KUZNETSOV, A.V., inzh.; LEYMAN, A.V., inzh.

Precast concrete at industrial construction projects in the Central Urals. Prom. stroi. 41 no.8:24-26 Ag '64. (MIRA 17:11)

1. Glavsreduralstroy.

ZAYTSEV, Guriy Semenovich; KUZNETSOV, Aleksandr Yakovlevich; CHUGASOV, A.A., podpolkovnik, red.; KHASAVINA, A.M., tekhn. red.

[Smoke screens] Dymovye sredstva i dymoobrazuiushchia veshchestva. Moskva, Voen.izd-vo M-va oborony SSSR, 1961. 82 p. (MIRA 15:2)

(Smoke screens)

BORISOV, V.A., kand.tekhn.nauk; KUZNETSOV, A. Ya., inzh.

Improving pavements made of marlaceous materials. Avt. dor. 23 no.4:10-11 Ap '60. (MIRA 13:6)
(Marl) (Pavement)

ACCESSION NR: AP4009471 S/0051/63/015/006/0824/0826

AUTHOR: Kry*zhanovskiy, B.P.; Kuznetsov, A.Ya.; Pafomova, L.A.

TITLE: Reflection of semiconductor layers of silicon monoxide doped with silver and gold in the long wavelength region of the spectrum

SOURCE: Optika i spektroskopiya, v.15, no.6, 1963, 824-826

TOPIC TAGS: heat filter, infrared mirror, infrared reflection, silicon monoxide coating, silver doped silicon monoxide, gold doped silicon monoxide, semiconductor coating

ABSTRACT: Thin coatings on the surface of glass and other materials characterized by selective reflection in the infrared are attracting the attention of investigators. A number of metal oxide coatings have been investigated and found to be characterized by a high reflection coefficient in the infrared region. In view of the possible utility of such coatings for heat shielding purposes it was deemed of interest to investigate the reflection of semiconductor layers of silicon monoxide doped with silver and gold, prepared by simultaneous vacuum evaporation of the substances. The fact that SiO (Ag,Au) layers can be deposited at relatively low tem-

Card 1/2

peratures makes it possible to use not only glass but also lucite and similar plastics as the substrate. Such layers are semitransparent in the visible part of the spectrum and have a surface conductivity of from 10^{-1} to 10^{-2} ohm^{-1}. Experiments showed that, while transparent in the visible region, semiconductor SiO (Ag,Au) coatings on lucite have a high reflection coefficient in the infrared region. The reflection coefficient monotonically increases from 0.3 to 4 μ and then levels off in the 4 to 14 μ region. As in the case of semiconductor layers of SnO_2 and In_2O_3 the reflection coefficient depends on the electric conductivity: it increases with increasing conductivity. The conductivity of the investigated SiO (Ag,Au) layers was varied by heating at 150-170°. The transmission and reflection curves obtained for some SiO layers are shown in Fig.1 of the Enclosure. There is some similarity between the electro-optical properties of SiO (Ag,Au) layers deposited on undercoatings of antimony, lead, bismuth and other metal oxides with the properties of gold and silver coatings as reported in the literature. The results of the present experiments indicate that semiconductor coatings of silicon monoxide doped with silver or gold can be used as heat shielding filters and infrared mirrors when deposited on glass or plastic substates. Orig.art.has: 2 figures.

ANDON'YEV, V.L.; BAUM, V.A.; BAUMGARTEN, N.K.; BEREZIN, V.D.; BIRYUKOV, I.K.; BIRYUKOV, S.M.; BLOKHIN, S.I.; BOROVOY, G.A.; BULEV, M.Z.; BURAKOV, N.A.; VERTSAYZER, B.A.; VOVK, G.M.; VORMAN, B.A.; VOSHCHININ, A.P.; GALAKTIONOV, V.D., kand. tekhn. nauk; GENKIN, Ye.M.; GIL'DENBLAT, Ya.D., kand. tekhn. nauk; GINZBURG, M.M.; GLEBOV, P.S.; GODES, E.G.; GORBACHEV, V.N.; GRZHIB, B.V.; GRUKULOV, L.F., kand. s.-kh. nauk; GRODZENSKAYA, I.Ya.; DANILOV, A.G.; DMITRIYEV, I.G.; DMITRIYENKO, Yu.D.; DOBROKHOTOV, D.D.; DUBININ, L.G.; DUNDUKOV, M.D.; ZHOLIK, A.P.; ZENKEVICH, D.K.; ZIMAREV, Ye.V.; ZIMASKOV, S.V.; ZUBRIK, K.M.; KARANOV, I.F.; KNYAZEV, S.N.; KOLEGAYEV, N.M.; KOMAREVSKIY, V.T.; KOSENKO, V.P.; KORENISTOV, D.V.; KOSTROV, I.N.; KOTLYARSKIY, D.M.; KRIVSKIY, M.N.; KUZNETSOV, A.Ya.; LAGAR'KOV, N.I.; LGALOV, V.G.; LIKHACHEV, V.P.; LOGUNOV, P.I.; MATSKEVICH, K.F.; MEL'NICHENKO, K.I.; MENDELEVICH, I.R.; MIKHAYLOV, A.V., kand. tekhn. nauk; MUSIYEVA, R.N.; NATANSON, A.V.; NIKITIN, M.V.; OVES, I.S.; OGUL'NIK, G.R.; OSIPOV, A.D.; OSMER, N.A.; PETROV, V.I.; PERYSHKIN, G.A., prof.; P'YANKOVA, Ye.V.; RAPOPORT, Ya.D.; REMEZOV, N.P.; ROZANOV, M.P., kand. biol. nauk; ROCHEGOV, A.G.; RUBINCHIK, A.M.; RYBCHEVSKIY, V.S.; SADCHIKOV, A.V.; SEMENTSOV, V.A.; SIDENKO, P.M.; SINYAVSKAYA, V.T.; SITAROVA, M.N.; SOSNOVIKOV, K.S.; STAVITSKIY, Ye.A.; STOLYAROV, B.P. [deceased]; SUDZILOVSKIY, A.O.; SYRTSOVA, Ye.D., kand. tekhn. nauk; FILIPPSKIY, V.P.; KHALTURIN, A.D.; TSISHEVSKIY, P.M.; CHERKASOV, M.I.; CHERNYSHEV, A.A.; CHUSOVITIN, N.A.; SHESTOPAL, A.O.; SHEKHTER, P.A.; SHISHKO, G.A.; SHCHERBINA, I.N.; ENGEL', F.F.; YAKOBSON, A.G.; YAKUBOV, P.A., ARKHANGEL'SKIY,

