CIRC ACCESSION NO--AP0119309   UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SATN. OF BUFFER SOLNS. WITH AMMONIA IS OBSD. DURING THE DETN. OF BASIC AMINO ACIDS BY USING ION EXCHANGE CHROMATOG. AMMONIA CAN BE REMOVED FROM THE BUFFER WITH THE SAME RESINS WHICH ARE USED IN THE AMINO ACID DETN. THE COLUMN (AMBERLITE IR-120; 25 CM LONG, 4 CM DIAM.) IS CAPABLE OF PURIFYING 2-5 L. OF BUFFER. THECCOLUMN CAN BE REGENERATED WITH 250-300 ML 0.35M NAOH. FACILITY: INST. PITAN., MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr: *AP0044150*   Ref. Code: UR 0244

PRIMARY SOURCE: Voprosy Pitaniya, 1970, Vol 29, Nr 1,
                   pp *48-56*

CURRENT STATE IN THE STUDY OF THE AMINO ACIDS COMPOSITION IN HOME-MADE FOOD PRODUCTS

V. I. Somin

Summary

Possible sources for the information as to the amino acids composition in Soviet-made foodstufis are discussed and on the ground of an analysis of pertinent literature sources incompleteness and insufficient accuracy of the data on the amino acids composition of food products made available through paper chromatography and by chemical methods are evinced. Materials proving high precision of modern methods employed in the amino acids analysis of proteins (amino acid analyzers and ion-exchange resins partition chromatography) are presented. An inference in drawn on the need of organizing at research institutions dealing with nutritional problems collection of pertinent information by using modern procedures with subsequent utilization of these data and including them in new detailed tables indicating chemical composition of Soviet-made food products. A complex procedure for specifying the amino acids composition of Soviet-manufactured foodstuffs of vegetable origin is offered for discussion.

1/1

2

USSR

UDC 621.385.711

MALYUGIN, V.I., SCHINSKIY, G.G.

"Investigation Of Ion Bombardment Of Cathodes Of An Amplitron"

Translation: A method is developed for investigation of ion bombardment of cathodes which can be used for investigations in M-type power devices with a cathode in the interaction space. As a result of experimental investigations of ion bombardment of cathodes in a power pulse amplitron, the connection between the ion current at the amplitron cathode and the intensity of the magnetic field $(1750 \leqslant H \leqslant 2200$ e), the anode voltage $(10 \leqslant V_a \leqslant 22$ kv) and the pressure of the residual gas $(10^{-8} \leqslant p \leqslant 10^{-4}$ mm mercury), it is found that the magnitude of the ion current at the cathode increases approximately by three orders of magnitude with an increase of the pressure from 10^{-8} to 10^{-4} mm of mercury. The results indicate the potentialities of forced tests of the stability of cathodes with respect to ion bombardment with an increase of the pressure of the residual gases to 10^{-4} mm mercury. 5 ill. 5 ref. G.B.

1/1

USSR

MIKHALEVSKIY, V. S., et al, Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh, 1970, Issue No 10, p 50

cylindrical wave and the radially diverging electron stream, close to practicable realization, makes it possible to evaluate quantitatively their effect on the amplification factor and the interaction conditions in a traveling-wave tube with a radial stream, and can be used during computation of concrete decelerating systems.

2/2

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USSR

KORSUNSKIY, M. I., SOMINSKIY, M. M., Institute of Nuclear Physics, Academy of Sciences of the Kazakh SSR, Alma-Ata

"Anomalous Dember Effect in Anomalously High Photovoltages in Cadmium Telluride Films"

Abstract: The phenomenon of generation of anomalously high photovoltages in CdTe films is considered in an effort to decide whether the barrier or diffusion mechanism is responsible for this effect. Measurements of the photomagnetic effect with front and back illumination show the presence of anomalous photodiffusion in these films. The illuminance curves for CdTe films also accord with the Dember mechanism of anomalously high photovoltages. The anomalous Dember effect also enables explanation of a number of other characteristics which do not agree with the barrier model.

1/1

USSR

UDC 535.215.6

GORODETSKIY, S.M., GRIGOR'YEVA, G.M., KREYNIN, L.B., LAZOVSKIY, V.V., LANDSMAN, A.P., SOMINSKIY, M.S.

"Effect Of Electron Irradiation On The Recombination Parameters Of p-Silicon And The Photoelectric Characteristics Of Silicon n-p Junctions"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals-- Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 159-266 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1E269)

Translation: The results are discussed of an investigation of the bombardment of silicon photoconverters by electrons in the 0.5--18 Mev range of energies. As follows from the photoelectric characteristics presented, impairment of the photo-converters by electrons is characteristics for the case of the action of penetrating hard radiation. The energy dependence was experimentally found of the damage factor of the p-silicon base with a resistivity of 1 ohm.cm. An analysis of the changes of the dependences of the lifetime on the injection level and the temper-ature made it possible to draw the preliminary conclusion that the center deter-mining the decrease of the lifetime of the p-Silicon irradiated by electrons is found at 0.2 ev above the top of the valence band and has a ratio of the electron and hole capture cross sections of $\sim$ 100. 6 ill. 17 ref. 1/1

- 71 -

Somov A.F.

UDC 669.018.5 + 549.21

ON THE ELECTRICAL CONDUCTIVITY OF DIRECTIONALLY CRYSTALLIZED COMPOSITION Al--Al₃Ni

V. Ye. Samonenko, A. I. Somov, and V. I. Tutov, Khar'kov State University imeni A. M. Gor'kiy, Physics Engineering Institute of the Ukrainian SSR Academy of Sciences, submitted to press 19 May 1972

Pages 1317-1319

At the present time considerable attention is being devoted to the study of composition materials, among which materials which have obtained directional crystallization of alloys of a eutectic composition [1--6] occupy a notable place. Quite a large number of works are known devoted to the development of various methods of obtaining and investigating the effect of the parameters of growth on the microstructure and mechanical properties of the composition [7--11]. However, the physical properties of such systems have been inadequately studied. Compositions based on aluminum alloys [5, 12, 13], having high values of specific strength and specific modulus of elasticity, are of special interest.
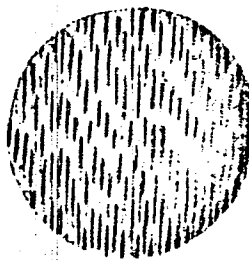
In this work the results of an investigation of the electrical conductivity of an Al--Al₃Ni alloy of eutectic composition are given, obtained by the method of directional crystallization.

As the initial materials, zone-purified aluminum was used, with a purity of 99.9996% with a residual resistance $R_{300K}/R_{4.2K} = 5650$ and nickel of 99.99% purity with a residual resistance $R_{300K}/R_{4.2K} = 590$. The eutectic system was unidirectionally crystallized according to the Chokhral'skiy method with the following rates of withdrawal of the ingot from the melt: 14; 24; 90; 180; 360; 720; and 1440 millimeters per hour.

At all rates of growth a primary mutual connection of the interphase between the phases of Al and Al₃Ni was observed, with a direction of growth, which may be described in the following manner:

$$\text{interface} \quad \frac{\langle 010 \rangle_{Al_3Ni} \parallel \langle 010 \rangle_{Al}}{\langle 100 \rangle_{Al_3Ni} \parallel \langle 100 \rangle_{Al}}$$

direction of growth $\langle 100 \rangle_{Al_3Ni} \parallel \langle 100 \rangle_{Al}$.

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Figure 1. Microslide of a specimen of Al--Al₃Ni grown at a rate of growth v=90 millimeters per hour (longitudinal section); × 1250.

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THERMAL STABILITY OF THE MICROSTRUCTURE OF THE Al--Al$_3$Ni EUTECTIC COMPOSITION

UDC 539.216:620.181

Yu. P. Kurilo, A. I. Somov, and A. S. Tyrtika, Physics Engineering Institute of the Ukrainian SSR Academy of Sciences, submitted to press 16 March 1972

Pages 1271-1291

The high-temperature stability of the reinforcing phase in the eutectic composition Al--Al$_3$Ni, obtained in a wide range of rates of growth, was experimentally investigated. The dependence of the dispersivity of the reinforcement upon the temperature and the annealing time of the composition was found. The behavior of the macrostructure characteristics of the composition (grains, colonies) at increased temperatures was studied.

The production of a number of materials having unique electrophysical and thermophysical, magnetic, optical, and mechanical properties is associated with controlled crystallization of the eutectics [1]. The temperature region of applicability of eutectic compositions depends upon the stability of their structure and increased temperatures. By means of a controlled change of such crystallization parameters as the rate of advance of the crystallization front and the temperature gradient in the melt [2, 3] we may control the dimensions, shape, distribution, and even the volumetric fraction of dispersed phase particles in alloys of the eutectic type. Subsequent annealing of the composition may change the morphology and degree of dispersivity of the phases and, in the final analysis, the properties of the material, especially in those cases when these properties have an extreme relative to the structural characteristics indicated.

In directed hardening the growth of the phases on a plane crystalliza-
tion front in a steady-state regime occurs, as a rule, with the formation of
low-index, and the means low-energy interfaces discontinuities (interfaces),
which increases the resistivity of the material to microstructural changes
in subsequent annealings. This was observed experimentally in systems of
$Al-Al_2Cu$ [4] and $Al-Al_3Ni$ [5].

In this work the investigation of the effect of the crystallization
conditions on the microstructure of the eutectic $Al-Al_3Ni$ and its stability
at increased temperatures is continued. The kinetics of the thermal
enlargement of the particles of the Al_3Ni phase in structures formed in a
wide range of rates of crystallization of the eutectic melt were studied.

An alloy of eutectic composition (6.2% Ni by weight) was prepared
from elements of pure 99.999% Al and 99.999% Ni. The specimens were
obtained by the Chokhral'skiy method in a vacuum of $\sim 10^{-6}$ torr. The
variable crystallization parameter is the rate of withdrawal of the crystal
from the melt. The specimens had the shape of rods with a diameter of
4 millimeters and a length of 100 millimeters. Six series of specimens
were obtained at withdrawal rates of 6, 72, 163, 342, 697 and 1472 milli-
meters per hour.

The methodology of the treatment of the specimens for metallographic
analysis is described in reference [2].

The specimens were annealed in a vacuum resistance furnace at a
pressure of $\sim 10^{-5}$ torr and at temperatures of 508, 575 and 608°C ($\pm$ 2°);
the annealing time varied from 25 to 100 hours.

Since the basic effect in the annealing of the alloy being investigated is
the coalescence of the fibers of the Al_3Ni phase, the measure of the effect
collected was the magnitude of P/P_0 the ratio of the number of fibers
per unit of area of the cross section of the specimen after annealing to
the number of fibers before annealing. This is easiest, and, which is the
main thing, it is an accurately measured quantity. With respect to it, in a
case of necessity, it is not difficult to calculate the diameter of the fibers
and the distance between them.

