. It is noted that many stars have convective nuclei or convective shells and that the material is fixed in the remaining parts of the stars: i.e., the turbulence is inhomogeneous, raising the problem of how the general field of the star will behave. If it is effectively damped in convective stars, it will rapidly be forced into nonfixed regions, and the lines of force will bypass the convective cores; consequently, the core will behave as a diamagnetic and can develop macroscopic electrodynamics: i.e., the electrodynamics of large-scale fields, where the magnetic permeability depends on the turbulent characteristics. The authors note that the theory of a turbulent dynamo is only beginning its development but it can nevertheless help to clarify the problem of the origin of enormous cosmic magnetic fields.

2/2

USSR

ZEL'DOVICH, Ya. B.

"Electromagnetic Current and Charge from the Interaction of Gravitational and Free Electromagnetic Fields"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16, No 7, 1972, pp 425-427

Abstract: In this letter, the author proposes a new interpretation of the interaction of gravitational and electromagnetic fields and the formulas describing that interaction without changing the formulas. For short waves, this interaction manifests itself as the deviation of photon trajectories. The author develops the idea that the gravitation field interacting with the electromagnetic field creates a definite charge density and current density, which are distributed in space and are linearly dependent on the electromagnetic field. Asserting that all beam-bending phenomena and variations of electromagnetic field intensity occurring in the gravitational field can be described in terms of the interaction of the electromagnetic waves and fields emitted by the new charge with the primary electromagnetic field, the author presents a diagram describing the deviation of a light beam by a heavy body.

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172 034

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--STATIONARY STATE OF ELECTRONS IN A NON-EQUILIBRIUM RADIATION FIELD

AUTHOR--(02)-ZELDOVICH, YA.V., LEVICH, E.V.

COUNTRY OF INFO--USSR

SOURCE--JETP LETTERS (USA), VOL. 11, NO. 1, P. 57-60 (JAN. 1970)

DATE PUBLISHED----JAN70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FREE ELECTRON, ELECTRON DENSITY, EXCITED ELECTRON STATE, COMPTON EFFECT, ELECTROMAGNETIC WAVE SCATTERING, BREMSSTRAHLUNG, COULOMB FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/1791

STEP NO--US/0000/70/011/001/0057/0060

CIRC ACCESSION NO--AP0133696

UNCLASSIFIED

2/2 034

CIRC ACCESSION NO--AP0133696

UNCLASSIFIED

PROCESSING DATE--13NOV70

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

ABSTRACT. THE STATIONARY STATE OF A SYSTEM OF FREE NONRELATIVISTIC ELECTRONS SITUATED IN A NON EQUILIBRIUM RADIATION FIELD IS DETERMINED. IT IS ASSUMED THAT THE ELECTRONS SCATTER THE RADIATION BY THE COMPTON MECHANISM. THE ROLE OF BREMSSTRAHLUNG PROCESSES IN THE FIELD OF THE NUCLEI WILL BE CONSIDERED SEPARATELY.

FACILITY: USSR ACAD. SCIS.

UNCLASSIFIED

172 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--PREPARATION OF CYCLODODECANONE BY THE LIQUID PHASE OXIDATION OF
CYCLODODECANOL -U-
AUTHOR--(051)-SOKOVA, K.M., ANDREYEVA, T.P., ZELENAYA, G.A., KRUGLIKOVA,
V.S., SHIRYAYEVA, V.YE.
COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(2), 236-41

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CYCLIC GROUP, HYDROXYL RADICAL, OXIDATION, AROMATIC KETONE,
ALCOHOL, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0963

STEP NO--UR/0204/70/010/002/0236/0241

CIRC ACCESSION NO--AP0134681

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134681

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SELECTIVITY OF THE OXIDN. OF CYCLODECANOL (I) BY O DEPENDED MAINLY ON THE DEGREE OF CONVERSION OF I AND THE CONCN. OF O IN THE OXIDN. GAS. AT LESS THAN OR EQUAL TO 10PERCENT CONVERSION OF I, THE SELECTIVITY OF THE REACTION APPROACHED 100PERCENT AND AT 45PERCENT, IT WAS 77PERCENT. THE PRODUCTS WERE TREATED WITH H SUB3 BO SUB3, AND THEN WITH BOILING H SUB2 O, AND THE ALCS. SEPD. BY EXTN. WITH ET SUB2 O. FACILITY: INST. NEFTEKHIM. SIN. IM. TOPCHIEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 621.438:669.5:546.821

KOSTYRKO, O. S., BRAUN, M. P., MARTYNYENKO, A. P., ZELENAYA, I. A., and GRIGOR'YEV, V. P.

"Particularities Associated With Using Some Grades of Steel and Alloys at Low Temperatures"

V sb. Lityye iznosostoyk. materialy (Cast Wear-Resistant Materials -- collection of works), Kiev, 1972, pp 156-164 (from RZh-Turbostroyeniye, No 5, 1973, Abstract No 5.49.152)

Translation: The authors study changes in the casting expansion factor and the characteristics of strength, plasticity, and ductility within a broad temperature interval of up to -70°C for the 12 Kh 2NChA, 18KhNVA, 30 Kh Kh-GSA, 38 KhMYuA, 40 Kh NMA, 2 Kh13, Kh17 N2, EI698-M grades of steel and for the VTZ-1 alloy. Fatigue strength using smooth and cut specimens was also studied in the case of the Kh17N2 and EI961 grades of steel and the VTZ-1 alloy. Original article: 5 tables, 3 bibl. entries.