(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 2.
Ye.A., retsenzent, red.; AKHUTIN, A.N., retsenzent, red.; BALASHOV, Yu.S., retsenzent, red.; BARABANOV, V.A., retsenzent, red.; BATUNER, P.D., retsenzent, red.; BORODIN, P.V., kand. tekhn. nauk, retsenzent, red.; VAIUTSKIY, I.I., kand. tekhn. nauk, retsenzent, red.; GRIGOR'YEV, V.M., kand. tekhn. nauk, retsenzent, red.; GUBIN, M.F., retsenzent, red.; GUDAYEV, I.N., retsenzent, red.; YERMOLOV, A.I., kand. tekhn. nauk, retsenzent, red.; KARAULOV, B.F., retsenzent, red.; KRITSKIY, S.N., doktor tekhn. nauk, retsenzent, red.; LIKIN, V.V., retsenzent, red.; LUKIN, V.T., retsenzent, red.; LUSKIN, Z.D., retsenzent, red.; MATRIOSOV, A.Kh., retsenzent, red.; MENDELEYEV, D.M., retsenzent, red.; MENKEL', M.F., doktor tekhn. nauk, retsenzent, red.; OBRAZKOV, S.S., retsenzent, red.; PETRASHEN', P.N., retsenzent, red.; POLYAKOV, L.M., retsenzent, red.; RUMYANTSEV, A.M., retsenzent, red.; RYABCHIKOV, Ye.I., retsenzent, red.; STASENKOV, N.G., retsenzent, red.; TAKANAYEV, P.F., retsenzent, red.; TARANOVSKIY, S.V., prof., doktor tekhn. nauk, retsenzent, red.; TIZDEL', R.P., retsenzent, red.; FEDOROV, Ye.M., retsenzent, red.; SHEVYAKOV, M.N., retsenzent, red.; SHMAKOV, M.I., retsenzent, red.; ZHUK, S.Ya. [deceased], akademik, glavnyy red.; FILISO, G.A., kand. tekhn. nauk, red.; FILIMONOV, N.A., red.; VOLKOV, L.N., red.; GRISHIN, M.M., red.; ZHURIN, V.D., prof., doktor tekhn. nauk, red.; KOSTROV, I.N., red.; LIKHACHEV, V.P., red.; MEDVEDEV, V.M., kand. tekhn. nauk, red.; MIKHAYLOV, A.V., kand. tekhn. nauk, red.; PETROV, G.D., red.; RAZIN, N.V., red.; SOBOLEV, V.P., red.; FERINGER, B.P., red.; FREYGOFER,

(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 3.
Ye.F., red.; TSYPLAKOV, V.D. [deceased], red.; KORABLINOV, P.N., tekhn. red.; GENKIN, Ye.M., tekhn. red.; KACHKOVSKIY, N.V., tekhn. red.

[Volga-Don; technical account of the construction of the V.I. Lenin Volga-Don Navigation Canal, the TSimlyansk Hydroelectric Center, and irrigation systems] Volgo-Don; tekhnicheskii otchet o stroitel'stve Volgo-Donskogo sudokhodnogo kanala imeni V.I. Lenina, TSimlianskogo gidrouzla i orositel'nykh sooruzhenii, 1949-1952; v piati tomakh. Moskva, Gos. energ. izd-vo. Vol.1. [General structural descriptions] Obshchee opisanie sooruzhenii. Glav. red. S.IA. Zhuk. Red. toma M.M. Grishin. 1957. 319 p. Vol.2. [Organization of construction. Specialized operations in hydraulic engineering] Organizatsiia stroitel'stva. Spetsial'nye gidrotekhnicheskie raboty.

(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 4.
Glav. red. S.IA. Zhuk. Red. toma I.N. Kostrov. 1958. 319 p.
(MIRA 11:9)
1. Russia (1923- U.S.S.R.) Ministerstvo elektrostantsii. Byuro tekhnicheskogo otcheta o stroitel'stve Volgo-Dona. 2. Chlen-korrespondent Akademii nauk SSSR (for Akhutin). 3. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Grishin, Razin).
(Volga Don Canal--Hydraulic engineering)

14(6) SOV/91-59-5-12/27

AUTHOR: Kuznetsov, A.Ya., Engineer

TITLE: Automation of Work of Electric Engines of Pumping Installations (Avtomatizatsiya raboty elektrodvigateley nasosnykh ustanovok)

PERIODICAL: Energetik, 1959, Nr 5, pp 23-24 (USSR)

ABSTRACT: This article briefly describes an automatic electric pumping unit 500 v of an unidentified TETs, used for removing the condensate from the tank, depicted schematically in Figure 1. It has two magnetic starters with two block contacts, KF switch, 500/36 transformer, 36 v starter coils. This unit is said to be reliable and easily operated. There is 1 circuit drawing.