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USSR

KOTOV, V. F., KURILO, YU. P., SOMOV, A. I., and SHVARTS, V. I., Physico-technical Institute, Academy of Sciences Ukrainian SSR

"Microstructure and Mechanical Properties of an Eutectic Composition Ni_3Al - Ni_3Nb"

Abstract: The aim of this work was to study the effect of controlled crystallization of Ni_3Al - Ni_3Nb alloy on its mechanical properties. Controlled crystallization was applied during drawing of an ingot from a melt in vacuum $(1 - 5 \cdot 10^{-6}$ mm Hg), using a pure crystalline Ni as seed charge. The crystallization rate varied from 21 to 98 mm/hour, with the temperature gradient in the melt from 80 to $150^\circ C$/cm. The tensile strength of samples prepared by this method was $140-180$ kg/mm^2 at room temperature. Changes in tensile properties were due to variations in the alloy crystal structure, namely, to disorientation of Ni_3Al and Ni_3Nb lamellas. When this disorientation was extensive, the tensile properties decreased to 100 kg/mm^2. Appearance of primary crystals of either Ni_3Al or Ni_3Nb phases decreased the tensile properties to $50-100$ kg/mm^2. Tensile properties of samples tested under vacuum conditions were somewhat higher compared with those at room temperature. When the testing temperature was high, this difference amounted to 14 kg/mm^2 at $1100^\circ C$. This is attributed
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USSR

KOTOV, V. F., et al, Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 3, 1973, pp 669-672

to oxidation of the alloy in atmospheric oxygen. The stress-rupture strength of samples tested in argon at 1100°C for 100 hours was ~16.5 kg/mm², and it was ~ 15 kg/mm² and ~24 kg/mm² when tested in atmosphere at 1100 and 1000°C, respectively. Mechanical properties of Ni_3Al - Ni_3Nb alloy produced by the controlled crystallization exceeded those of ordinary nickel alloys in many respects.

USSR

GOLOVIN, V. N., RYBAL'CHENKO, N. D., SOMOV, A. I., TRON', A. S., Khar'kov

"The Problem of the Strength of Nickel, Reinforced with Tungsten Fibers"

ABSTRACT: Vacuum rolling is used to produce a nickel-tungsten fiber sheet composition material with a volumetric fiber content of from 4 to 16%. The specifics of deformation of fibers are studied in the process of combined rolling with the plastic matrix.

Certain mechanical properties of the composition are studied in extension, along with the nature of its rupture at 20-800°C.

1/1

USSR

UDC 620.184.6:539.562

VESELYANSKIY, YU. S., GORUSHKINA, L. P., ZAKHAROV, V. I., JURILO, YU. P., and SOMOV, A. I., Ukrainian Correspondence Polytechnic Institute

"Impact Ductility of a Composite Material"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 7, 1973, pp 36-37

Abstract: The impact ductility of an $Al-Al_3Ni$ composite was investigated on specimens of the Al-Ni eutectic alloy grown in vacuum, depending on the cross section of Al_3Ni fiber. The impact ductility was found to be independent of the testing temperature and to depend on the crystallization rate. According to fractographic data, in impact bending of specimens of an $Al-Al_3Ni$ composite with great interfiber distances, the crack propagates more slowly than on specimens with small interfiber distances. This results in increased fracture of an $Al-Al_3Ni$ composite obtained at low crystallization rates. The $Al-Al_3Ni$ material possesses a low notch sensitivity; on the macrorelief of fractures of notchless specimens, local zones of brittle failure are absent. One figure, ten bibliographic references.

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USSR

UDC 669.71:539.53

KURILO, YU. P., SOMOV, A. I., TORTIKA, A. S., and CHERNYY, O. V.
Physicotechnical Institute, Academy of Sciences Ukrainian SSR

"Morphology of Structure and Microhardness of Al-(Ni,Cu,Be,Fe,Co) Eutectic Compositions"

Abstract: This work was devoted to studying the anisotropy of eutectic micro-hardness and the effect of dispersity of eutectic phases on microhardness and its anisotropy for the following eutectic systems: $Al-Al_3Ni$, $Al-Al_2Cu$, $Al-Be$, $Al-Al_3Fe$, $Al-Al_9Co_2$. It was found that in the directed crystallization of the above eutectic systems, a sharp anisotropy of microhardness can be observed which is expressed in both a change in the shape of the pyramidal penetrator impressions (type I anisotropy) and in the difference of absolute microhardness values in the longitudinal and transverse (with respect to direction of crystal-lization) cross sections of the sample (type II anisotropy). The micro hardness of a eutectic composition was found to be inversely proportional to the square root of the distance between the particles of the high-strength dispersed phase, which is explained by the effect of retarding the process of plastic deformation by interphase surfaces, leading to strengthening of the matrix phase. No
1/2

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USSR

KURILO, YU. P., et al., Fizika Metallov i Metallovedeniye, Vol 35, No 2,
Feb 73, pp 347-354

substantial effect of eutectic structure dispersity on microhardness anisotropy
was detected. 8 figures, 2 tables, 9 bibliographic references.

2/2

USSR   UDC 576.852.215.083.3

DASHKOVA, N. F., and SOMOV, G. P., Vladivostok Institute of Epidemiology and
Microbiology

"Investigation of the Interaction Between Pseudotuberculosis Pathogen and Cell
Cultures"

Abstract: Pseudotuberculosis bacteria are able to penetrate cells and prolif-
erate in them. Trypsinized human embryo kidneys and newborn rabbit kidneys are
especially sensitive to this pathogen. Three hrs after addition of 1 ml of
suspension containing 10^7-10^9 bacteria to the cell culture with nutrients, up
to 15 microbes are present in the cytoplasm of about 75% of the cells (extra-
cellular bacteria are eliminated through addition of polyvalent pseudotubercu-lo-
sis bacteriophages). Avirulent bacteria remain in small numbers and do not
destroy the host cells. Virulent bacteria multiply rapidly and exert a cyto-
toxic effect. In 16-18 hrs, the infected cells lose their mitotic activity, the
cytoplasm shrinks and large vacuoles form, the nucleus becomes pycnotic (though
it is free of the pathogen), and the cells die. In 18-72 hrs, the large

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USSR

cytoplasmic vacuoles contain hundreds of bacteria. This cytotoxic action is neutralized by immune sera of people and animals who have had pseudotuberculosis. The method is recommended for differentiating virulent from avirulent strains of pseudotuberculosis bacteria.

2/2

USSR   UDC 616.981.714-036.2:595.42-167 (576.6)

SHUBIN, F. N., NATSKIY, K. V., and SOMOV, G. P., Vladivostok Institute of Epide-
miology and Microbiology

"Vectors of Tsutsugamushi Fever in the Far East"

Abstract: Trombiculd mites collected from rodents in natural foci of tsutsuga-
mushi fever on Shikotan Island and in the Khasanskiy Rayon (Primorskiy Kray)
were studied to determine their feeding habits on man and calves. A natural
carrier state of Rickettsia tsutsugamushi was identified in D. pomeranzevi on
Shikotan Island, and the ability to transmit the rickettsia to man was demon-
strated. The natural rickettsia carrier state in N. mitamurai and N. japonica,
their capacity to feed on man, and the coincidence between the population of
these species and the incidence of tsutsugamushi fever led to the conclusion
that these species are vectors of this infection in the Southern Primorskiy Kray.
Larvae of the latter two species of mites and of L. pavlovskiy feed on cattle.

1/1

USSR

UDC: 911.3.616.981.714(571.6)

SOMOV, G. P., SHUBIN, F. N., SHAPIRO, M. I., COPACHENKO, I. M., MATSKIY, K. V.

"Further Study of the Zone of Tsutsugamushi Fever in the Far East"

V sb. Materialy XV Vses. S'ezda Epidemiologov, Mikrobiologov i infektsionistov, Tezisy dokl. Ch. I. (Proceeding of the 15th All Union Conference of Epidemiologists, Microbiologists and Specialists in Infectious Diseases, Report Theses, Part I--collection of works) Moscow, 1970, pp 110-111 (from RZh-Meditsinskaya geografiya, No 1, Jan 71, Abstract No 1.36.110, by V. Maslovskaya)

Translation: Patients and infected material yielded a total of 22 rickettsial strains. It was established that the strains belonged to the tsutsu-gamushi rickettsial group and differed from type strains only in their virulence. Ten of the 13 strains from Lake Shikotan, and 2 of the 3 from Sakhalin, were highly pathogenic. All 8 strains isolated from rodents and ticks in the northwest rayons of Primorskiy Kray were of low pathogenicity. On analysis of this data and previous research, the geographic plan shows that, from south to north, and from the oceanic islands to the continent, there is a decrease in the incidence of rickettsial strains from rodents and ticks, and a weakening of pathogenicity.

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USSR

SOMOV, G. P., et al., V sb. Materialy XV Vses. S'ezda Epidemiologov, Mikrobiolo-
gov i infektsionistov, Tezisy dokl. Ch. I. (Proceeding of the 15th All Union
Conference of Epidemiologists, Microbiologists and Specialists in Infectious Di-
seases, Report These, Part I--collection of works) Moscow, 1970, pp 110-111 (from
RZh-Meditsinskaya geografiya, No 1, Jan 71, Abstract No 1.36.110, by V. Maslov-
skaya)

The continental zone covers the whole southwestern part of the Primorskiy Kray,
right up to Khabarovskiy Kray (Bikinskiy rayon). In the northwestern region of
the Pacific Ocean, the tsutsugamushi zone includes south Sakhalin, the south
Kuril=e Islands, and apparently the very southeastern part of the Kamchatka pen-
insula. The natural foci in the Soviet Far East are part of the general zone
of this infection, including parts of Oceania, Australia, and South and South-
east Asia, all adjacent to the basins of the Pacific and Indian Oceans.

2/2

1/2   007
UNCLASSIFIED
TITLE--A STUDY OF THE CHEMICAL COMPOSITION OF D. SIBIRICUS -U-   PROCESSING DAT--16OCT70

AUTHOR-(02)-SOMOV, G.P., DZADZIYEVA, M.F.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 4, PP 21-24

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHEMICAL COMPOSITION, LIPID, MICROORGANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1523

STEP NO--UR/0016/70/000/004/0021/0024

CIRC ACCESSION NO--AP0109583

UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER IS CONCERNED WITH THE
INVESTIGATION OF THE CHEMICAL COMPOSITION OF TWO STRAINS OF D. SIBIRICUS
ISOLATE IN PRIMORIE TERRITORY (POKHODZILO'S STRAIN) AND IN ALTAI
"NETSVETAEV'S STRAIN). THE FOLLOWING WAS ESTABLISHED: LIPIDS, 46.9 AND
32.6PERCENT RESPECTIVELY, REDUCING SUBSTANCES, 5.6 AND 4.0PERCENT,
PHOSPHORUS, 1.4 AND 1.33PERCENT, AMIDE NITROGEN, 4.38 AND 4.48PERCENT,
PROTEIN, 27.38 AND 28.4PERCENT, AS WELL AS THE CONTENT OF 17 MOST
FREQUENTLY ENCOUNTERED AMINO ACIDS. THE BIOLOGICAL AND ANTIGENIC
PECULARITIES OF THE REFERRED TO STRAINS MAY BE ASSOCIATED WITH
DIFFERENCES IN THE QUANTITATIVE CONTENT THERIN OF CERTAIN CHEMICAL
SUBSTANCES.