1/1

UNCLASSIFIED

PROCESSING DATE--11SEP70

TITLE--CATALYTIC HYDROGENATION OF NITRILES ON A STATIONARY NICKEL ALUMINUM CATALYST -U-

AUTHOR--ZELENAYA, SH.A., BASOV, A.S., PAVLOV, A.A., PETRYAKOVA, N.K., GUSHCHIN, N.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1), 11-12

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CATALYTIC HYDROGENATION, NICKEL BASE ALLOY, ALUMINUM CONTAINING ALLOY, ORGANIC NITRILE COMPOUND, PRIMARY AMINE, FATTY ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1452

STEP NO--UR/0064/70/046/001/0011/0012

CIRC ACCESSION NO--AP0101538

UNCLASSIFIED

272 025

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--A0101538

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CATALYST FOR THE HYDROGENATION OF NITRILES WAS PREPD. BY PARTIAL LEACHING OF AL FOR 1:1 NI AL ALLOY BY 20PERCENT NaOH AT 100DEGREES. THE NITRILES OF C SUB17 TO C SUB20 SYNTHETIC FATTY ACIDS WERE HYDROGENATED BY H IN THE PRESENCE OF NH SUB3 AT 85 TO 120DEGREES-50 ATM, WITH FLOW RATE OF NITRILES 0.25 AND NH SUB3 0.32 VOL.-HR, TO GIVE 100PERCENT CONVERSION TO AMINES. THE CONCN. OF PRIMARY AMINES IN THE PRODUCT WAS 84.8PERCENT, THAT OF SECONDARY AND TERTIARY AMINES WAS 11.9PERCENT. AT GREATER THAN 100DEGREES, THERE WAS A SHARP DECREASE IN SELECTIVITY.

UNCLASSIFIED

172 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--ESR SPECTRA OF MOO SUB3 SINGLE CRYSTALS DOPED WITH VANADIUM AND NIOBIUM -U-

AUTHOR-(03)-IOFFE, V.A., PATRINA, I.B., ZELENETSKAYA, E.V.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VUL 37, NR 1, PP 425-432

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--EPR SPECTRUM, MOLYBDENUM OXIDE, SINGLE CRYSTAL PROPERTY, CRYSTAL IMPURITY, VANADIUM, NIOBIUM, ELECTRON HOLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1078

STEP NO--GE/0030/70/037/001/0425/0432

CIRC ACCESSION NO--AP0107587

UNCLASSIFIED

2/2 023
CIRC ACCESSION NO--AP0107587
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--300CT70

ABSTRACT. IN MOO SUB3:V SINGLE CRYSTALS ESR SPECTRA OF V PRIME4 POSITIVE IONS AND ELECTRON HOLE CENTRES INTERACTING WITH V PRIME51 (I EQUALS SEVEN HALVES) ARE OBSERVED. THE RELATIVE INTENSITIES OF THE V PRIME4 POSITIVE IONS AND HOLE SIGNALS CHANGE WITH THE ATMOSPHERE OF CRYSTAL GROWTH. IN MOO SUB3:NB SINGLE CRYSTALS ELECTRON HOLE CENTRES INTERACTING WITH NB PRIME93 (I EQUALS NINE HALVES) NUCLEI ARE PRESENT; THE ELECTRONS ARE PARTLY LOCALIZED IN THE MOLYBDENUM SUBLATTICE. NB PRIME4 POSITIVE IONS ARE ABSENT. SYMMETRY OF THE ELECTRON HOLE SPECTRA SHOWS THAT THE V PRIME51 NUCLEI ARE IN SUBSTITUTIONAL POSITIONS AND THE NB PRIME93 NUCLEI ARE IN INTERSTITIAL ONES. FACILITY: I. V. GREBENSHIKOV INSTITUTE OF SILICATE CHEMISTRY. Leningrad. FACILITY: ACADEMY OF SCIENCES OF THE USSR,

UNCLASSIFIED

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.

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- 54 -

Polymers and Polymerization:

USSR

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002203730007-7

MATNISHYAN, A. A., ZELENETSKIY, A. N., LIOGON'KIY, H. 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_0^2

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

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USSR

UDC 539.374

ZELENEV, V. M.