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ALEKSANDROV, Aleksandr Petrovich; KUZNETSOV, Aleksey Yakovlevich; MAYZEL', N.P., inzh., red.; LEVCHIK, L.P., red.; LEBEDEVA, L.V., tekhn. red.

[Practices of the construction of the Stalingrad Hydroelectric GES. Moskva, Orgenergostroi, 1960. 57 p. (MIRA 14:7)
(Stalingrad Hydroelectric Power Station)

KUZNETSOV, A.Ya.

Construction of the Stalingrad hydroelectric station. Gidr. stroi. 31 no.3:1-6 Mr '61. (MIRA 14:4)

1. Glavnyy inzhener Stalingradgidrostroya.
(Stalingrad Hydroelectric Power Station)

SEVAST'YANOV, V.I., glav. red.; KUZNETSOV, A.Ya., zam. gláv. red.; MIKHAYLOV, A.V., doktor tekhn. nauk, zam. glav. red.; ABRAMOV, Yu.S., red.; IVANOV, M.A., red.; PETROV, G.D., red.; RAPOPORT, Ya.D., red.

[Volga Hydroelectric Power Station (22d Congress of the CPSU); album of drawings] Volzhskaia gidroelektrostantsiia imeni XXII s"ezda KPSS; al'bom chertezhei. Moskva, Gosenergoizdat. Pt.1. [Basic structures] Osnovnye sooruzheniia. 1962. 62 p. (MIRA 15:5)

1. Moscow. Vsesoyuznyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut "Gidroproyekt" imeni S.Ya.Zhuk. (Volga Hydroelectric Power Station (22d Congress of the CPSU)—Design and construction)

KHASKHACHIKH, L.P.; SOKOLOV, B.A.; GENKIN, Ye.M.; SEVAST'YANOV, V.I., glav. red.; KUZNETSOV, A.Ya., zam. glav. red.; MIKHAYLOV, A.V., doktor tekhn. nauk, zam. glav. red.; ABRAMOV, Yu.S., red.; IVANOV, M.A., red.; PETROV, G.D., doktor tekhn. nauk, red.; CHEMIN, A.N., red.

[Volga Hydroelectric Power Station (22d Congress of the CPSU); album of engineering drawing] Volzhskaia gidroelektrostantsiia im. XXII s"ezda KPSS; al'bom chertezhei. Moskva, Gosenergoizdat. Pt.2. [Organization and the carrying out of installation and construction operations] Organizatsiia i proizvodstvo stroitel'no-montazhnykh rabot. 1963. 74 p. (MIRA 16:11)

1. Moscow. Vsesoyuznyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut "Gidroproyekt" im. I.Ya.Zhuk. (Volga Hydroelectric Power Station(22d Congress of the CPSU)

MIKHAYLOV, Andrey Vasil'yevich; KUZNETSOV, Aleksey Yakovlevich; ABRAMOV, Yuriy Semenovich; LAGAR'KOV, N.I., red.

[Construction of the Volga Hydroelectric Power Station (22d Congressof the CPSU); experience in planning and carrying out the construction work] Stroitel'stvo Volzhskoi gidroelektrostantsii imeni XXII s"ezda KPSS ; opyt proektirovaniia i proizvodstva rabot. Moskva, Izd-vo "Energiia," 1964. 486 p. (MIRA 17:6)

ACC NR: AP6036867 SOURCE CODE: UR/0147/66/000/004/0142/0150

AUTHOR: Kuznetsov, A. Ya.

ORG: none

TITLE: Estimation of fatigue durability of aviation engines on the basis of defects found during repairs

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 4, 1966, 142-150

TOPIC TAGS: mechanical fatigue, durability, piston engine, aircraft engine, statistic analysis

ABSTRACT: Statistical methods of treatment of data obtained during the periodic inspections of parts of piston engines permit the evaluation of reliability of these parts. The basis for this evaluation is the observation that the distribution of fatigue durability follows the logarithmically normal law of the form

$$f(t) = \frac{M}{\sigma t}\,\frac{1}{\sqrt{2\pi}}\,e^{-\frac{(\lg t-\lg \vartheta)^2}{2\sigma^2}}, \qquad (1)$$

By establishing experimentally the variance in this expression by periodic inspection of parts, the probability can be calculated for the absence of defects after a certain period of service. Several examples of application are given. For instance, it is

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UDC: 629.13.02/.07

ACC NR: AP6036867

shown by the Fisher F test that improvement of crankshafts by nitriding is statistically significant. Orig. art. has: 4 figures, 5 tables and 8 equations.

SUB CODE: 13, 01/ SUBM DATE: 13Jul65/ ORIG REF: 010

Card 2/2

ACC NR:

ACC NR: AP0002819 SOURCE CODE: UR/0237/60/000/012/0007/0009

AUTHOR: Kuznetsov, A.Ya.; Kruglova, A.V.

