



NEWMAN, G. Y., ...

Indicates device for removing ...  
machines. ...

(REF ID: A66300)

1. ...

SOV/124-57-9-10921

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 9, p 154 (USSR)

AUTHOR: Andreyev, G. A.

TITLE: Concerning the Testing of Soil Strength by Means of Uniaxial Compression (K voprosu ispytaniya prochnosti gruntov odnoosnym razdavlivaniyem)

PERIODICAL: V sb.: 15-ya nauch. konferentsiya Leningr. inzh.-stroit. in-ta, Leningrad, 1957, pp 92-95

ABSTRACT: Bibliographic entry

Card 1/1

AMBR YEV, G.A., Cand Tech Sci -- (diss) "The problem of testing  
the resistance ~~to shear~~ of clay rocks (soils) by the method of  
monoaxial crushing." Len, 1959. 19 pp (Fin of Higher Education  
USSR. Len Order of Labor Red Banner Construction Engineering Inst.  
Chair of "Bases and Foundations"). 150 copies (13,40-59, 103)

D<sup>r</sup> ZACHENKO, P.Ye.; OSHCHEIKOV, P.K.; TOLKACHEVA, N.N.; ANDREYEV, G.A.;  
CHUDOV, V.A.; GORYUNOV, K.N.; DUBOVA, L.N.

Using irradiation procedures for surface hardening of metals.  
Trudy Sem.po kach.poverkh. no.5:27-31 '61. (MIRA 15:10)  
(Surface hardening)  
(Materials, Effect of radiation on)

S/514/6./000/005/001/014  
1007/1207

AUTHORS: D'yachenko, P.Ye., Oshchepkov, P.A., Tolkacheva, N.A., Andreyev, G.A.,  
Gaidov, V.A., Goryunov, A.S., and Dubova, L.N.

TITLE: On the hardening of metal surface layers by irradiation

SOURCE: Akademiya Nauk SSSR. Komissiya po tekhnologii Mashinostroyeniya.  
Seminar po kachestvu poverkhnosti. Trudy. no. 5, 1961. Kachestvo  
poverkhnosti detaley mashin; metody i pribory, uprochneniye  
metalloy, tekhnologiya mashinostroyeniya, 27-31

TEXT: The thermal effect of nuclear irradiation in the surface layers of  
metals was investigated after electronic, ionic and deuteron irradiation. The  
equipment consisted of a voltage-pulse generator, electron gun and a vacuum unit.  
Considerable increase in the wear resistance of metals resulted from the levelling of  
micro-irregularities, fusion of micro-cracks and the sudden quenching of the surface  
layer. In a second test, ionic irradiation was achieved in a unit for the electromag-  
netic separation of isotopes by irradiation with titanium ions. The titanium diffused  
into the surface of the specimens to a depth of 110 microns and wear resistance  
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S/514/61/000/005/001/014  
1007/1207

On the hardening of metal...

increased by as much as 10 times compared to the initial resistance. Microhardness increased by as much as 1.5 times. Deuteron irradiation was performed in a cyclotron and resulted in an increase of microhardness by a factor of 2-3, and of wear resistance by a factor of 2-2.5. There are 4 figures.

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ANDREYEV, G.A.

Plotting the supporting area curve for a surface. Trudy  
Sem.p0 kach.poverkh. no.5:170-175 '61. (MIRA 15:10)  
(Surfaces (Technology))



D'YACHENKO, Petr Yefimovich, doktor tekhn.nauk, prof.; TOLKACHEVA, Nina Nikolayevna; ANDREYEV, Gavriil Alekseyevich; KARPOVA, Tamara Mikhaylovna; BANKVITSER, A.L., red.izd-va; GOLUB', S.P., tekhn. red.

[Area of actual contact of mating surfaces] Ploshchad' fakticheskogo kontakta sopriazhennykh poverkhnostei. Moskva, Izd-vo Akad. nauk SSSR, 1963. 94 p. (MIRA 16:6)  
(Surfaces (Technology))

ANDREYEV, G.A.

S/121/62/000/010/005/005  
D040/D112

AUTHOR: None given

TITLE: Dissertations

PERIODICAL: Stanki i instrument, no. 10, 1962, 44

TEXT: The following dissertations for the degree of Candidate of Technical Sciences were presented: L.D. Adamovich, at the Voenno-inzhener-naya krasnoznamennaya akademiya im. V.V. Kuybysheva (Military Engineering "Red Banner" Academy im. V.V. Kuybyshev), "Some Aspects of the Geometry of Helical Surfaces"; G.A. Andreyev, at the VNII zh.-d. transporta (VNII of RR Transportation), "Investigation of the Contact Formation Between Rough Sur-faces"; A.V. Baltrushevich, at the Vsesoyuznyy ordena Trudovogo Krasnogo Znameni NII elektromekhaniki (All-Union "Order of the Red Banner of Labor" NII of Electromechanics), "Investigation of a Digital Servo System for Con-verting Digits into Movements"; A.P. Bezrodnyy, at the Leningradskiy poli-tekhnicheckiy institut im. M.I. Kalinina (Leningrad Polytechnic Institute im. M.I. Kalinin), "Investigation of the Processes of Stepless Control of

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ANNENEV, G.A.

Effect of fluctuation in the rate of transport of inhomogeneities  
on the statistical characteristics of a wave propagating in a tur-  
bulent medium. Izv. vys. ucheb. zav.: radiofiz. 7 no.6:1198-1200  
1964. 1964 18:31

U. Nauchno-issledovatel'skiy tsentr radiofizicheskoi fiziki i te-  
orii svyazi.

ABDEYEV, G.A.; ALEKSANDROV, B.P.

Flotation study of the distribution of singly charged impurity ions in growing NaCl single crystals. Fiz. tver. tela 7 no.1: 177-182 Ja 1965. (MIRA 18:3)

1. Fiziko-tekhnicheskii institut imeni Ioffe AN SSSR, Leningrad.

ABDELVAH, G.A.

Effect of admixture of oxy-anions on the density of NaCl and KCl single crystals. Fiz. tver. tela 7 no.1:183-189, Jan '65.

(MIRA 18:2)

1. Fiziko-tekhnicheskij institut imeni Ioffe AN SSSR, Leningrad.

ANNEX 1

Approximate distribution of non-ferrous ions in the earth's crust  
in single crystals. Izv. vuzovskogo nauchno-issledovatel'skogo  
instituta khimicheskoy fiziki (1977) 18:6  
I. Fiziko-tekhnicheskyy institut imeni Lofte ad'vokata, Leningrad.

ANDREYEV, G.A.

Distribution of divalent impurities in growing NaCl single  
crystals. Fiz. tver. tela 7 no.6:1653-1656 Je '65.

(MIRA 18:6)

1. Fiziko-tekhnicheskii institut imeni Ioffe AN SSSR, Leningrad.

ANDREYEV, G.A.

Diffusion of water molecules in aqueous solutions of  
 $\text{KNO}_3$  and  $\text{Li}_2\text{SO}_4$ . Zhur.fiz.khim. 39 no.10:2586-2587 0  
1965. (MIRA 18:12)

1. Fiziko-tekhnicheskiy institut AN SSSR. Submitted July 8,  
1964.



ANDREYEV, G. A.

Andreyev, G. A. [Tomsk, Politekhicheskii Institut (Polytechnical Institute);  
Oscillographic Investigation of the Thermal Breakdown of Rock Salt at  
Constant Voltage

(The Physics of Dielectrics; Transactions of the All-Union Conference on the Physics  
of Dielectrics) Moscow, Izd-vo AN SSSR, 1958. 245 p. 3,000 copies printed.

This volume publishes reports presented at the All-Union Conference on the Physics of  
Dielectrics, held in Dnepropetrovsk in August 1956 sponsored by the "Physics of  
Dielectrics" Laboratory of the Fizicheskii Institut Imeni Lebedeva AN SSSR (Physics  
Institute Imeni Lebedev of the AS USSR), and the Electrophysics Department of the  
Dnepropetrovskiy gosudarstvennyy universitet (Dnepropetrovsk State University).

ANDREYEV, G. A.: Master Tech Sci (diss) -- "Oscillographic investigation of thermal breakdown of some solid dielectrics". Tomsk, 1958. 7 pp (Min Higher Educ USSR, Tomsk Order of Labor Red Banner Polytech Inst in S. M. Kirov, Chair of "Technology of High Voltages"), 150 copies (KL, No 2, 1959, 120)

AUTHOR: Andreyev, G. A.

SOV/139-58-4-20/30

TITLE: Breakdown of Some Alkali-Haloid Crystals at Elevated Temperatures (Proboy nekotorykh shchelochno-galoidnykh kristallov pri vysokikh temperaturakh)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, 1958, Nr 4, pp 123-126 (USSR)

ABSTRACT: The breakdown voltage and the electric strength were measured for NaCl, KCl and KBr at 20 to 440°C for increasing rectified voltages. The results are graphed in Figs. 1-3 and can be summarised thus:

- 1) The temperature dependence of the breakdown voltage and of the electric strength of NaCl, KCl and KBr in the case of a uniform field produced by a rectified voltage increasing with a speed of 0.63 kV/sec shows a minimum.
- 2) In the temperature range 20 to 100°C the change of the breakdown voltage and of the electric strength is in accordance with that of an electric type of breakdown; above 200°C the thermal breakdown theory of V. A. Fok was found valid and partly the "high temperature" breakdown theory of Frohlich. In the range 100 to 200°C a range Card1/2 was detected which was intermediate between the electrical

SOV/139-58-4-20/30

Breakdown of Some Alkali-Haloid Crystals at Elevated Temperatures and the thermal types of breakdown. In the entire investigated temperature range the breakdown voltage and the electric strength of the crystals decreases with the following sequence: NaCl, KCl, KBr. Acknowledgments are made to Professor A. A. Vorob'yev under whose guidance this work was carried out. There are 3 figures and 13 references, 9 of which are Soviet, 3 English, 1 German.