"Oscillations of a Single-Mass Hereditary-Elastic System"

Sb. nauch. tr. fak. prikl. mat. i mekh. Voronezh. un-ta (Collection of Scientific Works. Faculty of Applied Mathematics and Mechanics of Voronezh University), 1971, No. 1, pp 90-94 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3V655)

Translation: It is pointed out that the solution of the equation of motion of a single-mass system, the hereditary properties of which are determined by weakly singular nuclei, can be represented in the form

$$x(t) = \frac{1}{2\pi i} \int_0^{\infty} [x(se^{-i\pi}) - x(se^{i\pi})] e^{-st} ds + \sum_k \operatorname{res} [x(p_k) e^{p_k t}]$$

Where P_k is determined from the characteristic equation

$$p^2 + \omega_{\infty}^2 \{1 - \nu_e [1 + (p\tau_e)^{\nu_e}]^{-\nu_e}\} = 0$$

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USSR

ZELENEV, V. M., Sb. nauch. tr. fak. prikl. mat. i mekh. Voronezh. un-ta, 1971, No. 1, pp 90-94

where τ_e is the effective value of the relaxation time; γ_1 and γ_2 are parameters of the divisibility of the kernels which take on values from zero to one; $v_e = (\omega_\infty^2 - \omega_0^2)\omega_\infty^{-2}$; ω_∞ and ω_0 are the frequencies of elastic oscillations corresponding to nonrelaxation and relaxation values of the elastic modulus. The first term of the expression determining $x(t)$ describes the time-variable position of equilibrium and is expressed in terms of the distribution function for the relaxation and inertial parameters of the system, while the second term describes the damping harmonic oscillations around the equilibrium position.
M. I. Rozovskiy.

USSR

UDC: 539.376+532.135

ZELENEV, V. M., MESHKOV, S. I.

"Weakly Singular Heredity Kernel With Two Divisibility Parameters"

Tr. NII mat. Voronezh. un-ta (Works of the Scientific Research Institute of Mathematics of Voronezh University), 1971, vyp. 4, pp 130-133 (from RZh-Mekhanika, No 5, May 72, Abstract No 5V452)

Translation: Assuming that the relaxation kernel is characterized by two divisibility parameters, its expression in Laplace space is written

$$R(p) = [1 + (p\tau_e)^{\gamma_1}]^{\gamma_2}, \quad p = s + i\sigma$$

Here p is a complex variable, τ_e is the "effective" value of the relaxation time, γ_1 and γ_2 are the divisibility parameters. The original of the relaxation kernel is expressed in terms of distribution functions of the relaxation time and the logarithms of the relaxation time. The asymptotic behavior of the resultant solution is investigated. Representing the kernel in this way enables formal extension of the operator modulus concept to the complex case. By way of illustrating the properties of the resultant hereditary function in dynamic problems, the characteristics of a one-dimensional sinusoidal wave are calculated. L. Kh. Papernik.

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USSR

UDC 016:541.1/621.319.55

ZELENEV, YU. V.

"All-Union Symposium on Relaxation Phenomena"

Moscow, Vysokomolekulyarnye Soyedineniya 12, No 7, 1970, pp 1674-1675


Abstract: The symposium took place in Dushanbe in the Physico-Technical Institute of the Academy of Sciences of the Tadjik SSR and in the Tadjik State University imeni V. I. Lenin on 31 October to 3 November 1969. The papers were divided into two groups: "Acoustic Relaxation" and "Optico-Spectral Studies of Relaxation." S. YA. PRENKEL read a paper entitled "Structural Relaxation and Orientation in Polymer Solutions." I. G. NIKHAYLOV and L. I. SAVINA reported on "Structural Relaxation in Epoxy Resins," a study of the frequency change of ultrasonic waves in resin materials of different viscosity. G. M. BARTENEV and YU. V. ZELENEV presented a paper on "Peculiarities in the Relaxation Phenomena in Liquid Crystals of Micro- and Macroheterogeneous Polymer Compositions" in which they discussed molecular mobility in amorphous polymers. A method for the study of relaxation processes in liquid mixtures,
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USSR

ZELENEV, YU. V., Vysokomolekulyarnye Soedineniya 12, No 7, 1970,
pp 1674-1675

based on a kinetic model equation, was discussed in a report by A. A. ADKHAMOV, A. ASOYEVA, and KH. SAIDOV. V. P. EPIFANOV and V. V. VOYTONIS presented experimental data on the absorption and velocity of ultrasonic waves in the frequency range from 0.5 to 80 megacycles in their paper on "Some Problems of Acoustic Relaxation in Polystyrene Solutions." Among other papers given at the Symposium were "Comparative Studies of Relaxation Phenomena in Rubber by Different Physical Methods" and "Conformational Transitions During Elastic Stretching of Polyethylene Fibers."

2/2

172 026 UNCLASSIFIED PROCESSING DATE--02OCT70
 TITLE--DYNAMIC MECHANICAL PROPERTIES OF MULTICOMPONENT POLYMERIC
 COMPOSITIONS -U-
 AUTHDR--(05)-AIVAZOV, A.B., ZHIVAYEV, V.YA., NIKIFOROVA, A.V., ZELFNEV,
 YU.V., TYURINA, V.S. 
 COUNTRY OF INFO--USSR

SOURCE--MEKH. POLIM. 1970, 6(1), 138-41

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELASTIC MODULUS, CARBON BLACK, POLYISOPRENE, POLYSTYRENE
 RESIN, POLYPROPYLENE, POLYVINYL CHLORIDE, LOW TEMPERATURE EFFECT, HIGH
 TEMPERATURE EFFECT/(U)SKI3 POLYISOPRENE, (U)SKMS30 METHYLSTYRENE RUBBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1989/0815