ORG: None

TITLE: Investigation of ionic exchange reactions on glass by optical methods

SOURCE: Optiko-mekhanicheskaya promyshlennost', no.12, 1960, 7-9

TOPIC TAGS: optics, optic film, optic film property, optic coating, optical coating property, optic coating exchange reaction

ABSTRACT: This is an investigation of ionic exchange reactions on a glass surface by optical methods. Optical methods were used because of the negligible amounts of metals involved. Experimentation methods included production and stabilization of a 1000 Å thick SiO_2 - containing film by etching Pyrex glass with HNO_3 at elevated temperatures, followed by drying over P_2O_5. Reactions with chosen metal salts were then completed, followed by conditioning of the surface in hydrogen at 400 °C to reduce the cations to their atomic state. The spectral transparency of the glass was then measured, and the curves studied to determine the nature and the relative concentration of the cations in the film. Experimental results confirmed the decisive influence of the surface reactions upon the film's transparency. The action of hydrogen upon glasses previously processed with metal salt solutions causes a decrease in the spectral transparency curve ordinates. Each metal has its own characteristic. Reactions of mutual

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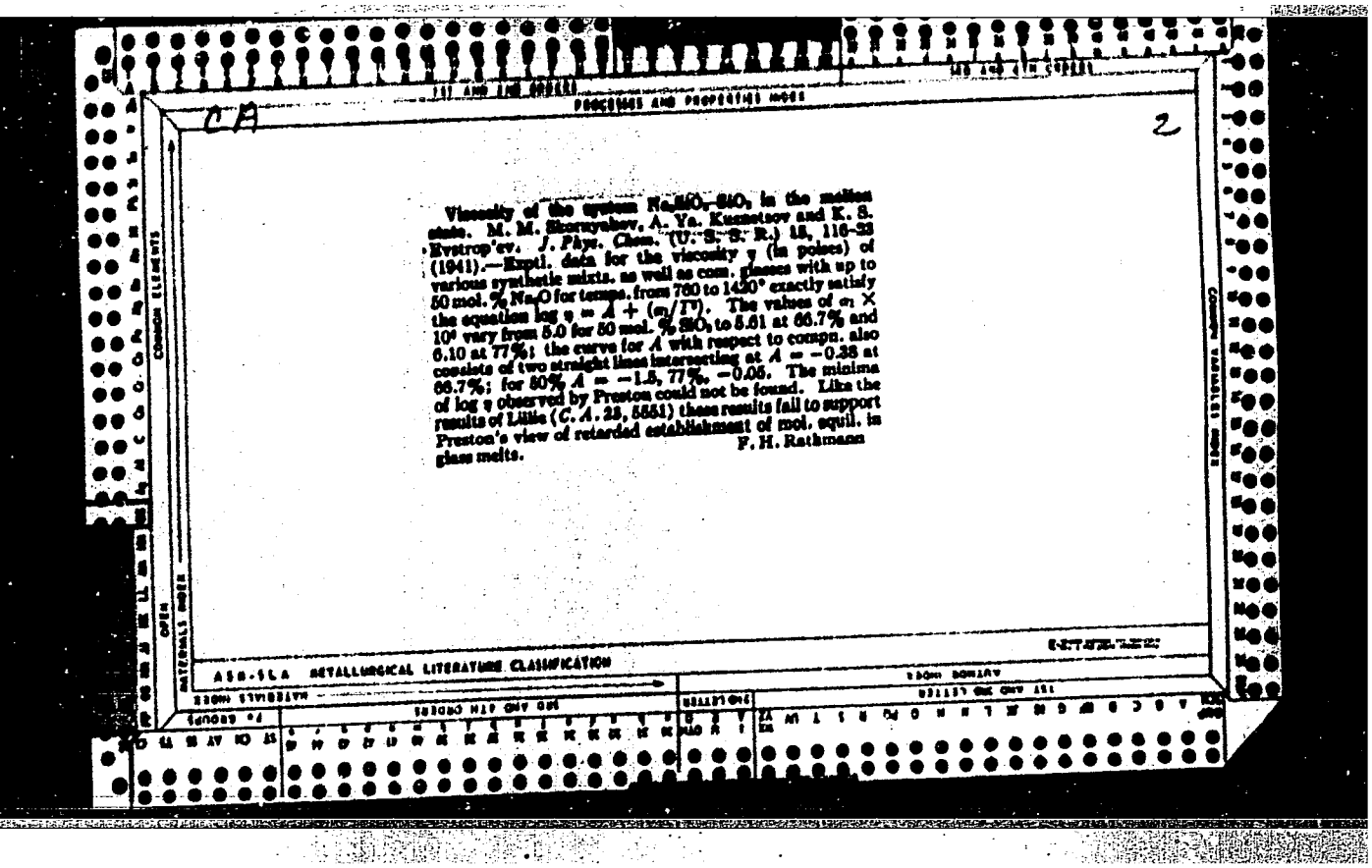
ACC NR: AP6002819

replacement of cations were also studied. The processing of Pyrex glass, previously acted upon by $AgNO_3$, by $NaNO_3$ restores the initial high transparency. Processing of $AgNO_3$-processed glass by $Cu(NO_3)_2$ produces a transition of the Ag characteristic curve into the Cu curve. It is concluded that hydrogen atoms on the glass surface can be easily replaced by mono and divalent metal cations. Mutual exchange capability of metal cations depends upon their nature and valency. Monovalent and different valency cations enter the reactions most easily. Divalent cations accumulate together in the surface film. Orig. art. has 5 figures.