ASSOCIATION: Tomskiy politekhnicheskii institut imeni S.M. Kirova  
(Tomsk Polytechnical Institute imeni S. M. Kirov)

SUBMITTED: February 25, 1958

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SOV/139-58-4-29/30

AUTHORS: Vorob'yev, A. A. and Andreyev, G. A.

TITLE: Thermal Breakdown of Ionic Crystals and the Lattice Energy  
(Teplovoy proboy ionnykh kristallov i energiya reshetki)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika,  
1958, Nr 4, pp 172-173 (USSR)

ABSTRACT: Paper presented at the Inter-University Conference on  
Dielectrics and Semiconductors, Tomsk, February, 1958.  
At room temperature a direct relation exists between the  
electric properties of the crystals and their lattice  
energy (Refs 1-4). The authors of this paper investi-  
gated the electric strength and the current in strong and  
pre-breakdown fields in single crystals of NaCl, KCl and  
KBr inside a uniform field in the temperature range  
20 to 440°C. In the temperature range 25 to 440°C the  
electric strength of NaCl, KCl and KBr increases in  
proportion to the energy of the crystal lattice, Fig.1.  
With increasing energy of the crystal lattice, the  
pre-breakdown current at elevated temperatures decreases  
according to the linear law, Fig.2; the linear dependence  
of the current measured at fields equalling 20 to 100% of  
the breakdown fields on the energy of the crystal lattice

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SOV/139-58-4-29/30

Thermal Breakdown of Ionic Crystals and the Lattice Energy

is conserved in the temperature range 100 to 440°C in NaCl, KCl and KBr. The Volt-Ampere-sec characteristics obtained for each of the specimens of the investigated salts (Ref 6) were used for calculating the electrical energy generated in the specimen during the action of the high voltage, i.e. from the beginning of an increase in the high voltage up to the instant of breakdown of the specimen. In the temperature range 20 to 440°C a decrease of the electric energy was observed with the following sequence NaCl, KCl, KBr. Thus, during a thermal breakdown crystals with lower energies of the crystal lattice have a lower electric strength and require a smaller quantity of electric energy for effecting the breakdown. The relation between the electric strength and the physico-chemical properties of the crystals is maintained in the field of the thermal breakdown. In Fig.1 the dependence is graphed of the electric strength of NaCl, KCl, KBr on the energy of the crystal lattice at the temperatures 25 to 350°C (top graph) and 400 to 440°C (bottom graph). In Fig.2 the dependence of the pre-breakdown current on the energy of the crystal lattice is graphed for the NaCl,

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Thermal Breakdown of Ionic Crystals and the Lattice Energy

KCl and KBr at the temperatures of 100 to 250°C (top graph) and 300 to 440°C (bottom graph).

There are 2 figures and 4 references, all of which are Soviet.

(Note: This is a complete translation)

ASSOCIATION: Tomskiy politekhnicheskii institut imeni S.M.Kirova  
(Tomsk Polytechnical Institute imeni S. M. Kirov)

SUBMITTED: February 25, 1958

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SOV/139-58-5-4/35

AUTHOR: Andreyev, G. A.

TITLE: Currents in Ionic Crystals at High Temperatures and in Strong Fields (Toki v ionnykh kristallakh pri vysokikh temperaturakh i sil'nykh polyakh)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, fizika, 1958, Nr 5, pp 16-21. (USSR)

ABSTRACT: The paper was presented at the Conference of Higher Educational Establishments on Dielectrics and Semiconductors, Tomsk, February, 1958. The author reports studies of current in NaCl, KCl and KBr crystals in a wide range of temperatures (20-440°C) and the relationship between currents and electrical breakdown. In his studies he used the apparatus shown schematically in Fig.1. Plates  $F_2$  of a double-beam cathode oscillograph were used to measure  $U_n$  which was proportional to the voltage across the sample and the measuring resistance  $R_{izm}$ . Plates  $F_1$  were used to measure the voltage across  $R_{izm}$ .

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A-7139-58-5-4/35

## Currents in Ionic Crystals at High Temperatures and in Strong Fields

when a current, equal to the current through the sample, was passed through  $E_{1mm}$ . The resistance of the sample was always much higher than  $E_{1mm}$ . Rectified voltage was increased uniformly at the rate of 0.65 kV/sec using a motor  $M_1$  and the associated apparatus (P-1, AT-2). Motion of the points on the oscillograph screen was recorded on a moving film. The time scan of the oscillograph was replaced by this mechanical motion of the film. Using another motor  $M_2$  and the associated apparatus P-2) it was possible to vary the rate of motion of the film from 0.1 to 180 cm/sec. Fig.2 gives a typical record for NaCl, KCl and KBr. The curves of the type shown in Fig.2 yielded information on the breakdown voltage, electric strength and currents flowing in the sample from the moment of application of the voltage to breakdown of the sample. The temperature dependences of the electric strength and the breakdown voltage were given in Ref.7; the present paper deals only with the currents flowing in the samples. Fig.3 gives the dependence of the logarithm of current on the relative field strength  $E/E_{br}$  for NaCl 0.1 mm

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SOV/139-58-5-4/35

Currents in Ionic Crystals at High Temperatures and in Strong Fields  
thick in the temperature range 20-440°C ( $E_{br}$  is the electric strength). With increase of the value of  $E/E_{br}$  from 20 to 100% the current in NaCl increases exponentially at all temperatures. This current can be represented by an empirical equation:

$$i = a \exp [bt + (c + dt) E/E_{br}] \quad (2)$$

where  $a$ ,  $b$ ,  $c$  and  $d$  are coefficients whose values for NaCl 0.1 mm thick are given in Table 1. At  $t = \text{const}$  the above equation is similar to the expression obtained by Poole, given in Ref.8. Values calculated from Eq.(2) agree satisfactorily with mean experimental values of current. The equations for samples of NaCl, 0.2 and 0.05 mm thick, and for KCl and KBr are identical with Eq.(2) but the coefficients  $a$ ,  $b$ ,  $c$ ,  $d$  have now different values. The results obtained suggest that the mechanisms of flow of current in crystals of NaCl, KCl and

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SOV 100-88-5-4/35

## Currents in Ionic Crystals at High Temperatures and in Strong Fields

KBr are identical in the temperature range 20-440°C, or at least very similar. Fig.4 gives the temperature dependence of the pre-breakdown current (the current flowing when  $E/E_{br} = 100\%$ ) for NaCl 0.1, 0.2 and 0.05 mm thick. Fig.5 gives the temperature dependence of the pre-breakdown currents in NaCl, KCl and KBr, all 0.1 mm thick. With increase of temperature the pre-breakdown currents in NaCl, KCl and KBr increase exponentially. In the 20-180°C temperature range, the currents rise faster with temperature than in the range 180-440°C. The author also obtained the temperature dependences of the total electrical energy  $P$  dissipated in a sample between the time of application of the voltage and the breakdown. These dependences are given for samples of NaCl in Fig.6 and for KCl and KBr in Fig.7. A maximum of the total dissipated energy occurs near 200°C in all the 3 types of crystal studied. The final general conclusion is that breakdown of NaCl, KCl and KBr crystals at temperatures above 200°C is a thermal process. This thermal process is satisfactorily explained by V. A. Fok's theory (Ref.9). Below 200°C, dependence of current on the temperature and sample thickness suggests a purely electrical breakdown. The author thanks Professor Dr. A. A. Vorob'yev,

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SOV/139-58-5-4/35

Currents in Ionic Crystals at High Temperatures and in Strong Fields  
who directed this work. There are 7 figures, 1 table and 11  
references, 6 of which are Soviet, 4 English and 1 Japanese  
in English.

ASSOCIATION: Tomskiy politekhnicheskii institut imeni S. M. Kirova  
(Tomsk Polytechnical Institute imeni S. M. Kirov)

SUBMITTED: February 25, 1958.

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ANDREYEV, G. A.

AUTHOR: Kuchin, V. D. ; Candidate of Technical Sciences SOV/105-58-7-24/32

TITLE: Conference on Solid Dielectrics and Semiconductors (Konferentsiya po tverdyim dielektrikam i poluprovodnikam.)

PERIODICAL: Elektrichestvo, 1958, Nr 7, pp. 85 - 85 (USSR)

ABSTRACT: The conference took place from February 5<sup>rd</sup> to February 8<sup>th</sup>, 1958, in the Tomsk Polytechnical Institute, Section of Breakdown of Solid Dielectrics and Semiconductors. I. Ye. Balygin, Candidate of Technical Sciences (Leningrad), reported that from the calculation data of the resistance of the discharge channel and on the basis of the obtained oscillographs he could draw final conclusions concerning the dynamics of the development and the physical nature of the breakdown of titanium-containing ceramic material with  $\epsilon=20$ . G. A. Vorob'yev (TPI), Candidate of Technical Sciences (TPI) constructed an oscillograph with pulse feeding. This oscillograph permits the reliable registration of phenomena of a duration of  $10^{-9}$  sec. M. A. Mel'nikov (TPI) found that the electric strength and the time of lagging of the discharge in

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Conference on Solid Dielectrics and Semiconductors 30V/105-58-7-24/32

the breakdown of NaCl-, KCl-, KBr-, KJ crystals and methylmethacrylate crystals with pulses of a front length of  $(5 - 7) \cdot 10^{-9}$  sec are almost independent of the chemical composition. A.V. Astafurov (TPI) reported on voltage vs. time characteristics and the dependence of the breakdown voltage on the thickness in the electric breakdown of solid dielectrics of considerable thickness (2 - 34 mm). The applicability of the empiric formula of Gorev-Mashkileyson for the latter is shown. G.A. Andreyev (TPI) found by means of the double-ray oscillograph that the temperature dependence of the electrical strength on NaCl, KCl and KBr has a maximum in the case of a breakdown due to thermal instability in the range of room temperatures. V.D. Kuchin (TPI) found, proceeding from the single electron model, the dependence of the electrical strength on the temperature in the following form:  $F^*(T) = kT/2e\lambda(T)$ , where  $\lambda$  denotes the free length of path of the electron. K.K. Sonchik (TPI) found that the time of lagging of the discharge in the ion crystals is the shorter, the higher the excess voltage at the sample and the crystal lattice energy are. M.P. Tonkonogov and Ye.T. Nadirov (Karaganda Mining Institute) investigated the destruction of coal by an electrohydraulic shock.