STEP NO--UR/0374/70/006/001/0138/0141

CIRC ACCESSION NO--AP0107357

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107357

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DYNAMIC ELASTICITY MODULUS (E) AND TAN(MECH. LOSS ANGLE) WERE DETD. FOR BINARY (RUBBER PLASTIC) AND TERNARY (RUBBER, PLASTIC, CARBON BLACK (II)) SYSTEMS BY THE METHOD OF FORCED NON RESONATING VIBRATIONS. THE TEMP. DEPENDENCE OF E PERMITTED TO CALC. THE ACTIVATION ENERGY (U) OF E CHANGE. IN THE LOW TEMP. REGION (SIMILAR TO MINUS 50DEGREES) U IS 13.4-13.8 KCAL-MOLE; IN THE HIGH TEMP RANGE (SIMILAR TO 160-5DEGREES) U IS 21.9-28.7 KCAL-MOLE FOR THE FOLLOWING AND SIMILAR SYSTEMS: 100:20 SKI-3-POLYPROPYLENE (II); 100:15 SKMS-30-II; 100:60 SKI-3-I; 100:10:60 SKI-3-MARBON 8000 A-1; 100:10:60 SKI-3-POLY(VINYL CHLORIDE)-I.

UNCLASSIFIED

1/2 042 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--MODELING OF THE DYNAMIC MECHANICAL PROPERTIES OF TWO COMPONENT
HETEROGENEOUS POLYMER COMPOSITIONS BY THE TECHNIQUE OF COMPOSITE
AUTHOR--(03)--AYVAZOV, A.B., ZELENEV, YU.V., BARTENEV, G.M.
COUNTRY OF INFO--USSR
SOURCE--MEKH. POLIM. 1969, 5(6), 1119-22
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--ELASTIC MODULUS, PLASTIC MECHANICAL PROPERTY, SYNTHETIC
RUBBER, POLYSTYRENE RESIN, POLYMER BINDER, COMPOSITE MATERIAL,
MATHEMATIC MODEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/0496 STEP NO--UR/0374/69/005/006/1119/0122
CIRC ACCESSION NO--AP0107101
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--02OCT70

2/2 042

CIRC ACCESSION NO--AP0107101

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPLEX DYNAMIC ELASTICITY MODULUS (E) AND TAN (MECH. LOSS ANGLE) ($\tan \delta$) WERE DETD. IN THE MINUS 100 TO PLUS 100DEGREES RANGE FOR MIXTS. OF SYNTHETIC RUBBERS WITH POLYSTYRENE (I). ALSO E AND $\tan \delta$ WERE DETD. OF COMPOSITE SAMPLES CONSISTING OF PURE I BONDED TO PURE RUBBER. FORMULAS WERE REDUCED WHICH GIVE THE REAL (E_{SUB1}) AND IMAGINARY (E_{SUB2} , LESS MODULUS) COMPONENTS OF E IN TERMS OF E_{SUB1} AND E_{SUB2} OF THE MIXT. CONSTITUENTS. THERE IS A CLOSE CORRESPONDENCE BETWEEN THESE FORMULAS AND FORMULAS DEDUCED FOR THE MIXTS., WHICH SHOWS THAT THESE MIXTS. ARE HETEROGENEOUS AND THEREFORE THEIR MECH. DYNAMIC PROPERTIES ARE MATH. PREDICTABLE WHEN THEIR COMPN. IS KNOWN.

UNCLASSIFIED

1/2 037 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--APPARATUS FOR STUDYING THE RELAXATION PROPERTIES OF POLYMERS -U-
AUTHOR-(02)-ZELENEV, YU.V., NOVIKOV, A.G. Z
COUNTRY OF INFO--USSR
SOURCE--ZAVOD. LAB. 1970, 36(2), 235-7
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--COMPRESSIVE STRESS, PLASTIC DEFORMATION, POLYMER, SHEAR
MODULUS, POISSON COEFFICIENT, MATERIAL TESTING EQUIPMENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1471 STEP NO--UR/0032/70/036/002/0235/0237
C.I.R.C. ACCESSION NO--AP0116908
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 037

CIRC ACCESSION NO--AP0116908

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

ABSTRACT. THE APP. CONSISTS OF AN ELECTROMAGNETIC SYSTEM FOR THE APPLICATION OF CONST. OR VARIABLE COMPRESSION STRESS TO POLYMER SAMPLES, A SYSTEM OF TENSODYNAMOMETERS FOR DETG. THE LONGITUDINAL AND TRANSVERSE DEFORMATIONS OR STRESSES, AND A THERMSTAT. THE APP. IS USED FOR STUDYING THE RELAXATION PROPERTIES OF POLYMERS IN THE GLASSY OR VISCOELASTIC STATE. THE COMPRESSION AND SHEAR MODULI, POISSON'S COEFFS., AND THE MECH. LOSS ANGLE MAY ALSO BE DETD. A COMPLEX ELECTRONIC PHASOMETER, COUPLED TO AN OSCILLOGRAPH, WAS USED FOR DETG. THE PHASE LAG BETWEEN THE APPLIED (SINUSOIDAL) STRESS AND THE MATERIAL RESPONSE.