SUB CODE: 20/ SUBM DATE: 12Oct60/ ORIG REF: 006/ OTH REF: 001

Card 2/2

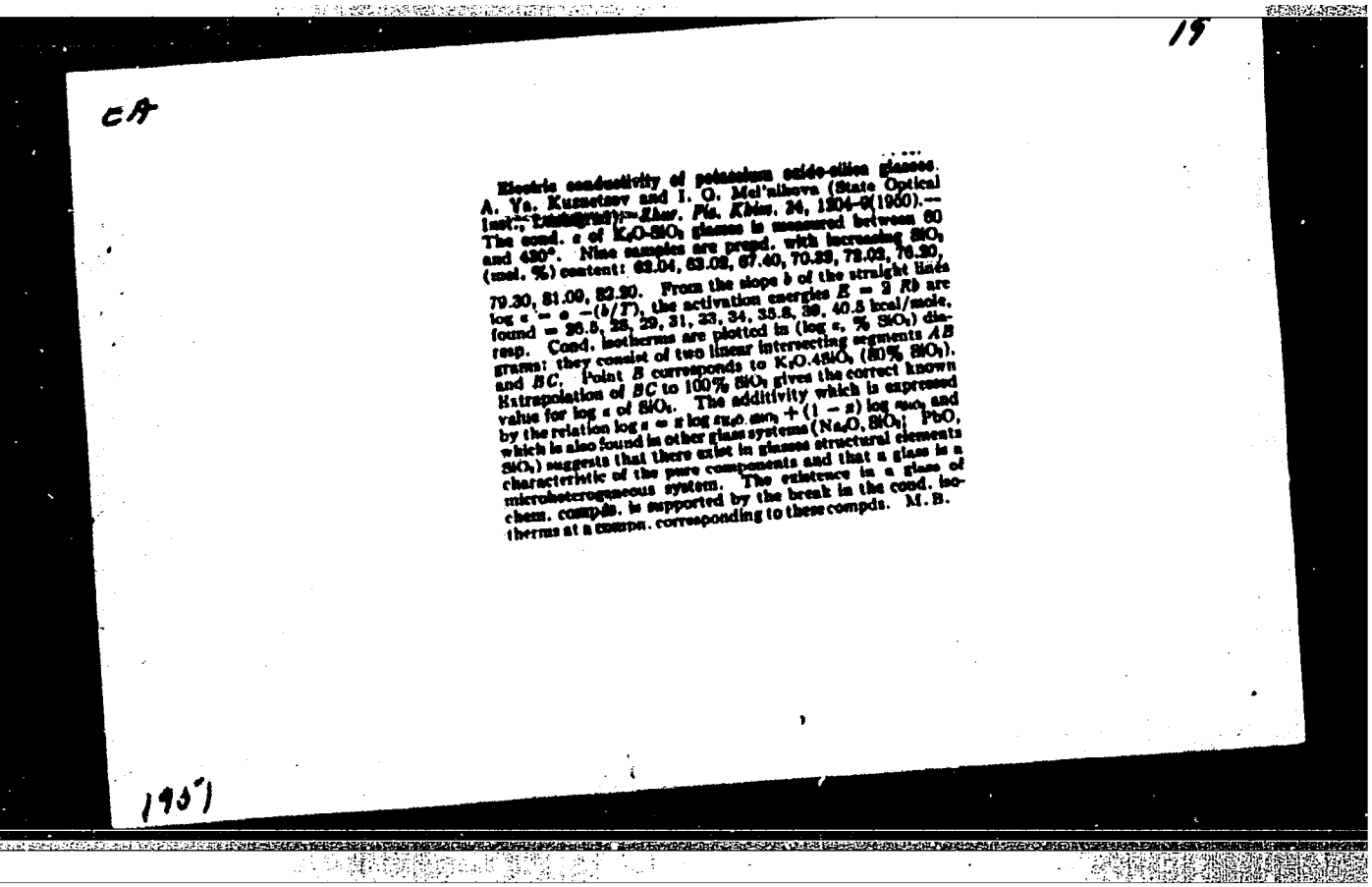


CA

2

Viscosity of the system Na_2SO_4-SiO_2 in the molten state. M. M. Shemyakhov, A. Ya. Kuznetsov and K. S. Evstrop'ev. *J. Phys. Chem. (U. S. S. R.)* 15, 116-23 (1941).—Expti. data for the viscosity η (in poises) of various synthetic mixts. as well as com. glasses with up to 50 mol. % Na_2O for temps. from 760 to 1420° exactly satisfy the equation $\log \eta = A + (m/T)$. The values of $m \times 10^3$ vary from 5.0 for 50 mol. % SiO_2 to 5.61 at 66.7% and 6.10 at 77%; the curve for A with respect to compn. also consists of two straight lines intersecting at $A = -0.38$ at 66.7%; for 50% $A = -1.5$, 77%, -0.05. The minima of $\log \eta$ observed by Preston could not be found. Like the results of Little (*C. A.* 25, 5551) these results fail to support Preston's view of retarded establishment of mol. equil. in glass melts.