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Conference on Solid Dielectrics and Semiconductors SOV/105-58-7-24/32

The calculation showed that the discharge channel formed in the breakdown of the water is the source of the shock wave which destroys the coal. V.I.Obukhov (TFI) showed that the introduction of 0 - 10% solid powdery dielectrics into transformer oil, castor oil, glycerin, and distilled water influences to a very small extent the amount of the resistivity to electric pulses. The strength of the systems is to a great extent increased in the case of a content of admixtures of 30%.

ASSOCIATION: Tomskiy politekhnicheskii institut (Tomsk Polytechnical Institute)

1. Dielectrics--USSR 2. Semiconductors--USSR 3. Conferences

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ANDREYEV, G. A.

AUTHOR: Andreyev, G. A.

48-22-4-13/24

TITLE: Investigation of Thermal Breakdown of Rock Salt at Constant Voltage by Means of Oscillographic Methods (Ostsillografi-cheskoye issledovaniye teplovo go proboya kamennoy soli na postoyannom napryazhenii)

PERIODICAL: Izvestiya Akademii Nauk SSSR Seriya Fizicheskaya, 1958, Vol. 22, Nr 4, pp. 415-418 (USSR)

ABSTRACT: Opinions established in science on the existence of electric and thermal breakdown of solid dielectrics are based on the different phenomena accompanying these breakdowns, besides others also the temperature dependence of dielectric strength. At a constant voltage (refs. 1 to 4) the dielectric strength of alkali-halide crystals at first increases with temperature (domain of electric breakdown), and then, from a certain temperature onward, decreases (domain of thermal breakdown). The experimental control of the thermal breakdown theory conducted by A. V. Val'ter and L. D. Inge must be supplemented by data on the current passing through the dielectric previous to the breakdown. This was the purpose of the present paper. The author investigated the breakdown of natural rock salt

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Investigation of Thermal Breakdown of Rock Salt at Constant 48-22-4-13/24  
Voltage by Means of Oscillographic Methods

in an homogeneous field at a constantly increasing voltage by means of a two-ray cathode-ray oscillograph. The electric diagram of the equipment is shown in figure 1. The method described by the author permits to determine the characteristic of voltage vs. ampereseconds of common salt at various temperatures. Figure 4 shows the temperature dependence of the dielectric strength,  $E_{pr}$  of common salt in samples of three different thicknesses - 50, 100 and 200 . The diagrams show, that a maximum exists at 40°C. At a further temperature rise  $E_{pr}$  decreases rapidly. Above 150°C an increase of  $E_{pr}$  is observed on a thinning of the samples. This is explained by the better heat conduction in thin samples, corresponding to the thermodynamic theory by V. A. Fock (V. A. Pok'). Figure 6 shows, that the current through the samples previous to the breakdown is independent of the thickness of the samples. Above 150°C the pre-breakdown current is greater in thicker samples, the general resistance of the thicker samples at the same time being smaller. In samples of all thicknesses a marked reduction of resistance was observed previous to the moment of breakdown. By means of an interpretation of oscillographs the temperature dependence of the general

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Investigation of Thermal Breakdown of Rock Salt at Constant 48-22-4-13/24  
Voltage by Means of Oscillographic Methods

energy generated previous to the breakdown was obtained for samples of varying thickness (figure 7). This dependence exhibits a maximum at 200°C which presumably is connected with the transition from electric to thermal breakdown. The figure also shows, that the electric generated previous to the breakdown increases almost linearly with the thickness. The author expresses his gratitude to A. A. Vorob'yev for the direction of his work. There are 7 figures and 9 references, 4 of which are Soviet.

ASSOCIATION: Tomskiy politekhnicheskii institut im. S. M. Kirova  
(Tomsk Polytechnical Institute imeni S. M. Kirov)

AVAILABLE: Library of Congress

1. Alkali metal halide crystals--Dielectric properties
2. Dielectric properties--Temperature factors
4. Voltage--Applications
5. Oscillographs--Applications

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S/003/60/000/008/001/002  
E073/E535

AUTHORS: Vorob'yev, A.A., Professor, Doctor of Physico-Mathematical Sciences and Andreyev, G. A., Candidate of Technical Sciences

TITLE: The Problem Laboratory Stimulates Major Creative Work

PERIODICAL: Vestnik vysshey shkoly, 1960, No.8, pp.48-51

TEXT: The problem laboratories which were created in 1957 are now fully in operation and have yielded the first results. The scientific activity of the Chairs has considerably expanded as a result of these laboratories, both as regards research on acute problems and the teaching activity of the Chairs. Positive results have been achieved by a number of Chairs of the Tomsk Polytechnical Institute imeni S. M. Kirov after establishing a problem laboratory on electronics, dielectrics and semiconductors. The laboratory, which was created in 1957 jointly by the Chairs of Physics, High-voltage Engineering, Electrical Insulation and Cable Engineering, has brought about full coordination of the activities of the 32 scientific workers of these Chairs. During the three years which have elapsed since the establishment of this laboratory, the

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The Problem Laboratory Stimulates Major Creative Work

personnel of these Chairs have prepared two doctor dissertations and six candidate dissertations and have published over 100 articles, although before hardly any scientific work was carried out in the Chair of Physics. The relevant feature of the laboratory is its unified scientific leadership. At present, 73 scientific workers of the Institute participate in the investigations, of which three are doctors of science, 16 are candidates of science and 21 are post-graduates. The laboratory consists of three sections, each of which deals with a subject relating to the following two problems: physical and chemical properties, strength and failure of dielectrics and semiconductors; development of radio circuits for instruments incorporating semiconductors. In the individual sections of the laboratory, the electrical, mechanical, physical and chemical properties of single crystals of alkali-haloid salts, solid solutions, oxides of the metals of the second group of the periodic table are being studied. The results enabled the theoretically and practically important conclusion on the existence of an inter-relation between the electrical.

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mechanical and other characteristics of simple dielectrics and the energies of their crystal lattice, thus providing a theoretical basis for developing dielectrics with pre-determined properties. In the second on the physical and chemical properties of dielectrics, the mechanism of formation of a contact layer in dielectrics and semiconductors was studied. Extensive data on the conditions and causes of generation of cathodo-luminescence of industrial crystal phosphors due to the effect of flames were obtained by Docent V. A. Sokolov and formed the basis of a recent doctor dissertation. Considerable successes have been obtained in the High-voltage Division (headed by Candidate of Technical Sciences I. I. Kalyatskiy) relating to the electric strength of ionic solid dielectrics; it was found that short duration impulses produce in solid dielectrics a discharge which develops in a similar manner to gas discharges. It was also found that in the case of the point electrode being of positive polarity, the average speed of the discharge increases with decreasing temperature and with increasing energy of the crystal lattice of the dielectric; the results were presented in candidate dissertations (defended in 1958) by G. A. Andreyev, 

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The Problem Laboratory Stimulates Major Creative Work

A. F. Astafurov and V. D. Kuchin. Under the leadership of Docent V. S. Dmitrevskiy and senior reader M. F. Pisartsev, the electro-physical properties of electrically insulating concretes have been investigated. This laboratory participates in the work relating to establishing the largest teaching and research high-voltage laboratory in Siberia. The High-voltage Hall of this laboratory is already equipped with test transformers for 200 and 350 kV, surge generators of 3 million volt, 1 million volt and 600 kV. A series of transformers for 1 million volt have already been installed and the erection has begun of a unique 5 million volt surge generator and of a 2.5 million volt electrostatic generator. This laboratory will be used for testing industrial equipment rated for voltages up to 220 kV. In the division on millimicrosecond techniques (headed by Candidate of Technical Sciences G. A. Vorob'yev), the volt-second characteristics of various dielectrics are being investigated. It was found that for equal electric strength of gaps the breakdown of the dielectrics occurs in the following sequence: solid dielectric, gas, liquid dielectric, a conclusion of great importance from the point of view of insulation coordination. Circuits and instruments  
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S/003/60/000/008/001/002  
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The Problem Laboratory Stimulates Major Creative Work

were devised which enable recording on a film ultrashort (of  $10^{-10}$  sec duration) voltage surges and also a fast-action arrester for over-voltage protection of high voltage apparatus. Furthermore, generators for single high voltage surges with amplitudes up to 40 kV and durations up to  $3.2 \times 10^{-9}$  sec were developed.

Under the leadership of Docent I. A. Suslov, methods of calculation of video amplifiers and of designing miniature transistorized television cameras have been developed. The theoretical and experimental work of this laboratory is reflected in 206 papers and 6 books published by the personnel; at present 12 books and 76 papers are in the process of publication. In addition, 87 papers and communications were presented at conferences. The laboratory is in contact with numerous other Soviet scientific establishments and also with the Polytechnical Institutes of "Tsinkhua" (China) and Jassy (Roumania). The studies of the Power Engineering Department have established the possibility of using concrete as a dielectric in high voltage engineering. As a result of this, the cost of building a 22 m insulated tower for the 5 million volt surge generator was reduced considerably. ✓

ASSOCIATION: Tomskiy politekhnicheskii institut imeni S.M.Kirova  
Card 5/5 (Tomsk Polytechnical Institute imeni S.M.Kirov)

VOROB'YEV, A.A.; ANDREYEV, G.A.

Determining the energy of destruction following breakdown in solid dielectrics. Fiz. tver. tela 2 no.5: 987-992 My '60.