FACILITY: MOSK. GOS. PEDAGOG. INST. IM.
LENINA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr: **AP0052536** Abstracting Service:
CHEMICAL ABST. 5-7C

Ref. Code:
WR 0460

Z

101359r Compatibility of poly(vinyl chloride) with butadiene-acrylonitrile rubbers. Aivazov, A. B.; Mindjarov, Kh. G.; Zelenev, V. V.; Orjanov, Yu. G.; Raevskii, V. G. (Mosk. Gos. Pedagog. Inst. im. Lenina, Moscow, USSR). *Vysokimol. Soedin. Ser. B* 1970, 12(1), 10-14 (Russ). NMR spectroscopy and detn. of the changes of the mech. loss angle in -50° to $+100^{\circ}$ interval established that the title polymers are miscible and compatible. At some component ratios, the mixts. have characteristics of binary systems. The obsd. phase transitions are due to glass temps. of poly(vinyl chloride) at high temp, and of butadiene-acrylonitrile copolymers at low temps.

CPJR *me*

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Acc. Nr:

AP0041407

Abstracting Service: 4-70 Ref. Code:

CHEMICAL ABST.

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79609y Thermodynamic description of relaxation phenomena in polymers. Bartenev, G. M.; Zolenev, Yu. V. (Dep. Phys. Solids, Lenin State Teachers' Training Univ., Moscow, USSR). *J. Appl. Polym. Sci.* 1976, 14(2), 393-408 (Eng). The anal. of various deformations of an ordinary elastic body and a highly elastic body accompanied by temp. changes shows that under adiabatic conditions the dynamic characteristics of a polymer in a highly elastic state depend on the amplitude of the applied stress (in particular, their position on a frequency or temp. scale), which is assocd. with the entropic nature of the highly elastic deformation. When describing the relaxation phenomena caused by the response of the system of interacting kinetic units to the external perturbation, the nonequil. thermodynamics relation between the "flow" and the "generalized force" is nonlinear even at small deviations from the equil. state. Creep and stress relaxation are considered. The calcd. dependencies agree with expt.

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Acc. Nr: AP0036571

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Ref. Code: UR 0391

PRIMARY SOURCE: Gigiyena, Truda i Professional'nyye
Zabolevaniya, 1970, Nr 2, pp 21-24

HYGIENIC, CLINICAL AND EXPERIMENTAL DATA CHARACTERIZING
MAGNESITE PNEUMOCONIOSIS

Zeleneva, N. I.; Makarov, Yu. V.; Starikova, S. K.;
Babushkina, L. G.; Yarosh, Z. P.; Ragol'skaya, F. S.

Summary

An examination of workers of a magnesite plant with long service record exposed to highly concentrated dust of raw or roasted (burnt) magnesite containing about 1-3% of total SiO₂ revealed 13 cases of pneumoconiosis, chiefly among workers exposed to the effect of roasted magnesite. Roengeno-morphologically magnesite pneumoconiosis is characterized by diffuse pneumofibrosis with isolated micromaculous elements. Clinical manifestations and periods marking development of the disease justify including it in the group of the so-called "benign" pneumoconiosis. Not infrequently it is associated with symptoms of chronic bronchities and pulmonary emphysema. Experiments on animals demonstrated magnesite dust to have had an insignificant fibrinogenicity, but confirmed its possible accumulation in the lungs, following its long-term inspiration. By comparison with the raw magnesite dust that of the roasted magnesite has somewhat greater pronounced fibrinogenous properties.]

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Acc. Nr: **AP0034679**

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 2, pp 140-144

PRIMARY ASSESSMENT OF ANTITUMOROUS ACTIVITY OF SOME FRACTIONS ISOLATED FROM THE CELLS OF STRIGOMONAS ONCOPELTI

Sukhareva-Nemakova, N. N.; Silayev, A. B.; Katrukha, G. S.;
Zeleneva, R. N.; Urinyuk, V.M.

Moscow State University

The study of the effect of fractions isolated from the cells of Strigomonas oncopelti on sarcoma-180 revealed that the cellular homogenate stimulates the growth of this tumor, the amino-acid fraction inhibits it, the peptide fraction is inactive, the total lipid fraction inhibits the growth of sarcoma-180 at early periods of tumor development and causes stimulation in a more prolonged introduction, the lipid fraction devoid of sterines and their esters is not endowed with a stimulating action, both at early and late periods of tumor development, microsomal-mitochondrial fraction possesses a significant antitumorous activity; the removal of lipids by the extraction of this fraction with a chloroform-methanol mixture leads to a loss of its antitumorous effect.