F. H. Rathmann



CA

19

Electric conductivity of potassium oxide-silica glasses. A. Ya. Kuznetsov and I. G. Mel'nikova (State Optical Inst., Leningrad).—*Zhur. Fiz. Khim.* 24, 1204–9(1950).—The cond. σ of K_2O-SiO_2 glasses is measured between 60 and 430°. Nine samples are prepd. with increasing SiO_2 (mol. %) content: 62.04, 63.08, 67.40, 70.39, 73.02, 76.20, 79.30, 81.09, 82.90. From the slope b of the straight lines $\log \sigma = a - (b/T)$, the activation energies $E = 2.3Rb$ are found = 26.8, 28, 29, 31, 33, 34, 35.8, 39, 40.8 kcal/mole, resp. Cond. isotherms are plotted in ($\log \sigma$, % SiO_2) diagram: they consist of two linear intersecting segments AB and BC. Point B corresponds to $K_2O.4SiO_2$ (80% SiO_2). Extrapolation of BC to 100% SiO_2 gives the correct known value for $\log \sigma$ of SiO_2. The additivity which is expressed by the relation $\log \sigma = x \log \sigma_{K_2O \cdot nSiO_2} + (1 - x) \log \sigma_{SiO_2}$ and which is also found in other glass systems (Na_2O, SiO_2; PbO, SiO_2) suggests that there exist in glasses structural elements characteristic of the pure components and that a glass is a microheterogeneous system. The existence in a glass of chem. compds. is supported by the break in the cond. isotherms at a compn. corresponding to these compds. M. B.

1951

CA

19

Effect of small quantities of foreign oxides on the electrical conductivity of glass. I. O. Mel'nikov, A. Ya. Kuznetsov, and V. A. Erinberg (State Optical Inst., Leningrad). *Zhur. Fiz. Khim.* 24, 1304–8(1950).—The cond. of two different glasses (I and II) has been measured at various temps. The compn. of I is $Na_2O.2SiO_2$ plus 2 to 9 mol. % of B_2O_3, Cr_2O_3, or TiO_2. The cond. of I between 20 and 300° is multiplied by a factor of 2 to 3 when any of the three foreign oxides is added in quantities varying between 3 and 7% depending on the nature of the oxide and the temp. For larger quantities of admixt. the cond. drops. The compn. of II is PbO 40, and SiO_2 60 (mol. %) and a similar trend of the cond. is observed when 2 to 12% of BaO, Al_2O_3, or TiO_2 is added to the fusion mixt. The cond. passes through a max. at about 3% of the foreign oxides between 70 and 220°. In all cases, the law log cond. = $a - (b/T)$ is obeyed. The data show that the structure and the bonds of a glass are somewhat loosened by small concns. of foreign cations. The cond. is thus enhanced independently of the nature of the glass and of the added oxide. The nature of the added oxide exerts its influence at large concns. for which the cond. drops sharply. Michel Boudart

1951

KUZNETSOV, A. YA.

Kuznetsov, A. Ia. and Mel'nikova, I. G. Electroconductivity of glasses of the system $K_2O - SiO_2$.

State Optical Inst.
Leningrad
February 23, 1950.

SO: Journal of Physical Chemistry, Vol. 74, No. 10. October 1950.

KUZNETSOV, A. Ya. PA 174T91

USSR/Electricity - Conductivity of Glass Jan 51

"Electrical Conductivity of Glasses of the PbO - SiO_2 System," K. S. Yevstrop'yev, A. Ya. Kuznetsov, I. G. Mel'nikova

"Zhur Tekh Fiz" Vol XXI, No 1, pp 104-111

Finds dependence of elec cond of subject glass upon temp is expressed satisfactorily by following formula: $\log K = a - b/T$.

Establishes that cond increases with PbO content in measurements carried out in temp range 60 - 300°C. Submitted 23 Dec 49.

174T91

KUZNETSOV, A. Ya.

USSR/Chemistry - Electrical Conductivity of Glasses Nov 51

"Electrical Conductivity of Glasses of the System PbO-B_2O_3," I. G. Mel'nikova, K. S. Yevstrop'yev, A. Ya. Kuznetsov, Leningrad

"Zhur Fiz Khim" Vol XXV, No 11, pp 1318-1327

Investigated spe elec cond of PbO-B_2O_3 glasses (PbO content 21.4-69 molar %) for temps 170-400°C. Found formula satisfying dependence of elec cond of glasses on temp. Found that logarithm of elec cond increases with higher PbO content in glasses. Discussed variations of elec cond in dependence on PbO content. Calcd activation energy of glasses; established that activation energy is high, increasing with higher B_2O_3 content.

(CA 47 no. 17: 8493 '53)

PA 196T16

KUZNETSOV, A. Ya.

USSR/Physics - Electrical Conductivity, Glass Aug 52

"Surface Electrical Conductuvity of Glass in a Humid Atmosphere," N. G. Gutkin, K. S. Yevstrop'yev, A. Ya. Kuznetsov

"Zhur Tekh Fiz" Vol 22, No 8, pp 1318-1324

Measures surface cond of a number of tech glasses in relation to humidity and temp. Results showed that surface cond in humid atm rises by a factor of 3-5, and at const temp the max rise occurs in a humidity range of 30-80%. With increasing temp the cond rises, the thermal coeff varying from 2 to 4%. Received 2 Oct 51.

226T98

USSR/Chemistry - Glass 21 Jul 52

"The Effect of Thermal Treatment on the Electrical Conductivity of Glasses," S.P. Zhdanov, A. Ya. Kuznetsov

"Dok Ak Nauk SSSR" Vol 85, No 3, pp 587-589

The elec cond of annealed glasses is always greater than that of calcined glasses. In sodium borosilicate glasses this is apparently due to the greater thermal stability of the Na-O-Si bond than of the Na-O-B bond and predominance of the 1st type of bonding after annealing at a high temp. The cond due to the Na-O-Si bond is greater. Presented by Acad I. V. Grebenshchikov 23 May 52.