(MIRA 13:10)

1. Politekhnikheskiy institut, Tomsk.  
(Dielectrics)



S/046/62/008/001/003/018  
B139/B102

24.1300  
AUTHORS:

Andreyev, G. A., Zverev, V. A.

TITLE:

Method of investigating the statistical properties of media with random inhomogeneities by means of continuous frequency-modulated acoustic irradiation

PERIODICAL: Akusticheskiy zhurnal, . 8, no. 1, 1962, 42 - 48

TEXT: When investigating the propagation of waves in static inhomogeneous media, the characteristics of inhomogeneities and the signal parameter changes caused by them must be known. The authors conducted experiments with saw-tooth sound waves. The signals arriving at the receiver are delayed against the carrier wave by the time  $\theta_i(t) = 2r_i(t)/c$  ( $r_i(t)$  = distance between the  $i$ -th elementary scattering space and the sound pickup). The correlation function of the sum of signals equals the sum of correlation functions of the summands, i.e.,

$$\gamma_u(\tau) = \overline{u(t)u(t+\tau)} = \sum_{i=1}^N \overline{u_i(t)u_i(t+\tau)} \quad (3). \quad \text{Via the expression}$$

Card 1/3

Method of investigating the statistical ... S/046/62/008/001/003/018  
B139/B102

$\psi_u(\tau) = \gamma_A(\tau) e^{-2k_0^2 v^2 \tau^2}$  (6), where  $\tau_0$  denotes the time during which the curve of (6) drops to the e-fold, the authors come to the formula

$$\overline{v^2} = \frac{1}{2k_0^2 \tau_0^2} \quad (7).$$

With the aid of the correlation curves, the time

interval  $\tau_0$  of the scattered signal can be determined, and from formula (7) the mean square velocity of motion of inhomogeneities. The statistical evaluation of test results was made by means of a block diagram, the signals being transmitted on films. The films came into an optical correlometer the signals of which were again recorded on films by means of a loop oscilloscope. The correlation function  $\gamma_u(\tau)$  was measured in tests with air as well as in sea water under various hydrometeorological conditions. To check the effect of all factors in their totality on the correlation function, an experiment was conducted where the scattering of frequency-modulated sound occurred by stable inhomogeneities. Some frequency modulation periods were then evaluated. The experimental parameters were:  $f_0 = 4$  kcps,  $\Delta F = 300$  cps,  $T = 1$  sec, integration time  $T_u$

Card 2/3

Method of investigating the statistical .. S/046/62/008/001/003/018  
B139/B102

in the correlometer = 12 sec. The functions  $\chi(\tau)$  arrived at in this control test proved the sufficient stability of the apparatus used. There are 14 figures and 12 Soviet references.

ASSOCIATION: N.-I. radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete (Scientific Research Institute of Radiophysics of the Gor'kiy State University)

SUBMITTED: December 16, 1960

Card 3/3

L 40004-65 KPA(a)-2/EWT(a)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWA(h)/EWA(c)

PT-4/Peb JD/HM/GS

ACCESSION NR: AT4049819

S/0000/64/000/000/0104/0108

31  
21  
101

AUTHOR: Konobevevskiy, S. T.; Levitskiy, B. M.; Sokurskiy, Yu. N.; Andreyev, G. A.

TITLE: The possibilities and prospects of hardening metals and alloys by irradiation

SOURCE: Soveshchaniye po uprochneniyu detaley mashin, 1982. Protssesy uprochneniya detaley mashin (Processes of the hardening of machine parts); doklady soveshchaniya. Moscow, Izd-vo Nauka, 1984, 104-108

TOPIC TAGS: metal irradiation, alloy irradiation, gamma irradiation, beta irradiation, neutron bombardment, metal hardening, metal surface hardening, radiation hardening

ABSTRACT: It is well known that irradiation may cause not only a deterioration of metal properties, but also their improvement. Thus, radiation sharply increases the yield point and moderately increases the ultimate strength and wear resistance. Hardening under irradiation is accompanied by lowering of plasticity. Different types of radiation, however, act differently on the atoms of the irradiated material. When the primary particles interact with the atoms of metals, energy is transmitted to the metal atoms. When this energy exceeds about 25-35 electronvolts, the atom is displaced from the lattice, and the energy of the first displaced atom may be sufficient for the displacement

Card 1/3

L 14001-65  
ACCESSION NR: AT4049819

of other atoms. Thus, clusters of displaced atoms are formed. This displacement affects the properties of alloys considerably. The number of secondary displaced atoms depends on the energy of the primary displaced atom. Under neutron bombardment, when the energy of the primary displaced atom is great, this number may be several hundred, while gamma and beta irradiation only produces 1 to 2. Point defects arise under irradiation, changing the properties of the metals (increasing electrical resistance, lowering internal friction, increasing the modulus of elasticity, etc.). Dislocations are formed by irradiation, resulting in hardening, which can in some cases be increased by additional irradiation. The future of radiation hardening lies in a combination of irradiation with subsequent heat treatment, irradiation being the initiating factor. It should be noted that new elements are created by irradiation with different properties. At the present stage of development of nucleonics, the cost of irradiation in an atomic pile is too high for neutron bombardment to be used for increasing the strength of large sets of parts. Even though gamma irradiation is weaker, the same results are obtained and it may be used in the future since the material does not become radioactive. Electron irradiation produces changes in structure in the same way as gamma irradiation, but only in the surface layer, causing surface hardening by heating. Heavy ions are also being

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L 1000-65

ACCESSION NR: AT4049819

2

used for irradiation, resulting in even better hardening of materials. The layers arising under irradiation differ from diffusion layers and may be irregular, but the stability may be increased and the bond with the base metal is better; only the first steps have been made in this direction. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 21 May 64

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 008

Cord 3/3

ACC NR: AP7005328

SOURCE CODE: UR/0181/67/009/001/0083/0087

AUTHOR: Andreyev, G. A.

ORG: Physicotechnical Institute im. A. F. Ioffe, AN SSSR, Leningrad (Fiziko-  
tekhnicheskiy institut AN SSSR)

TITLE: Interaction of impurities in a melt of NaCl

SOURCE: Fizika tverdogo tela, v. 9, no. 1, 1967, 83-87

TOPIC TAGS: sodium chloride, crystal growing, crystal impurity, copper

ABSTRACT: The author investigated the influence of monovalent and divalent copper impurity added to molten NaCl on the density of the crystals grown from the melt, and also the dependence of the effect on further addition of  $\text{SiO}_2$  and  $\text{B}_2\text{O}_3$  to the melt and on the time that the salt remains in the molten state. The copper was added to the melt in the form of anhydrous  $\text{CuCl}_2$ ,  $\text{CuCl}$ , and  $\text{CuSO}_4$ , and also in the form of  $\text{CuO}$ . To determine the composition of the complex ions produced when the additives were introduced, an investigation was made also of the effect of the addition of impurity combinations  $\text{OH}^- + \text{SiO}_2$  and  $\text{OH}^- + \text{B}_2\text{O}_3$  on the crystal density, at different contents of the oxides in the melt. The technique of growing the crystals from the melt and of measuring the density was described earlier (FTT v. 7, 177, 1965). The results show that the copper impurity in the NaCl melt is always monovalent, regardless of its initial form. The solubility of the copper oxide in the melt increases greatly with addition of  $\text{SiO}_2$  or  $\text{B}_2\text{O}_3$ . If an excess alkali is present in the melt, the  $\text{SiO}_2$

Card 1/2

ACC NR: AF7005328

impurity ionizes to  $\text{SiO}_4^{4-}$ . If there is not enough alkali,  $\text{SiO}_3^{2-}$  ions are produced. Similarly, the  $\text{B}_2\text{O}_3$  molecule forms  $\text{BO}_3^-$  in an excess of alkali and  $\text{BO}_2^-$  in a shortage of alkali. It is also shown that transition metals other than copper can be introduced ( $\text{Mg}^{2+}$ ,  $\text{Mn}^{2+}$ ,  $\text{Co}^{2+}$ , and  $\text{Ni}^{2+}$ ), provided small amounts of  $\text{B}_2\text{O}_3$  or  $\text{SiO}_2$  are added to the melt. Orig. art. has: 5 figures and 10 formulas.

SUB CODE: 20/ SUBM DATE: 19May66/ ORIG REF: 005/ OTH REF: 004

Card 2/2



ALEKSANDROV, B.P.; ANDREYEV, G.A.

Effect of impurities on the density of LiF single crystals.  
Fiz. tver. tela 3 no.8:2445-2450 Ag '61. (MIRA 14:8).

1. Fiziko-tehnicheskiy institut im. akademika A.F. Ioffe  
AN SSSR, Leningrad.

(Lithium fluoride crystals)

ALEKSANDROV, B.P.; ANDREYEV, G.A.

Formation of an (OH)<sup>-</sup>impurity during the growth of LiF crystals  
from a melt. Fiz. tver. tela 3 no.9:2835-2840 S '61.

(MIRA 14:9)

1. Fiziko-tehnicheskij institut imeni A.F. Ioffe AN SSSR,  
Leningrad.

(Lithium fluoride crystals—Growth)

ANDREYEV, G.A.; ALEKSANDROV, B.P.

Solubility of lithium oxalate in water at various temperatures.  
Zhur. neorg. khim. 6 no.7:1727-1728 J1 '61. (MIRA 14:7)

1. Fiziko-tekhnicheskiiy institut imeni A.F. Ioffe, AN SSSR  
(Lithium oxalate)

ALERSHEDROV, B.P.; ANDISEYEV, G.A.; BORISOV, S.A. [deceased]; IVANOV, I.A.

Increasing the accuracy and speed of the flotation determination  
of single crystal density. Zav.lab. 28 no.6:707-709 '62.  
(MIRA 15:5)

1. Fiziko-tekhnicheskii institut imeni A.F. Ioffe AN SSSR.  
(Crystals)

ANDREYEV, G.A.