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19711384

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USSR

UDC 547.261'18'17'13:543.422.25

ZELENEVA, T. P., ANTONOV, I. V., and STEPANOV, B. I., Moscow Chemical-
Technological Institute Imeni D. I. Mendeleev

"PMR Spectra of Alkoxy- and Arylalkoxysubstituted Cyclotriphosphazatrienes"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (105), No 5, May 73,
pp 1007-1010

Abstract: Reacting hexachlorocyclotriphosphazatriene with propyl, butyl, benzyl and phenethyl alcohols gave cyclophosphazatriene acid esters with the general formula $N_3P_3(Cl_{6-n}OR)_n$ where $n = 1, 2, 3, 6$ for $R = Bu$, and $n = 3, 6$ for $R = Pr, CH_2Ph, \text{ and } CH_2CH_2Ph$. These products were studied by PMR spectroscopy. It was shown that these compounds exhibit a virtual remote spin-spin split. It was possible to establish geminal and nongeminal structures of the substituted phosphazatrienes by means of PMR spectroscopy.

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USSR

UDC 621.791.754.011:546.821

KLYKOV, N. A., RESHETOV, A. L., Chelyabinsk Polytechnic Institute, RUSSO,
V. L., ZELENII, V. A., Leningrad

"Stress-Concentration Sensitivity of Seam-Zone Metal and Welded Seams of
Titanium Alloys"

Kiev, Avtomaticheskaya Svarka, No 11, Nov 72, pp 30-32.

Abstract: The notch sensitivity of the welded joints in titanium alloys was studied using VT5 and OT4-1 alloys. The fatigue resistance of the metal in the seam, near-seam zone and base metal differs. Both flat and cylindrical specimens were studied with a test base of $5 \cdot 10^6$ cycles. It was found that the thermal cycle of welding influences fatigue strength and sensitivity to stress concentration of the metal of the seam and near-seam zone of titanium alloys. As the sensitivity to stress concentration increases, the fatigue limit of smooth specimens decreases.

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USSR

BALOVNEV, V. I., CHIZHIK, Ye. I., DVORKOVOY, V. Ya., RASTEGAYEV, I. K.,
ZELENIN, A. N.

"Device for Studying the Effect of an Explosion in Excavation of Soils"

Otkrytiya Izobreteniya Promyshlennye Obraztsy Tovarnyye Znaki, No 5, 1972,
Patent No 355311.

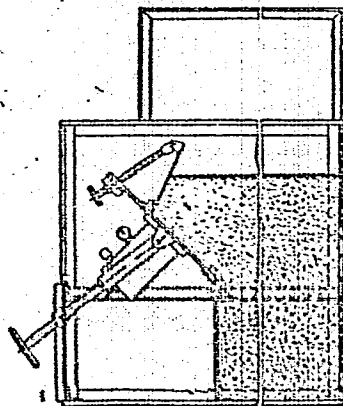
Translation: 1. Device for studying the effect of an explosion in excavation of soils by the working organs of earth moving and transportation machines including a container, an explosive device and measuring instruments, differing in that in order to assure the possibility of regulation of the energy and direction of application of the explosion, a plate is hinged in the container, with the explosive device rigidly connected to the plate, made with a power cylinder with a back valve, with an elastic film mounted on the side toward the soil, interacting with the filament installed in the power cylinder.

2. An installation according to Claim 1, differing in that the plate is connected to the container by a screw mechanism, with a smaller plate articulated to it, connected to the larger plate by an additional screw mechanism.

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USSR

BALOVNEV, V. I., CHIZHIK, Ye. I., ET. AL., Otkrytiya Izobreteniya Promyshlennyye Obraztsy Tovarnyye Znaki, No 5, 1972, Patent No 355311.



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ZELENIN, A.V.

Biology

Sci Serv 02516

17 Nov 1971

60414

SESSION OF THE COUNCIL OF THE INTERNATIONAL CIVIL RESEARCH ORGANIZATION

(Article by director of Biological & Environmental Sciences, Washington, D.C., USA, USSR, Russian, Vol 40, No 12, December 1970, pp 99-100)

A session of the Council of the International Civil Research Organization (ICRO) was held in Paris from 13 June to 17 June 1971. The main theme of the session was the development of the ICRO system which studies specimens of cell biology and genetics, molecular biology, cytology, embryology, virology, experimental cytology, etc. In accordance with the general tasks of ICRO the session concentrated its main efforts on the organization of international cooperation in these areas of research and also on the organization of short courses of training for the ICRO and other national centers for the study of the development of the developing countries mainly in the sciences.

At the session the report of the Executive Committee of the ICRO was read, plans for the work of that organization for the next two years were discussed, and members of the Council and Executive Committee were re-elected.

In the period 1969-1970 the ICRO successfully organized 11 international courses on various subjects in the field of cell biology, embryology, cytology, etc. In 1970-1971 a new range of courses is being organized. The ICRO system which studies specimens of cell biology and genetics, molecular biology, cytology, embryology, virology, experimental cytology, etc. In accordance with the general tasks of ICRO the session concentrated its main efforts on the organization of international cooperation in these areas of research and also on the organization of short courses of training for the ICRO and other national centers for the study of the development of the developing countries mainly in the sciences.