UNCLASSIFIED

KOROLYUK, A. M., SOMOV, G. P., and SHARAPOVA, T. A., Vladivostok
Institute of Epidemiology and Microbiology

"Study and Laboratory Diagnosis of Pseudotuberculosis (Far Eastern
Scarlet Fever-like Disease) Using the Indirect Hemagglutination
Inhibition Test"

Abstract: The indirect hemagglutination inhibition reaction is a
sensitive and specific method for detecting and titrating Bacillus
pseudotuberculosis antigen even in very small quantities. The use
of different immune sera with definite antibody spectra permits
differential titration of group and type antigens. The test is of
value in studies on experimental psuedotuberculosis, because it re-
veals the amount of antigen in different organs and tissues as well
as the time it appears. The test is also an aid in laboratory dia-
gnosis of the disease in humans, because it indicates the presence
of the antigen in feces and in urine in almost one-half and one-
third of the cases, respectively. The results of the test are known
within 4-6 hours.
1/1

Acc. Nr:
AP0036825

UTILIZATION OF THE REACTION OF INHIBITION OF INDIRECT HEMAGGLUTINATION FOR THE STUDY AND LABORATORY DIAGNOSIS OF PSEUDOTUBERCULOSIS (FAR-EASTERN SCARLATINA-LIKE FEVER)

A. M. Korolyuk, G. P. Somov, T. A. Shurapova

The authors elaborated a method of reaction of inhibition of indirect hemagglutination
for indication and titration of Bacillus pseudotuberculosis antigens. Determination of the
antigens in bacterial suspensions demonstrated the high sensitivity and specificity of this
method. Utilization of immune sera with a definite antibody spectrum for the mentioned reac-
tion offered a possibility of differential titration of type and group Bacillus tuberculosis
antigens. P. pseudotuberculosis rodentium antigen was revealed in the feces (46%) and urine
(31%) of patients, with the aid of reaction of inhibition of indirect hemagglutination.
This technique is recommended as an express method for laboratory diagnosis of pseudo-
tuberculosis.

REEL/FRAME
1972/742

6

USSR

UDC 616.928.8-022.39:636.2]-036.21-078.7

SOMOV, G. P., SHUBIN, F. N., KIR'YANOV, Ye. A., and MAMONTOVA, R. M., Vladivostok Institute of Epidemiology and Microbiology, and Primorskiy Kray Veterinary-Bacteriological Laboratory

"Serological Examination of Cattle as a Method for Detecting Natural Foci of Tsutsugamushi Fever"

Abstract: Blood serum of 586 head of cattle from southern Primorskiy Kray was tested for the presence of Rickettsia tsutsugamushi antigen to determine the usefulness of serological data as indexes describing natural tsutsugamushi fever foci, and calves were subjected to various experiments to identify their role in natural circulation of the pathogen. Antibody production dynamics of cattle in the spring-fall period coincided with those of healthy humans residing in the same areas, thus indicating that serological data are valid for determining the boundaries of natural foci. In the first experiment calves were infected subcutaneously and intravenously with R. tsutsugamushi. While intravenous injection did not cause rickettsemia and lymphadenites to appear, with sub-cutaneous injection infiltrates, lymphadenites, and rickettsemia arose within the 1st 10 days, for the most part localized about the area of injection.

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USSR

SOMOV, G. P., et al., Zhurnal Mikrobiologii, Epedemiologii, i Immunobiologii, No 2, 1973, pp 63-66

Rickettsemia lasted 7-10 days and arose earlier in local lymph nodes than at those located opposite the point of injection. Responses were even more rapid when the pathogen was injected directly into lymph nodes. These results suggest that in nature the pathogen undergoes initial reproduction in the skin and in lymph nodes close to the point of infection. In all cases specific complement-fixing antibodies were detected by the 7th day, maximized on the 14th, and were practically absent after 2 months. In the next experiment larvae of Trombiculae ticks were allowed to feed on calves to determine whether or not ticks might transmit the disease to cattle. L. pavlovskyi, N. japonica, and N. mitamurai larvae did manage to attach and feed. Since these ticks have been shown to be natural carriers of the disease, it is most probable that these species do transmit the disease to cattle. Whether or not uninfected larvae can become infected by feeding on infected cattle remains to be studied.

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MEDICINE
USSR
Aerospace Medicine

SOKOV, S., Col, Honored Military Pilot of the USSR

"Crew Stability"

Moscow, Aviatsiya i Kosmonavtika, No 9, Sep 71, pp 8-9

Abstract: A crucial factor in successful combat flying is the moral and psychological preparation of the crew members. This is generally realized, and examples of good moral-psychological training can be given. In one case the mission required planes to land on a short runway with a tailwind. Foreseeing possible stresses, the commander had all his crews perform practice flights beforehand until their confidence and ability was secure; in the actual exercise this commander's crews performed outstandingly. But there are still many shortcomings in this area also. Too many commanders consider moral-psychological training for flight personnel to be a simple matter of lectures on the importance of the mission and practice work in flight simulators. But the psychological tempering required to face and master real flight problems cannot be achieved entirely on the ground. It is necessary to develop dynamic, confident reactions to actual problems, and this requires that commanders be constantly alert to psychological questions. The case of the experienced pilot Eminov demonstrates poor psychological preparation.
1/2

USSR

SOMOV, S., Aviatsiya i Kosmonavtika, No 9, Sep 71, pp 8-9

During flight preparation, Eminov paid little attention to the fact that the mission involved landing on a short runway, and -- as he was a vetern pilot -- no one dared to chek him out. But when he actually approached the field he lost his nerve, took a wrong glide path and then -- to maintain his reputation -- landed anyway, overshooting the spot and taxiing in wrong. Another case involved technician Shmelev, a man with 12 years experience. His commander had concentrated technical knowledge with littel attention ot moral-psychological training, and when a disorder appeared in one engine during a flight, Shmelev lost his head completely from fear, switched off a good engine, and only the cool, correct action of the young pilot Chernyayev averted diaster. In this example, it is noteworthy that the commanders and stereo-typed views of the two men, being confident about Shmelev because of his "experience," but uncertain of the "young" Chernyayev. Other examples could be cited, but the point is clear -- commanders must devote attention in train-ing to developing, in every member of the flight crew, psychological and moral stability which will enable them to face and resolve any flight problems.

2/2

Acc. Nr:
AP0038035

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 130-132

Ref. Code: UR 0056

IDENTIFICATION OF HIGH ENERGY PARTICLES IN A STREAMER CHAMBER

Davidenko, V. A.; Dolgoshein, B. A.; Somov, S. V.; Starosel'tsev, V. N.

Relativistic growth of the specific primary ionization is measured in the following mixtures: 50 torrs Ne + 50 torrs He + 2 torrs H_2O and 320 torrs Ne + 320 torrs He. The accuracy of the measurements is 2.5%. The possibility of employing a streamer chamber for separation with respect to mass of particles with momenta up to 200 GeV/c is discussed.

REEL/FRAME
19731077

USSR

MISYURA, V. A., PIVEN', L. A., LITVINENKO, O. A., SOMOV, V. G.,
NABOKA, A. M., SURKOV, A. K., and KARATEYEV, N. G.

"Mobile Radio Ionosphere Complex for Investigating the Ionosphere
and Radio Wave Propagation"

Translation: A mobile radio ionosphere complex, developed in the
Khar'kov University for complex investigations of the ionosphere
and the propagation of radio waves by the method of vertical prob-
ing and the method of single-frequency and multifrequency differen-
tial Doppler and Faraday effects in satellite and rocket signals,
is described. The mobility of the complex permits, in addition to
conducting independent measurements, combination measurements with
devices for noncoherent scattering and with experiments using geo-
physical and meteorological rockets, as well as various shortwave
ranges and the like. Resume

1/1

USSR

UDC 621.317.77

MISYURA, V. A., PIVEN', L. A., SURKOV, A. K., SOMOV, V. G.,
KARATEYEV, N. G., ZAGVOZDKIN, B. V., NABOKA, A. M., LITVINENKO,
O. A., and KAPANIN, I. I.

"Systems of Phase and Doppler Measurements in a Mobile Radio
Ionosphere Complex"

Translation: A device for phase probing and a system for recording
the Faraday and Doppler effects in artificial earth satellite sig-
nals and rockets, including a series of multichannel receiver and
recorder devices operating at two, three, and four coherent fre-
quencies (20, 40; 24, 48, 144; 20, 30, 90, 180; 150 and 400 MHz,
and others), are described. The difference between the phase
probing system and those now known is the separation of the mea-
sured phase differences with a heterodyne frequency and consequent
narrow-band filtration. Resume

1/1

026

TITLE--PLASTIC OPERATIONS ON THE SCLERA -U-   UNCLASSIFIED

PROCESSING DATE--20NOV70

AUTHOR-(03)-SOMOV, YE.YE., YURCHENKO, V.V., KOMPANETS, N.A.

COUNTRY OF INFO--USSR

SOURCE--VOYENNO-MEDITSINSKIY ZHURNAL, NO 3, 1970, PP 32-36

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--WOUND, EYE, PLASTIC SURGERY, TISSUE TRANSPLANT, ADHESION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0391

CIRC ACCESSION NO--AP0131184

STEP NO--UR/0177/70/000/003/0032/0036

UNCLASSIFIED

272   026

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. PENETRATING WOUNDS OF THE SCLERA
WITH THE FORMATION OF A DEFECT OF THE TISSUE ARE AMONG THE ESPECIALLY
SEVERE DAMAGES OF THE ORGAN OF VISION WHOSE TREATMENT INVOLVES GREAT
DIFFICULTIES.   A PROBLEM OF PARAMOUNT IMPORTANCE IS THE TIMELY AND
RELIABLE REESTABLISHMENT OF THE HERMETIC SEAL OF THE EYEBALL AND THE
CREATION THANKS TO THAT OF CONDITIONS CONTRIBUTING TO THE NORMALIZATION
OF ITS TONUS AND A FAVORABLE COURSE OF THE REPARATIVE PROCESSES. TO
ACHIEVE THAT GOAL SOLELY BY MEANS OF THE OPEN SUTURES ORDINARILY USED IN
SURGERY OF WOUNDS OF THE EYEBALL WITH DEFECT OF THE TISSUE DOES NOT SEEM
POSSIBLE.   THEREFORE IT CAN BE A MATTER ONLY OF PLASTIC CLOSURE OF THE
SCLERAL DEFECT.   THE PURPOSE OF OUR EXPERIMENTS WAS TO STUDY THE
PLASTIC PROPERTIES OF TRANSPLANTS OF DIFFERENT NATURE INTENDED FOR THE
REPLACEMENT OF SCLERAL DEFECTS.   SIMULTANEOUSLY A DETERMINATION WAS MADE
OF THE INFLUENCE OF THE BIOLOGICAL ACTIVITY OF AUTO AND HOMOTRANSPLANTS
ON THE CHARACTER OF THEIR ADHESION, AND ALSO A SEARCH WAS MADE FOR THE
MOST RATIONAL WAYS TO CLOSE TRAUMATIC DEFECTS OF THE WALL OF THE
EYEBALL.

PROCESSING DATE--20NOV70

UNCLASSIFIED

USSR

UDC:62-531

KOSMACH, Yu. P., SOMOYLOV, V. D., TKACHENKO, O. V.