Diffusion of water molecules in the presence of hydrated ions.  
Dokl.AN SSSR 145 no.2:358-359 J1 '62. (MIRA 15:7)

1. Fiziko-tehnicheskiy institut imeni A.F.Ioffe AN SSSR.  
Predstavleno akademikom B.P.Konstantinovym.  
(Water) (Diffusion) (Isotopes)

45145

S/076/63/037/002/009/018  
B101/B186

5.2430

AUTHOR: Andreyev, G. A. (Leningrad) ;

TITLE: Diffusion in the H<sub>2</sub>O - HDO system

PERIODICAL: Zhurnal fizicheskoy khimii, v. 37, no. 2, 1963, 361-365

TEXT: The present paper is one of a series of physicochemical studies made under the guidance of B. P. Konstantinov, Academician. To resolve inconsistencies in the published data on the mutual diffusion of H<sub>2</sub>O and HDO molecules, the diffusion coefficient D was determined at 5-45°C according to the method developed by R. H. Stokes (J. Amer. Chem. Soc., 72, 763, 1950). A glass diaphragm of 10 μ pore diameter was used in the diffusion cell. The apparatus was calibrated with NaCl, since  $D_{NaCl}$  is independent of the concentration in the range 0.2-0.7 N NaCl. In the H<sub>2</sub>O - HDO system  $D = 2.57 \cdot 10^{-2} \exp(-4162/RT) \text{ cm}^2 \cdot \text{sec}^{-1}$ . The root mean square deviation was 0.5%. The deviation increased, however, at temperatures below 15°C and at 5°C D was too low by 4%. This is explained by an increasing degree of the extent that H<sub>2</sub>O is crystallized near its m.p. The data are compared with Card 1/2

Diffusion in the H<sub>2</sub>O - HDO systemS/076/63/037/002/009/018  
B101/B186

those of other scientists. They are consistent with those of J. R. Partington, R. F. Hudson, K. W. Bagnal (Nature, 169, 583, 1952) at low temperatures, and with those of J. H. Wang, C. V. Robinson, J. S. Edelman (J. Amer. Chem. Soc., 75, 446, 1953) at higher temperatures. The activation energy of H<sub>2</sub>O diffusion ( $E = 4.16$  kcal/g-mole) is compared with that of ions with infinite dilution of the aqueous solution.  $E$  was calculated from  $D = D_0 \exp(-E/RT)$  and  $D$  was calculated according to Nernst-Einstein.  $E$  (kcal/g-mole) is for: Li<sup>+</sup> 4.57; Na<sup>+</sup> 4.36; K<sup>+</sup> 3.96; Rb<sup>+</sup> 3.87; Cs<sup>+</sup> 3.84; Cl<sup>-</sup> 4.08; Br<sup>-</sup> 4.00; I<sup>-</sup> 3.98. The value exceeding  $E_{H_2O}$  for Li and Na is explained by hydration of the ions. There are 2 figures and 2 tables.

ASSOCIATION: Akademiya nauk SSSR, Fiziko-tekhnicheskiy institut im. A. F. Ioffe (Academy of Sciences USSR, Physicotechnical Institute imeni A. F. Ioffe)

SUBMITTED: November 13, 1961

Card 2/2

L 5053-65 BT(3)/ISS-2/REG-1/REG(+)  
ACCESSION NR: AP5011879

Pa-1/Pp-1/Pag-1/000/002/0101/0103  
UK/0120765/000/002/0101/0103  
621.317.35

AUTHOR: Andreyev, G. A.; Zverev, V. A.; Chandayev, A. K.

28  
2.7  
3

TITLE: Measuring the distribution of probabilities of infralow-frequency processes of a photoelectric method

SOURCE: Pribory i tekhnika eksperimenta, no. 2, 1965, 101-103

TOPIC TAGS: infralow frequency, probability distribution

ABSTRACT: A photoelectric method for measuring the distribution of probabilities of signals having an infralow-frequency (0.1-4 cps) spectrum is described. A beam of light falls on a rectangular window that carries a transverse recording of the process in question; a screen with a readout slit is located behind the recording. The quantity of light passing through the slit is proportional to the integral function of distribution of the process. The maximum vertical dimension of the recording is 24 mm; slit width, 0.5 mm. The screen of a storage tube can be used instead of the recording. Orig. art. has: 5 figures and 3 formulas.

Card 1/2



L 56653-65

ACCESSION NR: AP5011879

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific-Research Institute of Radiophysics, Gor'kiy University)

SUBMITTED: 21Feb64

ENCL: 00

SUB CODE: EC, GP

NO REF SOV: 006

OTHER: 001

288  
Card 2/2

L 25111-65 ENT(a)/T/ENP(t)/ENP(b) IJP(c) JD

ACCESSION NR: AP5003432

S/0181/65/007/001/0177/0182

AUTHOR: Andreyev, G. A.; Aleksandrov, B. P.

TITLE: Flotation investigation of the distribution of impurities of singly-charged ions in the growth of NaCl single crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 1, 1965, 177-182

TOPIC TAGS: impurity distribution, distribution coefficient, single crystal, crystal growth, sodium chloride, electron configuration, ionic radius

ABSTRACT: A method is proposed for finding the distribution coefficient (the ratio of the impurity concentrations in the solid and liquid phases, respectively) by measuring the density of crystals after each of two successive crystallizations from a melt containing the impurity. The method is a refinement of the flotation method and is used to determine the distribution of impurities of singly-charged ions in NaCl crystallized from the melt. The impurities were ions of alkali metals and halogens, which have, like the ions of the host substance, a spherically-symmetrical electron configuration. The single crystal was grown

Card 1/3

1 25111-65  
ACCESSION NR: AP5003432

by the Kirooulos method. A study of the dependence of the effective distribution coefficient on the impurity concentration and on the crystal growth rate has shown that the impurities have a practically equilibrium distribution at growth rates 0.5 mm/min and below, and that the crystal density depends linearly on the impurity content in the melt. A correlation was observed between the impurity distribution coefficient and the amplitude difference between the ionic radii of the impurity and substitutional ions. A list of the obtained distribution coefficients is given in Table 1 of the enclosure. Orig. art. has: 4 figures, 5 formulas, and 1 table.

ASSOCIATION: Fiziko-tekhnicheskij institut im. A. F. Ioffe AN SSSR, Leningrad  
(Physicotechnical Institute, AN SSSR)

SUBMITTED: 08 Jul 64

ENCL: 01

SUB CODE: SS/PP

NR REF SOV: 006

OTHER: 012

Card 2/3

L 25111-65

ACCESSION NR: AP5003432

ENCLOSURE: 01

Table. 1. Distribution coefficients of impurities between the melt and the crystal

Impurity	Concentration in melt, at. %	Distribution coeff.		Concentration in melt, at. %	Distribution coeff.
F <sup>-</sup>	4	0.09 ± 0.01	Li <sup>+</sup>	1	0.190 ± 0.01
		0.08 ± 0.01			0.189 ± 0.01
Br <sup>-</sup>	0.1	0.645 ± 0.005	K <sup>+</sup>	1	0.190 ± 0.008
		0.648 ± 0.005			0.189 ± 0.008
Br <sup>-</sup>	0.2	0.657 ± 0.005	K <sup>+</sup>	2	0.19 ± 0.01
		0.655 ± 0.005			0.20 ± 0.01
J <sup>-</sup>	0.5	0.061 ± 0.006	K <sup>+</sup>	2	0.17 ± 0.01
		0.069 ± 0.006			0.18 ± 0.01
J <sup>-</sup>	1	0.056 ± 0.006	Rb <sup>+</sup>	4	0.036 ± 0.006
		0.054 ± 0.006			0.039 ± 0.006

Card 3/3

L 25112-65 BWT(m)/T/EWP(t)/BWP(t) IJP(e) JD  
ACCESSION NR: AP5003433

S/0181/65/007/001/0183/0189

AUTHOR: Andreyev, G. A.

93  
22

TITLE: On the influence of impurities of oxygen-containing anions on the density of NaCl and KCl single crystals 6

SOURCE: Fizika tverdogo tela, v. 7, no. 1, 1965, 183-189

TOPIC TAGS: single crystal, sodium chloride<sup>1</sup>, potassium chloride, crystal density, crystal impurity, distribution coefficient

ABSTRACT: The author reports results of measurements of the density of NaCl and KCl single crystals, grown from melts with different oxygen-containing anion impurities, and the results of a study of the distribution of these impurities between the crystal and the melt by the flotation method. The experimental procedure is the same as described in a companion paper by the author in the same issue of the source (with B. P. Aleksandrov, FTI v. 7, 177, 1965, Accession AP5003432). The results have shown that addition of  $SO_4^{2-}$  and  $BO_2^-$  has little effect on the crystal density. An appreciable effect was observed for impurities of nitrate, nitrides, and carbonate salts (with the exception of  $K_2CO_3$  in KCl),

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L 25112-65

ACCESSION NR: AP5003433

and also hydroxides and peroxides. The magnitude of the effect depended on the atmosphere and on the duration of the prior soaking of the melt. In a  $\text{CO}_2$  atmosphere, a carbonate salt impurity did not influence the density of the resultant crystals. The obtained results are attributed to thermal decomposition of the impurities and to the interaction of the decay products with  $\text{CO}_2$  and with  $\text{H}_2\text{O}$  in the air. The double crystallization method described in the preceding paper was used to measure the distribution coefficients of impurities  $\text{NaNO}_3$ ,  $\text{NaNO}_2$ , and  $\text{NaOH}$  in  $\text{NaCl}$  and the impurities of  $\text{KNO}_3$  and  $\text{KOH}$  in  $\text{KCl}$ . The values obtained were  $0.07 \pm 0.02$  and  $0.06 \pm 0.01$  for  $\text{NaNO}_3$  and  $\text{NaNO}_2$  (4 and 2 mol. % content) and  $\text{NaOH}$  (4% content) in  $\text{NaCl}$  and  $0.21 \pm 0.01$  and  $0.09 \pm 0.02$  for  $\text{KNO}_3$  (2%) and  $\text{KOH}$  (2 and 4%) in  $\text{KCl}$ , respectively. The larger distribution coefficients in  $\text{KCl}$  (compared with  $\text{NaCl}$ ) are apparently due to the fact that the  $\text{KCl}$  lattice energy is lower than that of  $\text{NaCl}$ . Orig. art. has: 6 figures and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad  
(Physicotechnical Institute, AN SSSR)