237T18

KUZNETSOV, A. Ya.

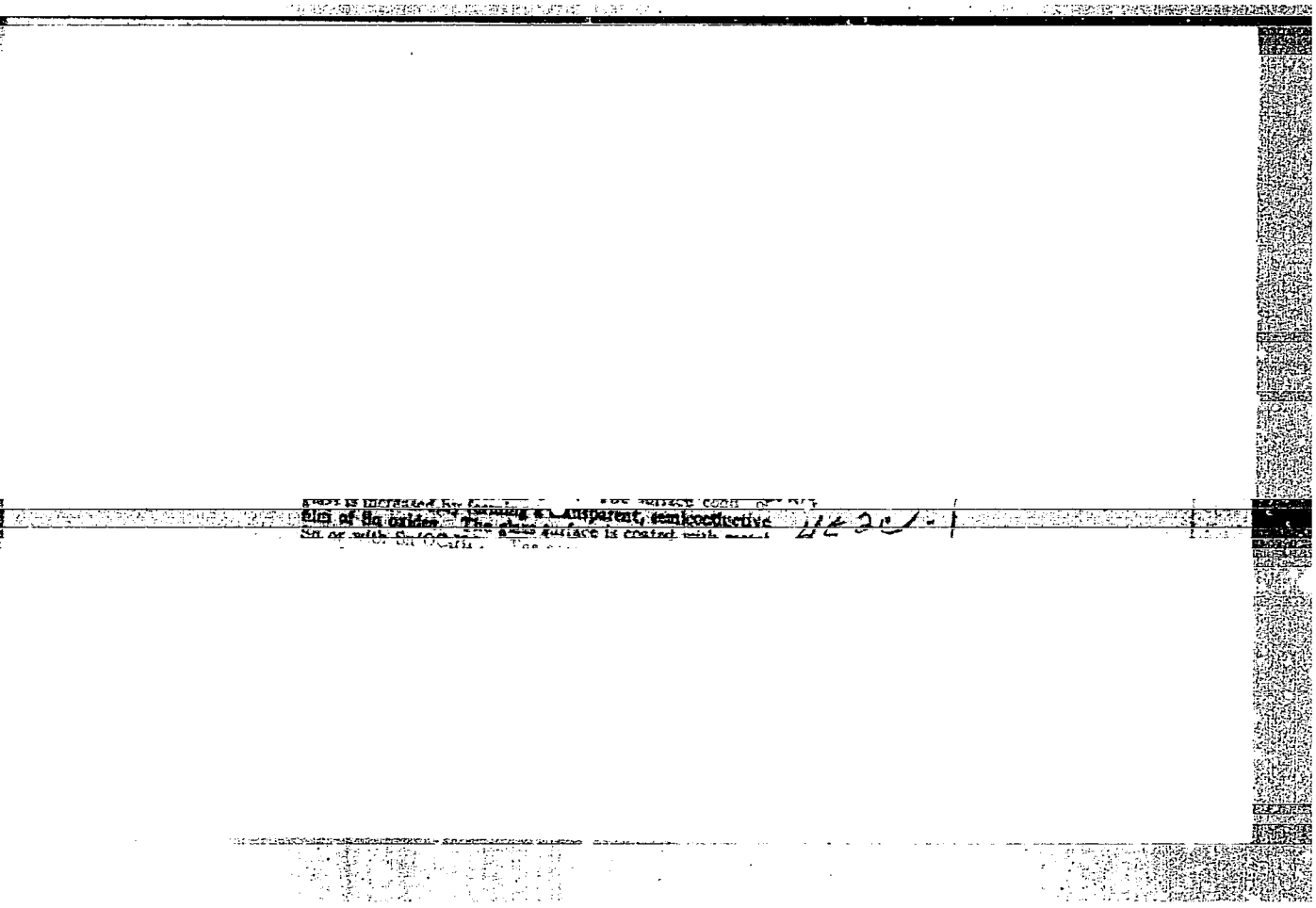
Physics

2-(1)

Chem Abs V48
1-25-54
General & Physical
Chemistry

Electric surface conductance of glasses in humid atmosphere. A. Ya. Kuznetsov. *Zhur. Fiz. Khim.* 27, 657-61(1953); cf. *C.A.* 47, 8103*h*.—The surface cond. *k*, of polished quartz was, e.g., 5×10^{-14} and 8×10^{-14} ohm^{-1} at 20° and 60°, resp., both at relative humidity (*H*) of 60%; it was 10 times and 40–50 times as great at *H* = 80% and 98%, resp. When films of SiO_2 were "in a chem. way" deposited on a quartz surface, *k*, increased with the thickness (*δ*) of the film (10^{-4} to 5×10^{-6} cm.). At $\delta = 3 \times 10^{-4}$ cm. and 20°, *k*, was 10^{-11} and 2×10^{-10} at *H* = 33% and 98%, resp. The sp. cond. k_s/δ was 6×10^{-4} to 10^{-3} ohm^{-1} cm.$^{-1}$, i.e. greater than that of distd. H_2O; the difference is attributed to the electrokinetic surface cond. Films of *δ* between 0.7 and 1.3×10^{-4} cm. were produced on a glass by leaching with 0.5% AcOH; their *k*, at 20° and *H* = 98% was 5×10^{-10} to 10^{-9}. Higher values of *k*, were obtained when the hydrolysis products of glass were not dissolved away, i.e. when glasses were kept in a humid atm. Thus, films of *δ* between 5 and 6×10^{-7} cm. were produced; their *k*, were 7×10^{-11} to 10^{-9} and k_s/δ were 10^{-4} to 6×10^{-3} cm. at 20° and 98%. The temp. coeff. of *k*, was 2%, i.e. identical with that of aq. solns. Surface cond. is cond. of the products of surface hydrolysis. J. J. Bikerman