"A Relay Tracking System"

TRANSLATION: In known relay systems containing a nonlinear section and a linear portion (amplifier, motor, object) it is difficult to provide high speed and reliability of operation. The device suggested differs from known devices in that a logic circuit with an oscillating period counter is connected at the input of the nonlinear element, with the counter connected to the linear drive, while the feedback loop contains a switch, the input of which is connected to a logic circuit, the other input of which is connected to the output of the oscillating period counter. This allows the accuracy and reliability of operation of the system to be increased. Two figures.

1/1

USSR

MAK, A. A., Doctor of Sciences, MIT'KIN, V. M., SOMS, L. N., STEPANOV, A. I.,
Candidate of Sciences, SHCHAVELEV, O. S., Candidate of Sciences

UDC 621.378.3; 535.89

"On Thermo-Optical Constants of Activated Glass"

Abstract: A simple method is described for determining the thermo-optical con-
stants of glass and the possibilities of obtaining glasses with small thermo-
optical constants is discussed. It is noted that optical pumping of the active
element of a laser is accompanied by heating of the laser and the formation of
temperature gradients in the transverse cross section which cause stresses and
double refraction, so that optical distortions arise in the element. Although
many methods have been described for overcoming the harmful effects of distor-
tions caused by these effects on the generation process, it is suggested that
a more radical method would be the development of materials in which thermal dis-
tortions would be sufficient small. Three constants are discussed: W, the
thermo-optical constant ordinarily applied in optics; P and Q, constants charac-
terizing the distortion averaged for two polarizations, and the double refraction.

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MAK, A. A., et al, Optiko-mekhanicheskaya promyshlennost', No. 9, Sep 71, pp 42-45

A table is given showing the values of P, Q and W for the following types of glass: KGSS3, KGSS7, LGS24-5, LGS28-2, LGS36, KGSS56 and KGSS1621. It is noted that for laser applications one should use a glass with zero or fairly small values of the constants W, P and Q. Studies showed that the thermo-optical constant W of the glass changes considerably with the composition of the glass. Its values can be much less than zero, 0 and negative. The constant P should be highly dependent on the composition of the glasses and its value can vary from -1 to +1 to the fifth power, so that the majority of compositions of industrial glasses and neodymium glasses should be characterized by values of P consider-ably less than zero. The constant Q depends on the composition of the glass to a considerably less degree than P. In the majority of silicate and phosphate glasses the constant Q is small and does not exceed $0.1 \cdot 10^{-5}$ deg^{-1}. It is con-cluded that it is possible in principle to obtain glasses with small values of the thermo-optical constants W, P and Q.

2/2

USSR

KOZLOV, N. P., LEVASHOV, I. P., MURYGIN, V. I., POPOV, L. V., SONDAYEVSKIY,
I. A. and STAFEYEV, V. I., Moscow Institute of Electronic Technology,
"Some Research in S-Diode Neuristors"

Abstract: The neuristors investigated in this article have S-shaped
volt-ampere characteristics and are of two types: first, with common
anti-cutoff contact and a sectioned p-n junction; second, with com-
mon p-n junction and sectioned anti-cutoff contact. The schematics
of both types are given. If the diode structures in the circuit
are sufficiently far from each other, the switching delay time may
be much less than the switching time of an individual element, and
the interelement switching time can be neglected. It is shown that
when the delay time between the switching of neighboring elements
is much greater than the switching time, the dependence of the
breakdown voltage on the parameters of the material has only a
slight effect on the coupling between the active elements in the
neuristor line. The second part of this paper describes experi-
ments performed to verify the theoretical results of the first
part. These experiments used neuristors of p-type germanium com-
pensated by gold.
1/1

- 196 -

KONECHKIN, D. M.

hydrometeorology

NUMERICAL ANALYSIS OF FRONTS IN THE LOWER TROPOSPHERE

UDC 551.515.5

The idea and results of testing an objective (numerical) method of atmospheric frontal analysis on massive data are discussed and presented. The method was implemented in the form of a computer program.

In connection with the development of numerical methods of weather analysis and forecasting, an effort toward making all stages of the forecasting become more objective and automation of them, including the operations required to produce weather by the traditional synoptic method has recently been observed. In particular, efforts have been made in the Soviet Union [1-4, 6] and abroad [5, 6] to put the basis for the synoptic method -- frontologic analysis -- on a machine.

However, it is necessary to consider that the synoptician-forecaster will hardly agree with transferring frontolytic analysis to a machine since in the process of doing this, the ideas of the synoptician regarding the state and evolution of the atmospheric processes are formed which permit him to fore-cast the weather on the basis not only of the formally existing rules but also of his own experience and intuition. On the other hand, in the presence of numerical weather analysis and forecasting, frontologic analysis is not used. It is possible, of course, to hope that, as numerical methods of forecasting weather phenomena develop, the demand for the introduction of forecasting based on numerical analysis will arise. However, even in this demand does not occur, the experiments in numerical analysis of atmospheric fronts will produce development of our understanding of atmospheric processes. It is also essential that it can demonstrate nontrivial possibilities of the modern methods of mathematical programming.

Returning to the above-mentioned publications, it is possible to show that the desired result has not been achieved by anyone. The reason for this is seen in the following discussion. All the authors herein with the con- of an atmospheric front as a zone where the values of certain or all

USSR

SONECHKINA, Ye. L. and KOMAROV, V. P., Compilers

UDC: None

"Some Problems of Information Retrieval in Office Management"

Moscow, "Izdatel'stvo Standartov," 1972, 40 pp

Abstract: Three types of problems that must be considered in information retrieval as practiced in office management are: first, determination of the characteristics of management documents as sources of information by comparing them with other material, such as that found in technical libraries; second, analysis of traditional methods of retrieval of information from management documents; and third, the investigation of possibilities of optimizing empirically developed methods of information retrieval and the application of those optimized methods to office management routine. These are the problems with which this pamphlet is concerned, and these form the three basic parts in which it is divided. A bibliogaphy of thirteen titles, all of them of Soviet origin, is appended; there are no illustrations.

1/1

1/2   009

TITLE--AMPEROMETRIC TITRATION OF THALLIUM USING UNITHIOL -U-

UNCLASSIFIED

PROCESSING DATE--20NOV70

AUTHOR-(03)-SUNGINA, G.A., OSPANOV, KH.K., KITAYGORODSKAYA, V.YA.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 482-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMPERECMETRIC TITRATION, THALLIUM, THIOL, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1126

CIRC ACCESSION NO--AP0128553

STEP NO--UR/0075/70/025/003/0482/0484

UNCLASSIFIED

CIRC ACCESSION NO--AP0128553   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE INTERACTION OF TL(III) AND   PROCESSING DATE--20NOV70

TL(I) WITH UNITHIOL WAS STUDIED BY AMPEROMETRIC TITRN.   TL(III) IS

REDUCED TO TL(I) WITH UNITHIOL.   THE MOLAR RATIO TL(III)-UNITIOL AT THE

END POINT IS 1:1.   THE EFFECT OF SOLN. ACIDITY AND VARIOUS ADMIXTS. OF

TL: TE AND SE DO.   THE SENSITIVITY OF THE DETN. IS 1 MUG TL PER ML.

DISSOLVE 0.5-2.0 G SAMPLE IN 15 ML HCL AND EVAP. TO DRYNESS.   TE AND SE

VOLATIZE AS CHLORIDES.   ADD 10 ML HNO SUB3 AND EVAP. AGAIN, ADD 10 ML

1:1 H SUB2 SO SUB4 AND EVAP. TO SO SUB3 FUMES.   DIL. WITH H SUB2 O TO 25

ML AND OXIDIZE TL(I) TO TI(III) BY THE ADDN. OF A FEW DROPS OF KMNO

SUB4.   FILTER AND DIL. TO 50 ML WITH H SUB2 O.   DIL. AN ALIQUOT WITH 2N

H SUB2 SO SUB4 TO 25 ML AND TITRATE WITH 0.003MU UNITHIOL

POTENTICMETRICALLY AT PLUS 1.0 V.   FACILITY: KAZ. STATE UNIV.,

ALMA-ATA, LSSR.

UNCLASSIFIED

008

UNCLASSIFIED

TITLE--AMPEROMETRIC TITRATION OF SCANDIUM AND LANTHANUM WITH POTASSIUM FERROCYANIDE -U-

AUTHOR-(03)-SONGINA, O.A., ZAKHAROV, V.A., TOKUSHEVA, G.T.

PROCESSING DATE--18SEP70

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(1), 64-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SCANDIUM, LANTHANUM, AMPEROMETRIC TITRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1746

CIRC ACCESSION NO--AP0108113

STEP NO--UR/0075/70/025/001/0064/0067

UNCLASSIFIED

CIRC ACCESSION NO--AP0108113   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ACTION OF SC AND LA WITH
(FE(CN)SUB6)PRIME4 NEGATIVE IN SOLNS. OF LINO SUB3, KNO SUB3, NANO SUB3,
AND NH SUB4 NO SUB3 AT PH 1.0-6.0 WAS STUDIED BY AMPEROMETRIC TITRN. AT
PH 2.2-4.8 SC FORMS SC SUB4(FE(CN)SUB6)SUB3 IN A LINO SUB3 MEDIUM AND
SCM FE(CN)SUB6 AT PH 5.0-6.0, WHERE M IS THE SUPPORTING ELECTROLYTE
CATION. IN A NANO SUB3 MEDIUM SCMFE(CN)SUB6 FORMS AT PH 2.5-3.5 AND SC
SUB4(FE(CN)SUB6)SUB3 AT PH 4.0-6.0. LA FORMS ONLY COMPLEX SALTS OF THE
TYPE LAMFE(CN)SUB6 AND ITS ACTION WITH (FE(CN)SUB6)PRIME3 NEGATIVE
DEPENDS ON THE NATURE AND CONCN. OF THE SUPPORTING ELECTROLYTE CATION.
SC CAN BE DETD. AMPEROMETRICALLY IN THE PRESENCE OF LA AND CA. THE
SENSITIVITY OF THE DETN. IS 3 MUG SC-ML. IN LINO SUB3 MEDIUM THE SUM OF
SC AND LA IS TITRATED; IN M NH SUB4 NO SUB3 ONLY SC IS TITRATED; 100
FOLD AMTS. OF CA DO NOT INTERFERE.

UNCLASSIFIED

Acc. Nr.
AP0054346 — Abstracting Service:
— CHEMICAL ABST. 10/70

Ref. Code
4R0032

117429z Amperometric determination of triphosphate ion.
Qmarkulova, G. O.; Songina, O. A.; Freze, N. A. (Kaz. Khim.-
Tekhnol. Inst., Alma-Ata, USSR). Zavod. Lab. 1970, 36(1),
20-1 (Russ). Na₅P₃O₁₀, until recently, was detd. indirectly
either by titrn. of H⁺ evolved by addn. of excess Zn⁺⁺ at pH
3.8 or by pptn. by BaCl₂ at pH 5. P₂O₇⁴⁻ interferes with the
latter method. Presently P₃O₁₀⁵⁻ is detd. directly either by
chromatog. or gravimetrically by pptn. with Co(en)₃Cl₃. The
amperometric procedure is a variant of this gravimetric method.
The titrn. was carried out with a dropping Hg electrode at
−0.8 V vs. SCE. The soly. of the ppt. was decreased by adding
EtOH to 30-50% by vol. One g of Na₅P₃O₁₀ was dissolved in
H₂O and dild. to 100 ml. A 10-ml aliquot plus sufficient HCl
(∼0.5 ml) to give pH 3.6 and 10 ml of a buffer soln. made up of
105 ml HOAc, 25-30 ml of EtOH, and 5-6 small pellets of gelatin
were placed in the polarographic cell. O was purged by bubbling

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REEL/FRAME
. 19831491

16

AP0054346

through CO_2 for 3-5 min and the soln. was titrated with $Co(en)_3Cl_3$. with agitation and continued CO_2 purging. The ppt. formed slowly and a const. current reading indicating the equivalence point was not achieved until 4-5 min after the 1st appearance of the ppt. Statistical comparison of the gravimetric and amperometric methods at the 95% confidence level gave variances of 0.28% and 0.30%, resp. Thus, while the accuracy of both procedures was exptl. the same, the amperometric method is preferred because a detn. takes only 20-30 min.