SUBMITTED: 08Jul64

ENCL: 00

SUB CODE: 88

NR REF SOV: 002

OTHER: 013

Card 2/2



L 1605-66 EWT(1)/EWT(m)/L:PF(c)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/GG  
ACCESSION NR: AP5014553 UR/0181/65/007/006/1653/1656

3  
2  
B

AUTHOR: Andreyev, G. A. 44, 65

TITLE: Distribution of divalent impurities when growing NaCl single crystals 44, 65, 21

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1653-1656

TOPIC TAGS: impurity effect, single crystal growing, sodium chloride, distribution coefficient, impurity distribution 27

ABSTRACT: This is a continuation of earlier work by the author (with B. P. Aleksandrov, FTT v. 3, 2445, 1961 and v. 7, 177, 1965), devoted to flotation investigations of the influence of different impurities on the density of single crystals grown from the melt. In the present article the author reports results of an investigation of the influence of the divalent impurities  $Mg^{2+}$ ,  $Ca^{2+}$ ,  $Sr^{2+}$ ,  $Ba^{2+}$ , and  $Cd^{2+}$  on the density of the single crystals of NaCl obtained from a melt, and present the equilibrium distribution coefficients of these im-

Card 1/2

L 1605-66

ACCESSION NR: AP5014559

3

purities. The procedure for measuring these coefficients is also given. Small crystals weighing 2 -- 4 mg were prepared in platinum crucibles in open air, with a crystallization rate of ~3 mm/min. The crystal density was measured by a procedure described in one of the earlier papers. The increase in density was found to be non-linearly connected with the content of impurity in the melt. The measured distribution coefficient was also found to be dependent on the concentration of the impurity, decreasing with increasing impurity concentration; the greatest decrease takes place at low concentrations (up to 0.1 atomic per cent of impurity in the melt). The decrease in the distribution coefficient was also found to decrease with increasing disparity between the dimensions of the impurity and host ions. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute, AN SSSR)

SUBMITTED: 13Nov64

ENCL: 00

44.55  
SUB CODE: SS

NR REF SOV: 002

OTHER: 003

Card

2/2



L 2510-66, EWT(1)/T/ IJP(c) GG

ACCESSION NR: AP5014601

UR/0181/65/007/006/1883/1884

AUTHOR: Andreyev, G. A. 44,55

TITLE: Distribution of impurities of singly charged ions in growing KCl and KBr single crystals 21,44,5

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1883-1884

TOPIC TAGS: single crystal growing, alkali-halide potassium chloride, potassium bromide, crystal impurity, distribution coefficient

ABSTRACT: This is a continuation of earlier work (FIT v. 7, 177, 1965) on the impurity distribution in NaCl single crystals. The present study is devoted to similar experimental data for KCl and KBr. The crystals were grown from aqueous solutions. The impurity distribution coefficient for NaCl, RbCl, CsCl, KF, KBr, and KI impurities in KCl single crystals and NaBr, RbBr, CsBr, KCl, and KI impurities in KBr single crystals were measured by floatation measurements of the crystal density after each of two successive crystallizations from the melt, in a manner described in the earlier paper. The values of the distribution coefficients for all the impurities are tabulated. The results do not confirm the data of V. S. Rylov (ZhAKh v. 16, 14, 1961), who claim that the impurity distribution

Card 1/2

L 2510-66

ACCESSION NR: AP5014601

3

coefficient decreases with increasing impurity concentration in the melt. A clear-cut correlation is found to exist between the absolute value of the difference in the radii between the host and the impurity ions, on the one side, and the impurity distribution coefficient on the other, and in first approximation the decrease in  $k$  is proportional to the increase in the difference in radii. For both KCl and KBr, linear extrapolation of  $k$  to  $\Delta r = 1$ . It is concluded therefore that alkali-halide compounds, the impurity distribution coefficient of singly-charged ions with 8-electron outer shell depends on  $|\Delta r|$ . Orig. art. has: 2 figures.

ASSOCIATION: Fiziko tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad  
(Physicotechnical Institute AN SSSR)

44,55

SUBMITTED: 13Nov64

ENCL: 00

SUB CODE: SS

NO REF SOV: 002

OTHER: 001

PC  
Card 2/2

L 31158-66 EWT(l)/EWP(e)/EWT(m)/T/EWP(t)/EWP(k) IJP(c) JD/JG  
ACC NR: AP6006809 SOURCE CODE: UR/0181/66/008/002/0327/0331

AUTHOR: Andreyev, G. A.

ORG: Physicotechnical Institute im. A. F. Ioffe AN SSSR, Leningrad (Fizikotekhnicheskiiy institut AN SSSR)

TITLE: Imperfections in alkali halide single crystals with a low impurity concentration  
27 18

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 327-331

TOPIC TAGS: alkali halide, single crystal, crystal defect, crystal lattice parameter, crystal impurity, ion

ABSTRACT: Data are given on variations in the impurity lattice constants of sodium chloride, potassium chloride and potassium bromide crystals based on experimentally observed increments in density. An analysis of the tabulated results shows that the rates of change in the lattice parameters for NaCl, KCl and KBr with impurity concentration based on precision density measurements for lightly doped crystals differ considerably on the positive side from the values calculated according to Vegard assuming volumetric additivity. This discrepancy is due to distortions in  
21,44.35 2

Card 1'2

KHAR'KOV, I.N. (Cheboksary); KOTLIKOVA, Yulia (Cheboksary); KOTLIKOVA, Yulia  
(Cheboksary); KOTLIKOVA, Yulia (Cheboksary)

Scopolamine. Group. Trava. I protok. 26 no. 10. 80. 1988.  
(1988)

1. Adria Avtereva: Cheboksary, Chuvashskaya ASSR, bol'nitskiy  
peredok, respublikanskaya bol'nitsa. Submitted case no. 1988.

L 48106 65 EWT(3)  
ACCESSION NR: AF5006035

8/0141/64/007/006/1198/1200

AUTHOR: Andreyev, G. A.

TITLE: Concerning the influence of fluctuations in the speed of transport of inhomogeneities on the statistical characteristics of a wave propagating in a turbulent medium

SOURCE: IYUZ. Radiofizika, v. 7, no. 6, 1964, 1198-1200

TOPIC TAGS: turbulence, statistical analysis, transport velocity, velocity fluctuation, wave propagation

ABSTRACT: The article deals with the influence of fluctuations in the speed of transport of inhomogeneities, using as an example the calculation of the coefficient of the space-time transverse correlation of the fluctuations of the logarithm of the amplitude of a plane monochromatic wave propagating in a turbulent medium. It is pointed out that it is customary to use in such calculations an idealization, wherein the transport velocity is assumed to be constant in time, but there is no published estimate of the correctness of such an idealization. The correlation moment is calculated under the assumption that the transverse

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ACCESSION NR: AP5006035

4

velocity is a random process stationary in time and homogeneous in space, and has a fluctuation-correlation interval much smaller than the fluctuation-correlation interval of the signal. Calculation of this coefficient shows that if it is not assumed that the transport velocity is constant, but it is assumed that the inhomogeneities remain stationary in time (frozen turbulence), the form of the calculated space-time correlation coefficient is appreciably changed. It is shown further that fluctuations in the transport velocity greatly decrease the correlation of the signal fluctuation of signals observed at two points in space.

"The author thanks V. A. Eversy for a discussion of the results, and also E. B. Sonin and L. F. Yemelin for help with the computations." Orig. art. has: 2 figures and 2 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskoy universitete (Scientific-Research Radio Physics Institute at the Gor'kiy University)

SUBMITTED: 23Apr64

ENCL: 00

SUB CODE: ME

NR REF POW: 004

OTHER: 000

Card 2/2

ANDREYEV, G.A., kand. tekhn.nauk; SERGEYEVA, A.I., inzh., red.;  
KHITROVA, N.A., tekhn. red.

[New equipment and advanced technology in the operation,  
maintenance and repair of tracks; work practice of the  
track workers of the Oktiabr' Railroad] Novyia tekhnika i  
peredovaia tekhnologiya v putevom khoziaistve; opyt pu-  
teitsev Oktiabr'skoi dorogi. Moskva, Transzheldorizdat,  
1963. 161 p. (MIRA 16:6)

(Railroads--Track)

ANDREYEV, G.A.

Giant epithelioma of the cranial vault. *Vop. neirokhir.* 28 no.4:59-61 J1-Ag '64. (MIRA 18:3)

1. Kafedra neyrokhirurgii Leningradskogo ordena Lenina instituta usovershenstvovaniya v uchey imeni Kirova (zav. - prof. I.S. Babchin) i Leningradskiy nauchno-issledovatel'skiy neyrokhirurgicheskiy institut imeni Polenova (dir. - prof. V.M. Ugryuzov).



L 33617-65 EPF(n)-2/EWT(m)/EWP(b)/EWP(t) Pa-h/Peb DIAAP/IJP(c) JD/JG

S/0048/85/029/002/0210/0212

ACCESSION NR: AP5005941

AUTHOR: Andreyev, G.B.; Deyneko, A.S.; Malakhov, I.Ya.