During the session the Executive Committee of ICRO discussed the report of the ICRO and also for short scientific sessions of members of different countries. A large portion of the

I/2 014 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--MECHANISM OF THE CYTOSTATIC ACTION OF AMINOACRIDINES -U-
AUTHOR--(05)-ZELENIN, A.V., KIRYANOVA, YE.A., LYAPUNOVA, YE.A., MELNIKOVA,
YE.YU., STEPANOVA, N.G.
COUNTRY OF INFO--USSR
SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(1), 96-101
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ANTITUMOR DRUG EFFECT, MITOSIS, PROTEIN SYNTHESIS, NUCLEIC
ACID
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1158 STEP NO--UR/0390/70/033/001/0096/0101
CIRC ACCESSION NO--AP0115177
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0115177

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 3,6,DIAMINOACRIDINES, INCLUDING ACRIDINE ORANGE, PROFLAVINE, ACRIFLAVINE, EUCRISINE 2, AND CORIPHOSPHINE, WERE CHARACTERIZED BY SIGNIFICANT ANTIMITOTIC ACTION STARTING IN THE 1ST FEW MIN OF THE EXPT., WITH A SHARP PARALLEL NOTED BETWEEN INHIBITION OF MITOTIC ACTIVITY AND PROTEIN SYNTHESIS, AND DELAYED PASSAGE OF CELLS THROUGH THE MITOTIC G SUB2 PERIOD. ACRIDINE AND RIBOFLAVINE ANTIMITOTIC ACTIONS APPEARED ONLY SEVERAL HR AFTER THE START OF THE EXPT. AND WERE NOT ACCOMPANIED BY EFFECTS ON PROTEIN SYNTHESIS OR BY ANY CHANGE IN THE G SUB2 PERIOD OF THE CYCLE. ANTIMITOTIC ACTIVITY OF THE 3,6,DIAMINOACRIDINES APPARENTLY INVOLVES DIRECT INHIBITION OF PROTEIN SYNTHESIS, WHILE THE 2ND GROUP OF COMPOS. INTERFERES WITH NUCLEIC ACID SYNTHESIS. FACILITY: INST. MOL. BIOL., MOSCOW, USSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--ZONOV70
TITLE--MORPHOLOGICAL CHANGES IN CULTURED AMNION EPITHELIAL CELLS IN THE

PRESENCE OF AMINOACRIDINES -U-
AUTHOR--(03)-STEFANOVA, N.G.; BIRYUZOVA, V.I.; ZELENIN, A.V.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(2), 453-6

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EMBRYOLOGY, MORPHOLOGY, CELL CULTURE, ELECTRON MICROSCOPY,
CYTOPLASM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1675

STEP NO--UR/0020/70/191/002/0453/0456

CIRC ACCESSION NO--AT0133580

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--20NOV79

CIRC ACCESSION NO--AFO133580

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

ABSTRACT. SINGLE LAYER CULTURES OF STRAIN PL

EPITHELIUM WERE INCUBATED WITH VARIOUS

CONCNS. OF ACRIDINE ORANGE AND PROFLAVINE AT VARIOUS TIME INTERVALS,

THEN SUBJECTED TO ELECTRON MICROSCOPIC EXAMN. BOTH NUCLEI AND CYTOPLASM

WERE ALTERED BY TREATMENT WITH THESE DYES AND PHOTOMICROGRAPHS OF

TYPICAL STRUCTURES WERE SHOWN. AT HIGHER CONCN. OF THESE DYES THERE IS

AN ACCUMULATION OF BASOPHILIC MATTER IN THE CYTOPLASM. FACILITY:

INST. MOL. BIOL., MSCON, USSR.

UNCLASSIFIED

1/2 034 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--OBSERVATION OF PLASMA SATELLITES NEAR HEI FORBIDDEN LINES DURING
TURBULENT HEATING OF A PLASMA -U-
AUTHOR--(05)-ZELENIN, G.V., KUTSYN, A.A., MAZNICHENKO, M.YE., PAVLICHENKO,
D.S., SUPRONENKO, V.A.
COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 6, PP 1879-1883
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--TURBULENT PLASMA, SATELLITE, GAS DISCHARGE, FORBIDDEN BAND,
ELECTRON DENSITY, PLASMA OSCILLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1727

STEP NO--UR/0056/70/058/006/1879/1883

CIRC ACCESSION NO--AP0120439

UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120439

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SATELLITES IN A TURBULENT PLASMA OF A STRONG CURRENT LINEAR GAS DISCHARGE (Z PINCH) HAVE BEEN DETECTED AND INVESTIGATED NEAR THREE FORBIDDEN LINES OF HEL. THE SATELLITES HAVE BEEN PREDICTED BY BARANGIER AND MOSER. TIME MEASUREMENTS OF THE POSITION AND INTENSITY OF THE SATELLITES YIELD THE ELECTRON DENSITY AND THE TIME VARIATION OF THE LEVEL OF THE PLASMA OSCILLATIONS. OBSERVATION OF SATELLITES IS A NEW CONTACTLESS METHOD FOR INVESTIGATING A TURBULENT PLASMA. FACILITY: FIZIKO-TEKHNICHESKIY INSTITUT AN UKR, SSR.