Herman Koretzky

19831492

USSR

GINZBURG, V. M., GUSEVA, I. N., SEMENOV, E. G., SONIN, A. S., and STEPANOV,
B. M., All-Union Scientific Research Institute of Optical and Physical
Measurements, Moscow   UDC 543.4

"Use of Holographic Interferometry For Crystal Studies"

Abstract: An UIG-2 holographic device was used to study the morphology of
crystal structures by obtaining interferograms of synthetic fluorite. The
UIG-2 unit was developed at the All-Union Scientific Research Institute of
Optical and Physical Measurements and its operating principle is as follows:
a laser beam passes through a collimating system and is split by two mirrors
into two equal intensity beams. Beam 1 is reflected by a third mirror to
form a reference wave front and beam 2 is reflected by a fourth mirror and
strikes a diffuser to form a signal wave front. Beams forming the reference
and signal wave fronts intersect at a photographic plate to register the
hologram. By comparing holograms obtained with the above UIG-2 unit with
holograms taken on a Michelson interferometer it was evident that holographic
interferometry makes it possible to evaluate heterogeneity of refraction
1/2

USSR

indices in the volume of a crystal sample. It is mentioned that with the
use of an intensive coherent light source one can obtain diffraction-
shadow pictures of diffraction index heterogeniety. With the use of
holographic methods it is possible to study growth defects in crystals by
establishing shapes of crystallization isotherms and the change in light
wave forms under the influence of impurities, stresses, etc. The authors
expressed their thanks to B. I. FEODOROVSKIY and Ye. N. LEKHTSIYER for
their assistance. Three figures, one table, four bibliographical references.

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_1_

USSR

GINZBURG, V. M., GUSEVA, I. N., SEMENOV, E. G., SONIN, A. S., STEPANOV, B. M.

UDC 548.4

All-Union Scientific Research Institute of Opticophysical Measurements, Moscow

"On the Possibility of the Application of Holographic Interferometry to the Investigation of Crystals"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 5, 11 Oct 71, pp 1092-1094

Abstract: The possibility of using the method of holographic interferometry for the investigation of crystals was shown by the authors on the basis of the example of fluorite. Used for obtaining holographic interferograms was the UIG-2 installation, developed at the All-Union Scientific Research Institute of Opticophysical Measurements. Data show that holographic interferometry makes it possible to obtain several different integral values for different observation angles of a single crystal. Due to the presence of an intensive coherent light source, the UIG-2 holographic installation makes it possible, in addition to interferograms, also to obtain a defraction-shadow pattern of inhomogeneity of the refraction index of the sample. It is comparable in sensitivity to a light pattern obtained by means of a special pro-

1/2

USSR

GINZBURG, V. M., et al, Doklady Akademii Nauk SSSR, Vol 200, No 5, 11 Oct 71,
PP 1092-1094

jection type shadow installation. Thus, holographic methods may be used for
complex research on growth defects: establishment of the shape of the
crystallization isotherm, shape changes of the light wave under the influence
of admixtures, stresses, etc. 3 figures, 1 table, 4 references.

2/2

049

TITLE--POSSIBLE USE OF LIQUID CRYSTALS FOR PHOTOGRAPHING SINGLE PULSES OF THERMAL RADIATION -U-

UNCLASSIFIED

AUTHOR-(05)-GINZBURG, V.M., SMIRNOV, V.I., SONIN, A.S., STEPANOV, B.M., CHISTYAKOV, I.G.

COUNTRY OF INFO--USSR

PROCESSING DATE--27NOV70

SOURCE--PRIB. TEKH. EKSP. 1970, (2), 206-7

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEODYMIUM LASER, LIQUID CRYSTAL, THERMAL RADIATION, PHOTOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0870

CIRC ACCESSION NO--AP0136304

STEP NO--UR/0120/70/000/002/0206/0207

UNCLASSIFIED

CIRC ACCESSION NO--AP0136304   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   A 2-DIMENSIONAL IMAGE WAS OBTAINED
OF A THERMAL FIELD GENERATED BY A SINGLE PULSE RADIATION NO LASER (PULSE
ENERGY SIMILAR TO 0.5 J, PULSE DURATION 2 TIMES 10 PRIME NEGATIVE8 SEC)
USING A LIQ. CRYSTAL MIXT. OF 70PERCENT CHOLESTEROL PELARGONATE AND
30PERCENT CHOLESTEROL OLEATE.   THE SELECTIVITY OF THE SCATTER OF THE
MIXT. RANGES FROM 59.8 TO 62.2DEGREES.   FACILITY: VNII OPT,-FIZ.
IZMER., USSR.

PROCESSING DATE--27NOV70

UNCLASSIFIED

Optics & Spectroscopy

USSR

GINZBURG, V. M., GUSEVA, I. N., KRAMARENKO, V. A., SEMENOV, E. G., SONIN,
A. S., and STEPANOV, B. M.

UDC 548.52:535.4

"The Use of Holographic Interferometry to Observe the State of a Solution
During the Growth of Single Crystals"

Abstract: The article shows that holographic interferometry can be used to
study the state of a solution during the growth of KH_2PO_4 single crystals.
The method used is that of bringing the object into coincidence with its
virtual image, in which the recorded wave front interferes with the real wave
front. The method makes it possible to obtain real-time holographic inter-
ferograms for any stage of the growth process and to take photographs and
motion pictures of them. The use of diffused illumination of the crystal-
lizer makes it possible to record the interferograms from various aspects,
which permits an analysis of the volumetric distribution of the refractive
index of the solution and from the known relation between variations in the

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USSR

GINZBURG, V. M., et al., Kristallografiya, Vol 17, No 5, Sep-Oct 72, pp 1012-1014

refractive index and the concentration, diffusion coefficient, etc. an analysis of the spatial distribution of the principal parameters of the solution.

The authors thank D. YE. TEMKIN, A. A. CHERNOV, N. N. SHEFTAL', and A. A. SHTERNBERG for discussing the results, and V. N. KIRILLOVA for her help in the experiment.

2/2

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UNCLASSIFIED

PROCESSING DATE--23OCT70

1/2   022
TITLE--GAS PHASE REACTIONS FOR THE PREPARATION AND TRANSFORMATIONS OF
CHLORINATED ETHANES. CHLORINE INITIATED DEHYDROCHLORINATION OF
AUTHOR-(05)-KRISHTAL, N.F., FLID, R.M., PIMENOV, I.F., SONIN, E.V.,
TREGER, YU.A.
COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 248-9

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINATION, CHLOROETHANE, CHEMICAL KINETICS, CHEMICAL
REACTION RATE, CALCULATION, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0076/70/044/001/0248/0249

PROXY REEL/FRAME--1995/1405

CIRC ACCESSION NO--AP0116852

UNCLASSIFIED

2/2   022
CIRC ACCESSION NO--AP0116852
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE TITLE REACTION IS A HALF ORDER
REACTION WITH RESPECT TO CL AND C SUB2 H SUB2 CL SUB4.   TO DET. THE
KINETIC PARAMETERS, A SERIES OF EXPTS. WERE CARRIED OUT AT
350-425DEGREES BY CHANGING (FOR EACH INVESTIGATED TEMP.) CL AND C SUB2 H
SUB2 CL SUB4 AMTS.   THE REACTION RATE CONSTS. WERE CALCD., AND A DIAGRAM
WAS PRESENTED OF THE DEPENDENCE LOG K EQUALS F(1-T).   THE ACTIVATION
ENERGY WAS 23.8 KCAL-MOLE, AND THE COEFF. 6.67 TIMES 10 PRIME7 SEC PRIME
NEGATIVE1.   FACILITY: INST. TONKOI KHIM. TEKHNOL. IM.
LOMONOSOVA, MOSCOW, USSR.

UDC 517.946+519.21

USSR

SONIN, I. M., Moscow

"Classes of Uniqueness for Degenerate Parabolic Equations"

Moscow, Matematicheskiy Sbornik, Vol 85, No 4, Aug 71, pp 459-473

Abstract: The author studies classes of uniqueness for a generalized solution to the Cauchy problem for a given equation

$$u_t = \frac{1}{2} \sum_{i,j=1}^{n} a_{ij}(x) u_{x_i x_j} + \sum_{i=1}^{n} a_i(x) u_{x_i} \equiv Lu, \quad u(0, x) = \varphi(x), \quad x \in R^n, t \in [0, T] \tag{1}$$

in the case of degeneration of the matrix $\{a_{ji}(x)\}$. He introduces the generalized solution by using the infinitesimal operator of the Markovian process associated with the operator in equation (1). He uses the probability characteristics of this process in proving the theorems. The author assumes in all theorems that the coefficients of equation (1) satisfy the following requirements: (a) The matrix $\{a_{ij}(x)\} \equiv a(x)$ can be represented in the form $a(x) = \sigma(x) \sigma^*(x)$, where $\sigma^*(x)$ is a matrix that is transposed with respect to $\sigma(x)$, and the elements of the matrix $\sigma(x)$ are bounded and

1/2

USSR

SONIN, I. M., Matematicheskiy Sbornik, Vol 85, No 4, Aug 71, pp 459-473

satisfy the Lipschitz condition. (b) $a_i(x)$ satisfy the Lipschitz condition. Equation (1) is given with several requirements for the coefficients and a certain a priori increase of the solution. The author wishes to prove that the generalized solution to the Cauchy problem with a zero initial condition having an increase no greater than that given must be equal to zero. Through the apparatus of three theorems he proves his assumptions. The article contains 11 bibliographic entries.

2/2

UDC: 621.375.4

USSR

KONDRATSKIY, B. A. and SONIN, M. S.

"Integrated Amplifier Stage With Thin-Film Transistors"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 13, No. 10, pp 1261-1262

Abstract: Asserting that although thin-film transistors are fre-
quently used in digital integrated circuits, they are also appli-
cable to linear analog circuits, the authors proceed to show how
this can be done in this brief communication. The integrated cir-
cuit, a schematic of which is shown, has no resistors; one of the
transistors is active while the other is the load device. The
original material of which the circuit was made was n-type silicon
with a resistivity of 7 ohm·cm. The topology of an integrated cir-
cuit designed to investigate the characteristics of the amplifier
stages is also shown, and the parameters of the four transistors
it contains are given in tabular form. A third illustration gives
the gain of the stages as a function of the supply voltage.