39  
35  
B

TITLE: Elastic scattering of protons by Li<sup>7</sup> nuclei Report, 14th Annual Conference on Nuclear Spectroscopy held in Tbilisi, 14-22 Feb 1964

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.29, no.2, 1965, 210-212

TOPIC TAGS: proton scattering, elastic scattering, lithium, beryllium

ABSTRACT: Elastic scattering cross sections of Li<sup>7</sup> nuclei for 1.2 to 3 Mev protons have been measured at angles of 90, 109.9, 125.3 and 140.8° in the center of mass system. The measurements were undertaken to provide data for a phase-shift analysis from which it is hoped that the spin and parity of the 19.1 Mev Be<sup>9</sup> level can be determined. The experimental conditions were similar to those described elsewhere by the present authors (Izv. AN SSSR, Ser. fiz. 26, 1134, 1962). The target was a thin LiF film of natural isotopic composition on an equally thin carbon backing, the thickness of the whole being of the order of tens of mg/cm<sup>2</sup>. The preparation of these films will be the subject of another paper. The scattered protons were analyzed with a magnetic spectrometer capable of clearly separating the Li<sup>6</sup> and

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ACCESSION NR: AP5005941

Li<sup>7</sup> peaks at all four angles. The existence of a resonance of width greater than 300 keV at a proton energy of 2.1 MeV, corresponding to the 19.1 MeV Be<sup>8</sup> level, has been confirmed, and an anomaly in the elastic scattering cross section was observed at the 1.88 MeV threshold for neutron emission. The 19.22 MeV Be<sup>8</sup> resonance that appears in the Li<sup>7</sup>(p,n) reaction did not appear in the elastic scattering. No narrow resonances were found in the proton energy range from 2.4 to 3.8 MeV. Up to now only relative cross sections have been determined. Absolute cross sections are now being determined, and when these are available a phase-shift analysis will be undertaken. "In conclusion, we express our gratitude to A.A. Tsigikalo and Yu.A. Kharchenko, who assured the uninterrupted operation of the electrostatic accelerator, and to V.V. Zolochevskiy for assistance with the measurements." Orig.art, has 2 figures.

ASSOCIATION: Fiziko-tekhnicheskii institut Akademii nauk UkrSSR (Physicotechnical Institute, Academy of Sciences, UkrSSR)

SUBMITTED: 00

ENCL: 00

NR REF SOV: 002

OTHER: 008

SUB CODE: NP

Card 2/3

ANDREYEV, G. B.; MALAKHOV, I. Ya.; DEYNEKO, A. S.

2

"Elastic Scattering of Protons by the Nucleus  $Li^7$ ."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22  
Feb 64.

KhFTI

Ukrainian Physico-Technical Inst

ANDREYEV, G.B.; DEYNEKO, A.S.; MALAKHOV, I.Ya.

Elastic proton scattering by  $\text{Be}^9$  and  $\text{B}^{11}$  nuclei. Izv. AN SSSR.  
Ser. fiz. 27 no.10:1305-1307 0 '63. (MIRA 16:10)

1. Fiziko-tekhnicheskii institut AN UkrSSR.

S/120/61/000/006/039/041  
E032/E514

AUTHORS: Andreyev, G.B., Deyneko, A.S., Malakhov, I.Ya.,  
Sorokin, P.V. and Taranov, A.Ya.

TITLE: Production of thin  $Al_2O_3$  films

PERIODICAL: Pribery i tekhnika eksperimenta, no.6, 1961, 149-150

TEXT: The aim of this work was to produce  $Al_2O_3$  backing films having a thickness of less than  $0.1 \mu$  for targets evaporated onto them in vacuum. Such targets are suitable for scattering experiments in nuclear physics. The films are prepared as follows. A  $40 \mu$  aluminium foil is first etched in a 30% solution of NaOH in order to clean the surface from contamination. When a thickness of about  $3 \mu$  has been reached the foil is oxidised for 2 to 3 min in a bath containing an electrolyte which consists of 1.5% (by weight) of acetic acid and 1.5% of aluminium acetate. The cathodes in the electrolytic bath are two aluminium plates and the foil to be oxidised serves as the anode. The initial current density is varied between 1 and 100 mA and the final oxidation voltage between

Card 1/2

UVAROV, G.A., kand.tekhn.nauk; SHESTAKOV, B.I., kand.tekhn.nauk;  
FEDOROV, V.N., inzh.; GOPKO, M.K., inzh.; ANDREYEV, G.B., inzh.  
ORLOV, A.V., inzh.

Simultaneous burning of anthracite culm and gas with different  
methods for supplying the gas to the furnace. Teploenergetika  
8 no.4:52-57 Ap '61.  
(MIRA 14:8)

1. Kuybyshevskiy industrial'nyy institut i Kuybyshevenergo.  
(Furnaces)

ANDREYEV, Georgiy Borisovich, inzh.; VOLOBUYEV, Viktor Mikhaylovich, inzh.; GORYUNOV, Boris Fedorovich, doktor tekhn.nauk, prof.; SMIRNOV, Nikolay Andreyevich, kand.tekhn.nauk; SOBOLEV, Georgiy Aleksandrovich, inzh.; Primalni uchastiye: ANNENKOV, Ye.I., inzh.; ZLATOVERKHNIKOV, L.F., kand.tekhn.nauk; KORCHAGINA, A.Ya., inzh.; KRIVITSKIY, S.I., inzh.; RUMYANTSEV, A.N., inzh.; LAPINA, Z.D., red.; MOSHAROVA, T.P., red.; TIKHONOVA, Ye.A., tekhn. red.

[Technical operation of hydraulic engineering structures in harbors] Tekhnicheskaya ekspluatatsiya portovykh gidrotekhnicheskikh sooruzhenii. [By] G.B. Andreev i dr. Moskva, Izd-vo "Morskoi transport," 1962. 375 p. (MIRA 15:8)  
(Hydraulic structures) (Harbors)

L0366

S/048/62/026/009/002/011  
B125/B186

21.2400

AUTHOR: Shareyev, G. B., Deyneko, A. S., and Kalakhov, I. Ya.TITLE: Elastic proton scattering by  $B^{10}$  nucleiPERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya,  
v. 26, no. 9, 1962, 1134-1136

TEXT: The  $B^{10}(p,p)B^{10}$  differential elastic scattering cross section was measured at proton energies from 1 to 3.5 Mev at the c. m. s. angles  $110^\circ$ ,  $125^\circ$  and  $141^\circ$ . The proton beam from the electrostatic accelerator of the FIAN USSR was deflected through by  $90^\circ$  by a magnetic analyzer, it passed through several diaphragms and made to impinge on the target ( $100\mu B^{10}$ ). The elastically scattered protons were separated from the products of the reactions  $Be^9 + p$  and  $B^{10} + p$  by a double focusing spectrometer. A discriminator enabled the protons elastically scattered from  $B^{10}$  nuclei to be easily separated at the scattering angles  $\theta_{lab} > 120^\circ$  /

Card 1/3



Elastic proton scattering by  $B^{10}$  nuclei

S/048/62/026/009/002/011  
B125/B186

from the  $\alpha$  particles arising in the accompanying reactions  $B^{10}(p,\alpha)$  and  $Be^9(p,d)$ . The maxima of the three resonances observed are at 1.5; 2.2 ( $\theta_{c.m.s.} = 141^\circ$ ) and  $> 3.5$  Mev. The wide resonance at 2.2 Mev ( $\Gamma > 300$  kev) does not occur in the reactions  $B^{10}(p,p)C^{11}$  and  $B^{10}(p,\alpha)Be^7$ . In the present measurements the resonance at 1.15 Mev remains within the statistical limits of error. The absolute elastic scattering cross section  $B^{10}(p,p)B^{10}$  and the phase shift analysis of the data obtained will be dealt with in a future paper. There are 2 figures and 1 table.

FIG. 2:  $B^{10}(p,p)B^{10}$  differential elastic scattering cross section with  $\theta_{c.m.s.} = 141^\circ$  (the data of Day R. B., Huus J., Phys. Rev., 95, 1003 (1954) were used for establishing the absolute scale). The lower curve shows the theoretically calculated Rutherford scattering cross section. X

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ANDREYEV, G.B.; DEYNEKO, A.S.; MALAKHOV, I.Ya.

Elastic scattering of protons by  $B^{10}$  nuclei. Izv. AN SSSR. Ser.  
fiz. 26 no.9:1134-1136 S '62. (MIRA 15:9)  
(Boron) (Nuclear reactions) (Protons—Scattering)

ANDRUYEV, G.B.; DZYBKO, A.S.; MALASHOV, I.Ya.

Elastic proton scattering by  $Li^7$  nuclei. Izv. AN USSR Ser. Fiz.  
29 no.2:10-12 1965. (UFG 18:3)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

SOURCE CODE: UR/0120/66/000/003/0218/0219

ACC NR: AP6022038

AUTHOR: Malakhov, I. Ya.; Deyneko, A. S.; Andreyev, G. B.

ORG: Physics and Engineering Institute, AN UkrSSR, Khar'kov (Fiziko-tekhnicheskiy institut AN UkrSSR)

TITLE: The production of beryllium and carbon thin films

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1966, 218-219

TOPIC TAGS: ~~thin film~~, thin plate, nuclear reactor technology, beryllium, carbon, ~~thin film production~~

ABSTRACT: A method for producing beryllium and carbon thin films to be used either as targets or backings in nuclear reaction studies is described. The thin films were obtained as follows. Beryllium and carbon were evaporated in a metallic vacuum chamber. The vapor was then deposited on glass plates covered with a thin layer of potassium soap; the layer of soap was washed away to separate the film from the glass. In this manner thin films 0.05 to 0.3  $\mu$  thick and 7 to 12 mm in diameter were obtained. Experiments have shown that carbon films are mechanically stronger and can withstand greater ray currents than beryllium films of the same thickness. The maximum proton current with ray diameter of 2 mm and proton energy of 2 Mev is 0.5  $\mu$ a for beryllium films 0.1  $\mu$  thick; carbon films with the same thickness can easily withstand currents of 1  $\mu$ a. The authors express their gratitude to V. V. Zolocheskiy for assistance in

UDC: 539.234:621.52

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ACC NR: AP6022038

the work. Orig. art. has: 2 figures.