UNCLASSIFIED

USSR

ZELENIN, G. V., KUTSYN, A. A., et al (Physics-Engineering Institute, Ukrainian Academy of Sciences)

"Observation of Plasma Satellites Near HeI Forbidden Lines During Turbulent Heating of a Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, June 1970, pp 1879-1883

Abstract: Satellites in a turbulent plasma of a strong-current, linear gas discharge (z-pinch) were detected and investigated near three forbidden lines of HeI. The satellites were predicted by Baranger and Mozer. Time measurements of the position and intensity of the satellites yielded the electron density and the variation of the level of the plasma oscillations with respect to time. Observation of satellites is a new contactless method of investigating a turbulent plasma.

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1/2 013 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--SYNTHESIS OF ALKYLPIRIDAZINES FROM FURANS --U-
AUTHOR--(02)--ZELENIN, K.N., BEZHAN, I.P. 2
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(6), 1292-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ORGANIC SYNTHESIS, FURAN, HETEROCYCLIC NITROGEN COMPOUND,
ORGANIC AZINE COMPOUND, HYDRAZINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0226 STEP NO--UR/0020/70/191/006/1292/1294
CIRC ACCESSION NO--AT0132498
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 013
CIRC ACCESSION NO--AT0132498
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. EQUIMOLAR MIXTS. OF FURAN AND ETO
SUB2 ON:NC0 SUB2 ET IN C SUB6 H SUB6 WERE TREATED WITH 1 VOL. N H SUB2
SO SUB4 AND THEN WITH 1.5 FOLD EXCESS N SUB2 H SUB4 TO GIVE I AS FOLLOWS
(R PRIME1, R PRIME2, AND R PRIME3 GIVEN); AS SHOWN ON MICROFICHE. I
WERE CHARACTERIZED AS PICRATES, PICROLDNATES, OR HCL SALTS. SIMILARLY,
1,3-DIPHENYL, ISOBENZOFURAN GAVE AN ADDUCT WHICH WITH N SUB2 H SUB4 GAVE
1,4-DIPHENYLPHthalazine, M. 194.5-95DEGREES. OTHER DIENOPHILES
(THIOYLANILINE, PHNO) FAILED TO YIELD PRODUCTS WITH FURANS.
FACILITY: VOENNO-MED. AKAD. IM. KIROVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DIENE SYNTHESIS OF VINYLAZO ALKANES WITH METHYL VINYL KETONE -U-
AUTHOR--1021-ZELENIN, K.N., MATVEYEVA, Z.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. ORG. KHIM. 1970, 6(4), 717-19
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--AZO COMPOUND, ORGANIC SYNTHESIS, ALKANE, ALIPHATIC KETONE,
CHROMATOGRAPHIC SEPARATION, DIENE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/1962 STEP NO--UR/0366/70/D06/004/0717/0719
CIRC ACCESSION NO--AP0125591
UNCLASSIFIED

2/2 Q08

UNCLASSIFIED

PROCESSING DATE--B00C170

CIRC ACCESSION NO--AP0125551

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RN:NCME:CH SUB2 (Z. M. MATVEEVA, ET AL., 1969) ENTER DIELS-ALDER REACTIONS WITH H SUB2 C=CHCOME GIVING MIXTS. OF I, (R, SUBSTITUTED), 5, ACETYL, 3, METHYL, DELTA PRIME2, TETRAHYDROPYRIDAZINE (I) WITH ITS 6, ACETYL ANALOG, (II) (R IS ME, ET, PR, OR ISO-PR). I AND II WERE SPED. BY COLUMN CHROMATOG. ON AL SUB2 O SUB3. THE RELATIVE AMTS. OF I AND II DEPEND ON R AND ARE IN AGREEMENT WITH THE SUBSTITUENT EFFECTS OBSD. IN DIELS-ALDER SYNTHESIS INVOLVING HYDROCARBON DIENES. FACILITY: VOENNO-MED. AKAD. IM. KIROVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--VINYLAZO ALKANES AND THEIR REACTION WITH METHYL VINYL KETONE -U-
AUTHOR--(03)-ZELENIN, K.N., MATVEYEVA, Z.M., YERMOLAYEVA, L.YU.
COUNTRY OF INFO--USSR
SOURCE--ZH. DKG. KHIM. 1970, 6(4), 723-7
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--AZO COMPOUND, ALKANE, ALIPHATIC KETONE, CHROMATOGRAPHIC SEPARATION, CONDENSATION REACTION, EPR SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/1984 STEP NO--UR/0366/70/006/004/0723/0127
CIRC ACCESSION NO--APO125553
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125553

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

ABSTRACT. THE CONDENSATION OF H SUB2
CICHXNR (R IS ME, ET, PR, OR ISO-PA) WITH H SUB2 CICHXOME GAVE MIXTS.
OF I, (R, SUBSTITUTED), 5, ACETYL, DELTA PRINE2, TETRAHYDROPYRIDAZINE (II) WITH
ITS 5, ACETYL ANALOGS (III). THE MIXTS. WERE SEPD. BY GAS CHROMATOG.; I
AND II WERE IDENTIFIED BY EPR SPECTROSCOPY. THE RELATIVE AMTS. OF I
AND II DEPEND ON R; MORE BULKY R DECREASE THE AMT. OF II IN PRODUCTS.
FACILITY: VUENNO-MED. AKAD. IM. KIROVA, LENINGRAD, USSR.

UNCLASSIFIED