1/1

Welding

UDC 539.4.019

USSR

SONNOV, A. P., and TRYKOV, YU. P., Volgograd

"Calculation of the Parameters of Welding by Explosion of Multilayer Components"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, 1973, pp 128-133

Abstract: A method has been developed for the calculation of optimal para-
meters of explosion welding of multilayer components from various metals and
alloys with consideration of the quantity, thickness, and physical-mechanical
properties of the layers being joined. A couple of examples of the calculation
of technological parameters for the welding of four- and eleven-layered com-
pounds are reported.

1/1

UDC: 519.2

USSR

PRESMAN, E. L., SONON, I. M.

"The Problem of Best Choice in the Case of a Random Number of Objects"

Teoriya veroyatnostey i yeye primeneniya (Probability Theory and its Applications), 1972, 17, No 4, pp 695-706 (from RZh-Kibernetika, No 5, May 73, abstract No 5V95 by R. Liptser)

Translation: The solution of the following problem is known. Let there be n objects arranged according to quality. The objects are presented to an observer in random order in an equally probable manner. It is required to select the object of best quality with maximum probability. The authors consider a generalization of this problem to the case where the number of objects n is random. If the number n is known beforehand, the solution of the problem consists in the following: there exists a number k* such that the first k* - 1 objects must be allowed to pass, and then presentation will be stopped on the first object (after the k*-th) which is

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better than all preceding ones. However, if the number of objects is random, then the stop number, generally speaking, may be confused with numbers in which stopping is unnecessary. Conditions are established under which the number of sets of stop numbers is finite. In particular it is shown that for uniform distribution on $[1,n]$ there is a single geometric Poisson set of stop numbers which has the form $[k^*, \infty]$. For these same distributions which depend on the parameter λ the authors study the behavior of the quantity $k/\lambda = k^*(\lambda)/\lambda$, and also present formulas for the probability of detecting (as $\lambda \to \infty$) the best object when the optimum strategy is used.

Inventions & Discoveries

USST

KEKIN, A. A., SOPIKOV, G. D., BEDAREV, P. I.

"A Generator of Light Aero-Ions to Produce Unipolarly Charged Mine Aerosol"

Alma-Ata, Vestnik Akademii Nauk Kazakh SSR, No 6, 1973, pp 50-53

Abstract: A method is proposed for precipitating mine dust by unipolar charging of the dust particles. The central idea of the method is to create a generator of light aero-ions to put the air in an ionized state. Since the outer region of a corona discharge is a gas which contains a high density excess unipolar space charge, the generator was developed on the basis of theoretical and experimental data obtained in tests of various corona discharge devices by using a compressed air jet to carry the space charge out of the discharge column. Basically, the generator is a corona discharge needle electrode enclosed in a tube through which compressed air flows, carrying the space charge to an exit cone from which the jet of ionized air is thrown at high velocity. Test results are given.

1/1

USSR

UDC: 66.05

YUDAYEV, V.F., Candidate of Technical Sciences, KOKOREV, D.T.,
Doctor of Technical Sciences and SOPIN, A.I., Aspirant (Moscow
Institute of Chemical Machine-Building)

"On Determination of Geometric Parameters of Hydrodynamic Siren
Type Devices"

Abstract: The present article deals with closed containers in which
pressure pulsations are produced in order to intensify various physical-
chemical processes. The inner wall of the stator container is a cylinder
of radius R, the outer wall is a cylinder of radius $2R$. The rotor is a
cylinder located inside the inner cylinder of the stator. The inner wall

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USSR

YUDAYEV, V. F., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 6, 1972, pp 80-85

of the stator and the rotor are provided with slots. The number of rotor slots is a multiple of the number of stator slots.

The liquid is flowing from the rotor to the stator through the overlapping slots. The rotation of the rotor interrupts periodically the flow. If the rotating speed is such that the time between slot openings is less than the time required for a pressure wave to travel the distance 2R, then a hydraulic hammer takes place and the amplitude of pressure pulsations increases sharply. For a given rotational speed this amplitude is proportional to the flow.

2/2

UDC 66.045.5:621.51.001.24

USSR

USHAKOV, V. I., Candidate of Technical Sciences, SOPIN, B. N., Engineer, and
GLUSHAKOV, A. A., Engineer

"Determination of the Heat-Exchange Surface of Terminal Cooler of Compressor"

Moscow, Khimicheskoye i Neftyanoye Mashinostroyeniye, No 10, Oct 72, pp 17-18

Abstract: The article examines the question of air dehumidification, given
certain ratios between the compressed-air and cooling-water temperatures and
ambient temperature. A formula is given for determining the heat-exchange
surface of the terminal cooler. The compressor station at the Kursk Portable
Unit Plant is equipped with four VP20/8 reciprocating compressors with KKh-20
terminal coolers, the heat-exchange surface for each of which is 6.3 sq m.
The cooling water temperature is no higher than 10° C and the consumption
about 16 liters/min. Such a heat-exchange surface, even with maximum water
consumption, is insufficient in order for the compressed air temperature at
the cooler outlet to become less than the ambient temperature. According
to the suggested formula, at an ambient temperature of 22° C the heat-exchange
surface of each cooler must be equal to 9.4 sq m. For design considerations
and assembly conditions, the four coolers should be replaced with a single
1/2

- 16 -

USSR

USHAKOV, V. I., et al., Khimicheskoye i Neftyanoye Mashinostroyeniye, No 10, Oct 72, pp 17-18

cooler with the appropriate heat-exchange surface. A four-pass heat exchanger with a heat-exchange surface of 45 sq m was installed. The water consumption was 65 liters/m. During the year and a half that this cooler has been in operation there has been no condensate at any point of the pneumatic system. The temperature of the air coming into the system has not exceeded 18° C. There has been an economic effect of about 20,000 rubles per year.

2/2

EFFECT OF RNA ON CONTENT AND RENEWAL OF ATP IN LIVER WITH RADIATION INJURY

E. F. Sopin, B. O. Tsudzevich

Department of Biochemistry of Human and Animals, the T. H. Shevchenko University, Kiev

Summary

The content of ATP decreases in liver after total X-irradiation of guinea-pigs in a dose of 500 r, but the intensity of renewal increases in all the times under investigation on the 1th, 3rd, 7th, 10th day. Yeast RNA favours a rise in the ATP content of the liver in irradiated guinea-pigs as well as has a stabilizing effect on the intensity of ATP and inorganic phosphorus renewal.

A long duration administration of yeast RNA to the normal animals results in increasing ATP in the liver (on the 3rd and 10th day) as well as in rising the intensity of ATP and inorganic phosphorus metabolism in all the times under investigation.

Yeast RNA being administrated, the duration of life of the guinea-pigs after irradiation increases up to 15—20 days. The control animals as a rule dies in 10—12 days.

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REEL/FRAME
19790830

USSR

UDC:: 519.281

STEPANOV, V. A., SOPIN, I. A.

"Modified Kolmogorov Operator in Identification Problems"

V sb. Tekhn. kibernetika. Vyp. 15 (Technical Cybernetics--collection of works. No 15), Kiev, 1970, pp 54-57 (from RZh-Kibernetika, No 7, Jul 71, Abstract No TV334)

Translation: A sequential heuristic procedure for selecting the most informative terms of an approximating polynomial called a modified Kolmogorov operator is considered as applied to problems of identification of a control system. The informative usefulness of the terms is determined from the maximum negative increment of residual variance of the identification. Assuming good conditioning, the operator of all possible associations of paired combinations of variables has the highest rate of convergence. G. Semenov.

1/1

UDC 591.1.15

USSR

SOPIN, YE. F.

"On the Primary Biochemical Mechanism of Radiation Injury"

Visnyk Kyiv. un-tu Ser. biol. (Herald on Kiev University -- Biology series),
1972, No 14, pp 3-7 (Ukrainian, summaries in English and Russian), (From RZh-
Biologicheskaya Biologicheskaya Khimiya, No 21, 10 Nov 72, Abstract No
21F1349 from summary)

Translation: The author shows the favorable effect on metabolism in radiation
injury of the vitamins P-P, folic acid and vitamin B_{12}, as well as choline
that take part in the processes of methyl-group sunthesis and elimination
from the organism. The question of the primary biochemical mechanism in
radiation injury is considered from the viewpoint of disturbance of the
reactions of normal transport of methyl groups. There is a discussion of
the possibility of free methyl radicals appearing first in the organism and
then, as a result of this, of nitrogen bases with an altered structure.
This results in a distortion of the data transmission process.

1/1

USSR   UDC 577.164.1:612.015.3:577.391

SOPIN, Ye. F., and KUCHERENKO, M. Ye., Chair of Human and Animal Biochemistry, Kiev University imeni T. H. Shevchenko

"Effect of Some B-Complex Vitamins on Metabolism in Radiation Injury"

Kiev, Ukrainskiy Biokhimicheskiy Zhurnal, Vol 42, No 3, 1970, pp 289-293

Abstract: A review of research conducted at the Chair of Human and Animal Biochemistry, Kiev University, on the effects of radiation on various metabolic pathways and ways in which these effects can be counteracted by B-complex vitamins is presented. For example, administration of vitamin PP prolonged the life of animals subjected to lethal radiation doses. It was assumed that methylation processes are blocked or at least disrupted as a result of radiation injury. Other studies have shown that cholesterol metabolism also depends on vitamin B_1. In general, cholesterol was found to be very important in metabolic processes, especially in those of nervous tissues. Folic acid was found to have radioprotective properties and was capable of stabilizing the RNA-DNA content in the brain.

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UNCLASSIFIED   PROCESSING DATE--13NOV70

TITLE--EFFECT OF EXERCISE THERAPY ON INDICES OF THE COAGULATION AND FIBRINOLYTIC SYSTEMS OF THE BLOOD IN THE COMPLEX TREATMENT OF PATIENTS

AUTHOR--SOPINA, N.V.