SUB CODE: 11, 18/ SUBM DATE: 03Jun65/ ORIG REF: 001/ OTH REF: 001

Card 2/2

ANDREYEV G. F.

ALICHKIN, S.L.; AGRINSKIY, N.I.; ANDREYEV, G.F.; BAKUMENKO, G.D.;  
VORONTSOV, S.M.; VOYSTRIKOV, I.V.; GRADYUSHKO, G.M.; ZYKOV, A.V.  
IVANOVTSSEV, P.V.; KINBURG, M.Ya.; KOVALEV, P.A.; KOZLOVSKIY, Ye.V.  
KORNIYENKO, A.P.; KOLYAKOV, Ya.Ye.; LAKTIONOV, A.M.; LEVADNYY, B.A.  
MEDVEDEV, I.D.; NOVIKOV, N.V.; ORLOV, F.M.; OSTROVSKIY, A.A.;  
ORTSEV, V.P.; PENIONZHKO, A.M.; POLOZ, D.D.; PRITULIN, P.I.;  
PETUKHOVSKIY, A.A.; ROGALEV, G.T.; RYBAK, P.Ya.; SUTYAGIN, G.P.  
TUKOV, R.A.; KHAVCHENKO, D.F.; CHERNETSKIY, T.I.; SHPAYER, N.M.  
SHUSTOVSKIY, F.A.

Nikolai Vasil'evich Spesivtsev. Veterinariia 35 no.2:96 F '58.  
(MIRA 11:2)  
(Spesivtsev, Nikolai Vasil'evich, 1901-1957)

ARONOV, B.A.; RAPOTA, T.D.; ANDREYEV, G.F.; SLIN'KO, B.I., red.;  
LEUSHCHENKO, N.L., tekhn. red.

[Installation of "woodstone" floors] Opyt ustroistva ksilolitovykh polov. Kiev, Gosstroizdat USSR, 1962. 18 p.  
(MIRA 16:5)

1. Akademiya budivnytstva i arkhitektury URSR. Instytut vprovadzhennia peredovoho dosvidu v budivnytstvo i tekhnichnoi informatsii.

(Floors)

SOLOV'YEV, A.A., prof.; ANLSEYEV, G.S., imh.

Testing the raking and loading equipment for inclined workings.  
Izv. vys. ucheb. zav.; gor. zhur. 8 no. 3:143-144 '65.

(MIRA 18.9)

1. Khar'kovskiy institut gor'nogo mashinostroyeniya, avtomatiki  
i vychislitel'noy tekhniki. Rekomendovana kafedroy pirnykh  
mashin i rudnichnogo transporta.



ANDREYEV, G.G.

Improving the clamping mechanism of the Park-2 cross-cut saw for  
parquet cutting. Sbor.vnedr.rats.pred. v les. 1 msh.prom. no.2:  
72-73 '59. (MIRA 13:8)

1. Derevoobrabatyvayushchiy zavod No.1 tresta "Stroydetal' No.82"  
Glavleningradstroya.

(Saws)

ANDREMYEV, Georgiy Ivanovich; ZHAK, Lyubov' Yefimovna; POPELLO, A.P., red.;  
GORDNYCHIK, G.M., red.; KOGAN, V.V., tekhn. red.

[Machine for separating fibers from waste] Mashina dlia vydelenia  
volikna iz uliuka. Pod red. A.P. Popello. Moskva, Gos. nauchno-  
tekhn. izd-vo lit-ry po legkoi promyshl., 1958. 27 p. (MIRA 11:7)  
(Cotton gins and ginning)

ANDRKYEV, G.I., inzh.

Experience obtained in the installation and adjustment of TB-  
60-2 turbogenerators. Elek.sta. 31 no.2:90-91 F '60.  
(MIRA 13:5)

(Turbogenerators)

ANDREYEV, Georgiy Ivanovich; TARASOV, V., red.; SALAKHUTDINOVA, A.,  
tekh. red.

[The PNTS file-sharpening machine] Poluavtomaticheskii pilo-  
nasekatel'nyi stanok PNTs. Tashkent, Gosizdat UzSSR, 1961. 45 p.  
(MIRA 15:7)

(Grinding machines)

ANDREYEV, Georgiy Leont'yevich; MYASNIKOV, Lev Leonidovich;  
GORODENSKIY, L.M., red.; GVOZDEV, V.A., tekhn. red.

[Let's disseminate physical and mathematical knowledge  
among the masses] Fiziko-matematicheskie znanija - v massy.  
Moskva, 1962. 34 p. (MIRA 16:3)  
(Physics--Study and teaching)  
(Mathematics--Study and teaching)

ANDREYEV, Georgiy Ivanovich; RASKIN, Isaak Iosifovich; NURALIYEV, A.,  
kand. tekhn. nauk, red.; MURAKAYEVA, A., red.; ABBASOV, T.,  
tekhn. red.

[New type of equipment in the cotton industry] Novaya tekhnika v khlopkovoi promyshlennosti. Tashkent, Gosizdat UzSSR,  
1962. 72 p. (MIRA 16:4)

(Cotton machinery)

ANDREYEV, G.M., inzhener.

Working frozen ground by means of preliminary cutting into blocks. Biul.stroi.  
tekh. 10 no.13:15-16 Ag '53. (MLRA 6:10)

(Earthwork) (Frozen ground)

ANDREYEV, G.M., inzhener.

Precasting concrete beams in metal form groups. Biul.stroi.tekh. 10  
no.17:12-13 D '53. (MLRA 7:1)

1. Stroitel'no-montazhnyy trest No. 11.  
(Precast concrete construction)



88522

S/179/60/000/006/016/036  
E022/E107

10.4000 also 2115.2707  
AUTHOR: Andreyev, G.N., (Moscow)  
TITLE: On the Solution of the Radiation Flux in the Laminar  
Boundary Layer

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh  
nauk, Mekhanika i mashinostroyeniye, 1960, No. 6,  
pp. 109-111

TEXT: The two-dimensional case is considered and the specific  
heat as well as the Prandtl number are considered constant, while  
the viscosity is taken to be a linear function of the temperature.  
Further, radiation is admitted only in the transverse direction in  
the boundary layer. Equations of motion are set up in a  
dimensionless form, in which all quantities represent ratios of  
their values in the boundary layer to the corresponding values  
outside it. Radiation flux is assessed from the temperature  
distribution in the boundary layer computed for the non-ionised  
gas and the wall temperature is assumed constant. The stream  
function  $\psi$  is then introduced and use is made of Blasius'  
transformation of coordinates, resulting in:  
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X

88522

S/179/60/000/006/016/036  
E022/E107

On the Solution of the Radiation Flux in the Laminar Boundary Layer

$$\frac{\partial^2 T}{\partial \eta^2} + Pf \frac{\partial T}{\partial \eta} - Pf' \xi \frac{\partial T}{\partial \xi} = - \frac{\gamma - 1}{4} \rho M^2 f''^2 + 2B \xi \frac{\partial H}{\partial \eta} \quad (7)$$

with the boundary conditions  $T = \alpha$  at  $\eta = 0$ , and  $T = 1$  at  $\eta = \infty$ . Since the streamwise radiation is neglected, the whole radiation flux may be represented as a stratified field parallel to the wall as given by:

$$H = 2N\xi \left\{ \int_0^\infty d\nu \int_0^\eta \kappa_\nu I_\nu E [N\xi \tau_\nu(t, \eta)] dt - \int_0^\infty d\nu \int_\eta^\infty \kappa_\nu I_\nu E [N\xi \tau_\nu(\eta, t)] dt \right\} \quad (9)$$

$$\tau_\nu(t, \eta) = \int_t^\eta \kappa_\nu dt, \quad N = \frac{2\mu_\infty \kappa^* l_\nu}{V_\infty} \sqrt{R}$$

in which  $I_\nu$  is the spectral intensity of radiation from the absolutely black body,  $\sigma$  is Stefan's constant,  $l_\nu$  is the unit spectral interval,  $\kappa_\nu$  is the dimensionless mass coefficient of absorption, and  $\kappa^*$  is its characteristic value. The further analysis follows the line employed by D. Chapman and Card 2/3

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S/179/60/000/006/016/036  
E022/E107

On the Solution of the Radiation Flux in the Laminar Boundary Layer

M. Rubesin (Ref.2). This enables the author to evaluate the difference between the temperature fields in the boundary layer in the case of ionised and non-ionised gas, which eventually leads to a formula for the heat flux in the layer. This formula is in the form of an infinite series of  $N$  and  $x$ . Since for air the values of  $N$  are small, the higher powers of  $N$  are neglected and a simplified expression for the ratio  $q/H$  is obtained which appears to have a constant value of about 10-15%. Thus it is concluded that the ionised gas partially screens the body but that the effect is not very strong.

There are 2 references: 1 Soviet and 1 English.

SUBMITTED: February 4, 1960

X

Card 3/3

L 4408-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)  
ACCESSION NR: AP5025725

IJP(c) BC  
UR/0286/65/000/018/0079/0079  
621.317.757

39 38 B

AUTHOR: Atamanenko, V. G.; Andreyev, G. N.; Artemenko, I. N.; Bokhenek, A. Ya.

TITLE: Transfer function analyzer operating at infralow frequencies. Class 42, No. 174805

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 79

TOPIC TAGS: automatic pneumatic control, automatic control system, transfer function, automatic control analysis

ABSTRACT: This Author Certificate introduces a transfer function analyzer which operates at infralow frequencies. The device contains integrators based on operational amplifiers, a low-frequency oscillator, multiplying units, and an indicator display. The installation is designed for improved accuracy in analyzing systems with random disturbances and for reduced analysis time. The sine output from the electropneumatic low-frequency oscillator is connected to all the first inputs of the units for sine multiplication. The second inputs of these multiplication units are connected through input converters to the output of the system to be analyzed. The cosine output from the low-frequency oscillator is connected to all the

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