COUNTRY OF INFO--USSR

SOURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 27-30

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CORONARY BLOOD CIRCULATION, ATHEROSCLEROSIS, EXERCISE, BLOOD COAGUALTION, FIBRINOLYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1733   STEP NO--UR/0475/70/000/005/0027/0030

CIRC ACCESSION NO--AP0129101

UNCLASSIFIED

2/2   018
CIRC ACCESSION NO--AP0129101

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BLOOD COAGULATION AND
FIBRINOLYSIS WERE STUDIED IN 74 PATIENTS WITH CORONARY ATHEROSCLEROSIS
IN CONDITIONS OF COMPLEX TREATMENT INCLUDING VASODILATING, CARDIAC,
HYPOTENSIVE, ANTISCLEROTIC DRUGS AT THE BACKGROUND OF PHYSICAL CULTURE
AND WITHOUT IT. MOST PATIENTS SHOWED SIGNS OF HYPERCOAGULATION.
INCLUSION OF EXERCISE THERAPY IN THE COMPLEX OF TREATMENT EXERTED A
NORMALIZING EFFECT ON THE COAGULATION SYSTEM OF THE BLOOD (PROCOAGULANTS
AND ANTICOAGULANTS), THOUGH NOT ON THE FIBRINOLYTIC SYSTEM.
FACILITY: KIYEVSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

TITLE--POLY(VINYL ETHERS) OF METHYLENE SUBSTITUTED D, GLUCOSE -U-

AUTHOR-(03)-SOPINA, V.E., LAPENKO, V.L., MIKHANTYEV, B.I.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN, SER. B 1970, 12(2), 159-60

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--VINYL COMPOUND, ETHER, GLUCOSE, METHYLENE, CATALYTIC
   POLYMERIZATION, POLYMER, OPTIC ACTIVITY, SOLUBILITY, BORON FLUORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0936   STEP NO--UR/0460/70/012/002/0159/0160

CIRC ACCESSION NO--AP0055634
                        UNCLASSIFIED

2/2   027
CIRC ACCESSION NO--AP0055634   UNCLASSIFIED   PROCESSING DATE--18SEP70
ABSTRACT/EXTRACT--(U) GP-O-   ABSTRACT.
 6-VINYL-1,2:3,5-DIMETHYLENE-D-GLUCOSE WAS POLYMD. IN THE PRESENCE OF BF
 SUB3 OET SUB2 AT PLUS 3 TO MINUS 22DEGREES FOR 2-8 HR TO GIVE COLORLESS
 RESINS (MOL. WT. 1200-8200) IN 35-95PERCENT YIELD, SOL. IN DIOXANE AND
 HALOGENATED HYDROCARBONS. THE SOLNS. OF THE POLYMERS WERE OPTICALLY
 ACTIVE. POLY(6-VINYL-1,2:3,5-DIMETHYLENE, D-GLUCOSE) (MOL. WT.
 1800-2100) WAS HYDROLYZED IN AQ. DIOXANE-ALC. SOLN BY REFLUXING THE
 MIXT. (IN THE PRESENCE OF H SUB2 SO SUB4 DISSOLVED IN ETOH) AT
 70-90DEGREES FOR 40 HR. THE PRODUCT,
 POLY(6-VINYL-1,2-METHYLENE-D-GLUCOSE), WAS SOL. IN AQ. ALC.

UNCLASSIFIED

1/2   031   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--STUDY OF THE PHASE STRUCTURE OF ALLOYS IN THE SYSTEM TI3AL-NB -U-

AUTHOR--NARTOVA, T.T., SOPOCHKIN, G.G.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, METALLY, MAR. APR. 1970, P.   -
220-223
DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALLOY PHASE SYSTEM, PHASE STRUCTURE, METAL MICROSTRUCTURE, X
RAY ANALYSIS, TITANIUM ALLOY, ALUMINUM ALLOY, NIOBIUM ALLOY/(U)TINBTI3AL
ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0340   STEP NO--UR/0370/70/000/000/0220/0223

CIRC ACCESSION NO--AP0108638
ZZZZZZZZZZZZ   .   UNCLASSIFIED

CIRC ACCESSION NO--AP0108638

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE PHASE EQUILIBRIA OF ALLOYS IN THE QUASI TERNARY SYSTEM TI-NB-TI3AL, USING MICROSTRUCTURAL, THERMOGRAPHIC, AND X RAY ANALYSES. IT IS FOUND THAT ALLOYS OF THIS SYSTEM FORM CONTINUOUS SOLID SOLUTIONS BASED ON THE BETA SOLID SOLUTION OF THE SYSTEM TI-AL AND NIOBIUM. ADDITIONS OF NIOBIUM TO THE COMPOUND TI3AL RESULT IN A SUBSTANTIAL DECREASE OF THE TRANSFORMATION TEMPERATURE IN THE SOLID STATE AND STABILIZE THE REGION OF THE BETA SOLID SOLUTION.

UNCLASSIFIED

USSR   UDC 621.382.322

SOPOV, O.V., ABRANOVA, L.I., MIKHEYEV, A.D., NIKONOV, A.S., RZHANOVA, T.R.

"Stabilization Of MOS Transistor By Phosphorous Silicate Glass"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Tech-
nology. Scientific-Technical Collection. Semiconductor Devices), 1970, Issue
2(52), pp 169-185 (From RZh--Elektronika i yeye primeneniya, No 3, March 1971,
Abstract No 3B215)

Translation: The problems are considered of the stabilization of a MOS trans-
istor with an induced p-channel by phosphorous silicate [Fosfornosilikatnyy]
glass. An investigation is conducted of the effect of the conditions of form-
ation of phosphorous silicate glass on the stability of the device. The exis-
tence of optimum conditions for the stabilization process is established. It is
possible with the aid of stabilization by phosphorous silicate glass to assure
high stability of a MOS transistor during the long-term action of an electric-
al load and increased temperature of the environment. Summary.

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USSR

UDC 621.382

FEDOTOV, YA. A., SOROV, O.V., ABRAMOVA, L.I., CHERNYAVSKIY, I.A.

"Investigation Of The Parameters Of Boundary States In Oxide-Semiconductor Structures"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, No 1(51), pp 140-151 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B106)

Translation: The density and energy distribution of the boundary states in Si-SiO2 structures were studied. From a comparison of the theoretical volt-farad dependence, constructed on the basis of the ideal theory of Garretta--Brattena, and the experimental volt-farad dependence, the distribution was found of the magnitude of the charge captured by the boundary states as a function of the surface potential of the semiconductor. It is shown that the boundary states have a different energy distribution in the forbidden band of the semiconductor. It is revealed that different technological operations on the MOS structures have an uneven effect on boundary states with a different energy position. 6 ref. Summary.

1/1

TITLE--ON THE PERFORMANCE OF A PYROELECTRIC WITH A FIELD EFFECT TRANSISTOR

UNCLASSIFIED

PROCESSING DATE--23OCT70

-U-

AUTHOR-(05)-NOVIK, V.K., NIKONOV, A.S., SOPOV, O.V., LEVINA, I.A., GAVRILOVA, N.D.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, NO 3, MAR 70, PP 642-644

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PYROELECTRIC DETECTOR, FIELD EFFECT TRANSISTOR, ELECTRONIC AMPLIFIER, ELECTROMAGNETIC NOISE, VOLT AMPERE CHARACTERISTIC, SILICON, SILICON DIOXIDE, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1465

STEP NO--UR/0109/70/000/003/0642/0644

CIRC ACCESSION NO--AP0104759

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0104759
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS PAPER IS CONCERNED WITH THE
PERFORMANCE OF PYROELECTRIC ELEMENTS (INVRARED AND MILLIMETER WAVE
DETECTORS, THERMOMETERS, ETC.) WITH A FIELD EFFECT TRANSISTOR. A GROUP
OF DEVICES COMBINING RECEIVING AND AMPLIFYING ELEMENTS IN ONE DEVICE WAS
INVESTIGATED. THE DEVICES WERE BASED ON SILICON METAL OXIDE
SEMICONDUCTOR (MOS) TRANSISTORS WITH P AND N TYPE CHANNELS. THE BASIC
GOAL OF THE INVESTIGATION WAS THE DETERMINATION OF THE MAXIMUM VALUE OF
THE THERMAL NOISE R WHICH ASSURES ABSENCE FROM BREAKDOWN OF THE GATE IN
THE PRESENCE OF VARIOUS THERMAL EFFECTS (OVER ALL SLOW CHANGE OF
TEMPERATURE, POWER PULSE EXPOSURE, ETC.). THE DEVICES WERE ASSEMBLED IN
THE CASINGS OF TYPE GT-313 TRANSISTORS. THE SENSING ELEMENTS WERE
PREPARED FROM CRYSTALS OF TRIGLYCINESULFATE AND MEASURED SIMILAR TO 3 BY
3 BY 0.5 MM. MOUNTING OF THE ELEMENTS AND THE ELECTRODES TO THEM WAS
DONE WITH SILVER PASTE. THE INVESTIGATIONS SHOWED THAT THE STABILITY OF
DEVICES WITH A P TYPE CHANNEL WAS DEFINITELY HIGHER. IT WAS DETERMINED
THAT THE OPTIMUM VALUE OF R IS 1 G OHM. WITH SUCH A LOAD, THE THRESHOLD
SENSITIVITY IN THE 20 HZ, 20 KHZ RANGE AMOUNTS TO SIMILAR TO 3 TIMES 10
PRIME NEGATIVE7 WATT. IT WAS FOUND THAT TRANSISTORS WITH A VOLTAGE CUT
OFF OF 5 V ARE MOST SUITABLE FOR OPERATION WITH PYROELECTRIC ELEMENTS.
IN THAT CASE, THE BIAS VOLTAGE WHICH IS FED TO THE GATE FROM THE DRAIN
SOURCE ASSISTS LONG TERM MAINTENANCE OF THE MACROSCOPIC POLARIZATION OF
THE CRYSTAL. THE WRITERS CONCLUDE THAT FIELD EFFECT TRANSISTORS ARE
PROMISING AMPLIFYING ELEMENTS FOR OPERATION WITH PYROELECTRIC ELEMENTS.

UNCLASSIFIED

CIRC· ACCESSION NO--AP0104759   UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--USE OF MCS TRANSISTORS IS SUITABLE UP TO A FREQUENCY OF
SIMILAR TO 1 KHZ. AT HIGHER FREQUENCIES WHERE A SMALLER VALUE OF R IS
PERMISSIBLE, IT IS ADVISABLE TO USE DEVICES WITH A P-N JUNCTION HAVING
LESS NOISE. 2 FIG. 8 REF. RECEIVED BY EDITOR: 20 FEB 69.

UNCLASSIFIED

USSR

NOVIK, V. K., NIKONOV, A. S., SOPOV, C. V., LEVINA, I. A.,
GAVRILOVA, N. B., and YEGINA, Ye. N.

UDC: 621.382.323

"Pyroelectric Operation with Field Effect Transistor"

Abstract: The authors list four advantages of pyroelectric elements which have made them objects of engineering interest: high input impedance; lower noise level; possibility of combining sensor and amplifying elements in a single device; possibility of designing planar and epitaxial integral sensor and amplifier systems. The pyroelectric detector has a low noise level, and its sensitivity depends on the condition that the product of the frequency, the load resistance, and the crystal capacitance exceed unity, a condition not easily realized in various types of transistor. Other characteristics of pyroelectric transistors are briefly listed. The authors of this brief communication

1/2

USSR

NOVIK, V. K., et al, Radiotekhnika i Elektronika, Vol 15, No 3, 1970, pp 642-644

Abstract:

tested combined sensor-amplifier pyroelectric units with silicon junctions; the purpose of these tests was to establish the maximum value of load resistor required to evade gating breakdown for various thermal reactions such as slow temperature changes, power flare spots, etc. Photographs and a schematic sketch of these devices are shown, and some details of their fabrication are given. The tests showed that the optimal value of the load resistor was 1 gigohm; at this value, the threshold sensitivity in the 20 Hz to 20 kHz was about $3 \cdot 10^{-7}$ watts. Conclusions arrived at by the authors are: field effect transistors are promising amplifier elements for working with pyroelectric detectors; it is better to combine sensing and amplifying elements in a single package than to mount the pyroelectric directly on the transistor p-n structure.

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1/2   014   UNCLASSIFIED   PROCESSING DATE--11DEC70
TITLE--NITROVINYLATION OF CH ACIDS -U-

AUTHOR-(03)-VOLYNSKIY, V.E., PEREKALIN, V.V., SOPOVA, A.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(5), 938-41

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITRATION, BENZENE DERIVATIVE, CHLORINATED ORGANIC COMPOUND,
  AROMATIC NITRO COMPOUND, AROMATIC KETONE, ETHER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1326   STEP NO--UR/0366/70/006/005/0938/0941
CIRC ACCESSION NO--AP0135000
                    UNCLASSIFIED

2/2   014   UNCLASSIFIED   PROCESSING DATE--11DEC70
CIRC ACCESSION NO--AP0135000
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF PHCX:CHNO SUB2 (I)
  (X IS CL OR IODINE) WITH NACHRCO SUB2 ME (R IS CO SUB2 ME, OR CN), NA
  DIMEDONE DERIV., OR NACH(COR PRIME1) COR PRIME2 (R PRIME1 AND R PRIME2
  GIVEN: ME, OET; ME, ME; PH, ME) GAVE MIXT. OF O SUB2 NCH SUB2 CPH:CRCO
  SUB2 ME, O SUB2 NCH: CPHCH(COR PRIME1) COR PRIME2, OR
  5,5,DIMETHYL,2,(1,PHENYL,2,NITROETHYL),1,3,CYCLOHEXANEDIONE.   THE
  REACTION OF I WITH MEOH GAVE PHC,(OME) SUB2 CH SUB2 NO SUB2.
  SIMILARLY, PHCI:CPHNO SUB2 REACTED WITH MEOH TO GIVE PHC (OME) SUB2
  CHPHNO SUB2.   FACILITY: LENINGRAD, GOS. PEDAGOG. INST. IM.
  GERTSENA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

SOPRONYUK, F. O., TSARKOV, E. F.

"The Stability of Linear Stochastic Differential Equations with Delay"

Dopovidi AN URSR [Ukranian], 1973, A, No 4, pp 347-350, 382 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V95 by the authors)

Translation: A study is made of the equation

$$dx(t,\omega) = \left[\sum_{j=0}^{n} a_j x(t-\gamma_j, \omega) \right] dt + \sum_{j=0}^{n} [d\Xi(t,\omega)] s(t-\Delta_j(t),\omega), \qquad (1)$$

where $x(t,\omega) R^N$, a_j are square $N \times N$ matrices, $\Xi_j(t,\omega)$ are square matrices composed of independent processes of Brownian motion with zero drift and diffusion parameters σ_{kl}^j (k, $l = 1,2,\dots,N$; $j=0,1,\dots,n$). Sufficient conditions

1/2

- 20 -

USSR

SOPRONYUK, F. O., TSARKOV, E. F., Dopovidi AN URSR, 1973, A, No 4, pp 347-350, 382

for mean square asymptotic stability of the trivial solution of (1) are produced.

2/2

USSR

UDC: 51:621.391

KONDRAT'YEV, Ye. A., SOPRUNENKO, Ye. P.

"On a Class of Functions Which are Realizable on a Single-Track Cascade"

V sb. Diskretn. avtomaty i seti svyazi (Discrete Automata and Communications Networks—collection of works), Moscow, "Nauka", 1970, pp 73-77 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V376)

Translation: The authors discuss the realizability of functions of an algebra of logic on a single-track cascade of functional elements in the basis of all functions of two variables. In this paper necessary and sufficient conditions are found for the realizability of a function of n variables on such a cascade of n cells. The corresponding algorithm is given. G. Blokhina.

1/1

USSR

UDC: 51:621.391

KONDRAT'YEVA, Ye. A., SOPRUNENKO, Ye. P.

"On a Homogeneous Medium Which Realizes Symmetric Functions"

V sb. Diskretn. avtomaty i seti svyazi (Discrete Automata and Communications Networks--collection of works), Moscow, "Nauka", 1970, pp 82-85 (from RZh--Kibernetika, No 1, Jan 71, Abstract No 1V372)

Translation: The authors consider the problem of realizing an arbitrary symmetric function on a homogeneous medium. As the authors point out, this realization may be achieved for instance by modeling a known circuit for a symmetric function of n variables by a Neumann-Church automaton. The number of elements (complexity) of this medium is equal to $cn\log_2 n$, the elements used for constructing such a medium being fairly complex in structure. In the article being abstracted here, a medium is proposed which is constructed from much simpler elements, and which realizes an arbitrary symmetric function of n variables. The complexity of such a medium is equal to cn^2. G. Blokhina.

1/1

USSR

SOPRYAKOV, V.I., YUKHNEVICH, A.V., YANCHENKO, A.M.

"Structure Of Forward Branch Of Current-Voltage Characteristics Of Silicon Diodes Irradiated By Gamma Quanta"

Translation: The results are presented of measurements of the current-voltage characteristics (CVC) of silicon semiconductor diodes irradiated by Gamma quanta Co^{60}. The CVC was measured in a current generator regime. The semiconductor diodes were prepared from n-type Si; $\rho = 15$ ohm.cm, the O_2 content of which amounted to $> 10^{17} cm^{-3}$ and $< 2.10^{16} cm^{-3}$. The p-n junction was formed by fusion of Al; the junction area amounted to $(1 - 2) . 10^{-3}$, and the thickness of the base equalled 20 - 150 micrometers. With fluxes $> 5. 10^{16} cm^{-2}$ and a temperature of 80° K at the forward branches of the CVC, in addition to an increase of the diffusion resistance, there were also located sections of negative curvature, which with an increase of the flux up to $(1 - 2) . 10^{17} cm^{-2}$, were transformed

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USSR

SOPRYAKOV, V. I., et al., <u>Radiats. fiz. nemet.kristallov. T. 3, Ch. 2</u>
(Radiation Physics of Nonmetallic Crystals. Vol 3, Part 2 -- Collection Of
Works), Kiev, "Nauk.dumka," 1971, pp 193-196 (from <u>RZh--Elektronika i yeye</u>
<u>primeneniye</u>, No 12, Dec 1971, Abstract No 12B138)

into sections of negative resistance, and with increase of the flux into hyster-
isis loops. A difference is noted in the behavior of semiconductor diodes pre-
pared from Si with different O_2 contents at temperatures of 80 and 300° K. These
peculiarities are connected with nonuniformity of distribution of the doping and
compensating impurities in the initial p-n junction. Formation of the hysterisis
loops was simulated by a parallel connection of a semiconductor diode with
ordinary CVC and with the presence of a section of negative resistance.2 ill.3 ref.
V.S.

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USSR

UDC: 681.2:519.27

DATIASHVILI, G. V., SORDIYA, Kh. R.

"Method of Rapid Estimation of the Normalized Autocorrelation Function with Slight A Priori Measurement Information"

Moscow, Metrologiya, No 1, 1973, pp 30-33.

Abstract: An algorithm is studied for digital processing of centered random processes in real time, produced on the basis of the theory of random excursions. It is demonstrated that the algorithm suggested is most effective in those cases where the volume of a priori information concerning the random process being studied is slight.

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USSR

UDC: 621.397:389.6

SORENZON, A. P.

"On the Selection of Metrics for Setting Standards for Gradation Distortions in Television"

V sb. Vopr. elektrosvyazi (Problems of Electrical Communications--collection of works), Kiev, "Tekhnika", 1970, pp 103-110 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11G72)

Translation: The objective and subjective sides of the problem are considered. It is proposed that limitations be introduced on variations in certain features of the image -- brightness, contrast, redistribution of half-tones -- and that image quality be judged from the total effect of these characteristics on the eye. A criterion is selected for evaluation under subjective conditions -- the opinion of the average viewer. An experimental method is described and an example is given which illustrates application of this method. One illustration, bibliography of four titles. Resumé.

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USSR

SORENZON, A. P.

UDC 62.397.001

"Estimating the Nonlinearity of the Amplitude Characteristic of an Electric Circuit for Image Transmission"

Vopr. Radioelektroniki. Nauchno-tekhn. sb. Tekhn. televideniya (Problems of Radio Electronics. Scientific and Technical Collection. Television Equipment), 1970, vyp. 1, pp 3-11 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G103)

Translation: This article contains an investigation of the possibility of using the MKKR [International Radio Consultative Committee] system for an electric image transmission channel. It is demonstrated that it is neces- sary to increase the number of parameters to estimate the nature of the nonlinear distortions of the individual elements of this channel and also to have the possibility of future summing of the introduced nonlinearities. An approximate analytical method is proposed which permits calculation of the total nonlinear distortions of the electric image transmission channel with respect to the characteristics of the electric elements for cases of linear and quadratic variation of the values of the differential equation of individual elements.

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017

TITLE--EFFECT OF CHROMIUM IMPURITIES ON THE EPR SPECTRUM OF MN PRIME2 POSITIVE IN MAGNESIUM OXIDE -U-

UNCLASSIFIED

PROCESSING DATE--04DEC70

AUTHOR-(02)-SORIN, L.A., KAKAZEY, N.G.

COUNTRY OF INFO--USSR

SOURCE--UKR. FIZ. ZH. (RUSS. ED.) 1970, 15(3), 521-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--EPR SPECTRUM, CHROMIUM, MAGNESIUM OXIDE, METAL IMPURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0457

CIRC ACCESSION NO--AP0135920

STEP NO--UR/0185/70/015/003/0521/0523

UNCLASSIFIED

CIRC ACCESSION NO--AP0135920   UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BASIC MECHANISM OF INTERACTION BETWEEN MN PRIME2 POSITIVE AND CR PRIME3 POSITIVE IN A DIAMAGNETIC MGO MATRIX WAS STUDIED BY USING EPR SPECTRA. THE EPR SPECTRUM OF MNSO SUB4 IN MGO AFTER EVAPN. OF WATER WAS IDENTICAL WITH THOSE DESCRIBED PREVIOUSLY. WITH INCREASING CR PRIME3 POSITIVE CONCN., THE LINDWIDTHS OF THE MN PRIME2 POSITIVE SPECTRA INCREASED SIMULTANEOUSLY WITH A DECREASE OF THE LINE AMPLITUDES. DIPOLE DIPOLE INTERACTION WAS FOUND AS THE BASIC MECHANISM OF THIS BROADENING. THE DEPENDENCE OF THE LINEWIDTH OF MN PRIME2 POSITIVE SPECTRA ON CR PRIME3 POSITIVE CONCN. QUAL. CORRESPONDED TO PREVIOUSLY SUGGESTED THEORY (C. KITTEL, E. ABRAHAMS, 1953). FACILITY: INST. PROBL. MATERIALOVED., KIEV, USSR.

UNCLASSIFIED

USSR

UDC   621.391.8:519.27

ASTRATOV, O. S., LIKARPENKOV, V. G., SORIN, V. Ya.

"Problems of Spectrum Conversion in Variable Transposition"

Translation: The authors analyze passage of a harmonic signal through a system which provides time transposition of its individual sections. It is shown that the spectrum of the output signal contains a set of harmonics which are symmetrically arranged relative to the frequency of the input signal at a distance which is a multiple of the transposition period. It is proved that individual harmonics in the output signal spectrum (including harmonics on the input signal frequency) may be absent for certain frequencies with some transposition laws.   Resume.

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USSR

KLIGER, G. A., SMILOVENKO, L. I., and SCRIMA, E. I.   UDC: 621.396.677.085.414

"Investigating the Possibility of Shortening the Horizontal Elements of a Vertical Zigzag Log-Periodic Antenna"

Tr. NII radio (Transactions of the Scientific Research Institute of Radio) No. 2, 1970, pp 96-102 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B34)

Translation: Several methods are considered for reducing the length of horizontal phasing elements of a vertical zigzag log-periodic antenna. Results are given of computations and experimental investigations. Resume

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