6/11/54



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928110020-8"

U S S R

2031. The firing of Satkin magnesite with a ferruginous mineralizer. — V. A. Potapov and A. [illegible] Kuznetsov (*Ogneupory*, 20, 3, 1955). Satkin magnesite fired in shaft and rotary kilns is heterogeneous in composition (particularly in its CaO content) and has a high porosity. The dead-burning of coarsely crushed Satkin magnesite can be improved by the addition of 2·0–2·5% mill-scale (Fe_3O_4), which has a refractoriness of 1,560°–1,580° C. The mineralizer improves the recrystallization of periclase and makes it possible to obtain purer (less contaminated [illegible]) magnesite for [illegible] use. (9 tables.)

KUZNETSOV, A.Ya., Doc Chem Sci -- (diss) "Surface Electrical Conductivity of Glass." [Len], 1956, 19 pp (State Order of Lenin Optical Inst im S.I.Vavilov), 120 copies (List of Author's works, 19 pp (11 titles)) (KL,49-57, 110)

Kuznetsov, A. Ya

USSR /Chemical Technology. Chemical Products and Their Application I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31528

Author : Kuznetsov A. Ya., Kruglova A.V., Kryzhanovskiy, B. P.

Title : Heating of Glass- and Ceramic Ware by Means of Semiconductor Films

Orig Pub: Zavod. laboratoriya, 1956, 22, No 8, 993-995

Abstract: It is recommended to utilize as the heating element semiconductor tin dioxide. Films consisting therefrom can be produced by treating the heated article with an alcohol solution of stannic chloride or with stannic chloride vapor.

Card 1/3

USSR /Chemical Technology. Chemical Products and Their Application I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31528

Semiconductor films adhere well to the surface of glass, porcelain and other ceramic materials, and are characterized by high mechanical durability and chemical stability. Specific conductivity of a film 1-3 μ thick is of about 1000 ohm^{-1} cm^{-1}. As concerns conduction the film is similar to an intermetallic compound. The films are stable to the action of electric fields: they withstand up to 5000 v/cm, current density of up to 30 a/mm^2, wattage of up to 15 w/cm^2. Use of semiconductor films in heating of porcelain beakers, porcelain funnels, quartz crucibles, glass funnels and heaters, made it possible to raise the efficiency to 80-94%.

Card 2/3

USSR /Chemical Technology. Chemical Products and Their Application I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31528

Simplicity of the processes of film deposition, low cost of the starting products and prolonged stability of the coatings, indicate the necessity of their extensive utilization, as heating elements, in various technological fields.

Card 3/3

Kuznetsov, A. Ya.

AUTHOR: Kuznetsov, A. Ya.

TITLE: Methods of Applying Coatings of Semiconducting Tin Dioxide for Heating Glass and Ceramics (Metody naneseniya pokrytiy poluprovodnikovoy dvuokisi olova dlya nagreva stekla i keramiki)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, No. 1, pp. 90-92 (U.S.S.R.)

ABSTRACT: The author describes the method of preparing the glass or ceramic vessel for applying the coating. The glass contains alkali and it is leached with nitric acid and subjected to temperatures of 450 — 500°. This will improve the transparency of the coating and make it adhere more firmly. An apparatus is described for applying a coating of $SnCl_2$. The solution for applying this material contains a number of chemicals and the reactions which result in an ultimate coating of SnO_2 and Sn are explained. Directions are given for preparing and applying electrodes to vessels treated in this way. There are 3 references, of which 1 is Slavic.

Card 1/2

Methods of Applying Coatings of Semiconducting Tin Dioxide for Heating Glass and Ceramics

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE:

Card 2/2

AUTHORS: Kuznetsov, A.Ya., Pafomova, L.A., Kalinina, L.M. 32-12-40/71

TITLE: Ceramic Semiconductor Heaters (Keramicheskiye poluprovodnikovyye nagrevateli).

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 12, pp. 1497-1498 (USSR)

ABSTRACT: As ceramic semiconductors produced from lead dioxide possess high electric conductivity, an investigation was carried out with a view of finding out what influence is exercised by admixtures to this material of various semiconductive oxides and some of their compounds with respect to conductivity properties. The highest degree of electric conductivity at room temperature was found to exist in the composition containing 96% SnO_2, 2% CuO and 2% Sb_2O_3. Such a mixture was pulverized in a porcelain grinding machine and put through a sieve. The lead dioxide was previously heated red hot at 1100-1200°, whereas the copper oxide was used in form of fine crystalline powder. This mixture of powder was kneaded together by the admixture of 5% of water to a pulp and formed into a briquette. The latter is dried for 2 hours at a temperature of 130°, after which it is quickly heated up to a temperature of 1000°, and heated red hot at a slowly rising temperature (50° per hour) up to 1450°. Cooling was carried

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Ceramic Semiconductor Heaters

32-12-40/71

out together with the furnace while the current was switched off. The ceramic semiconductors thus obtained have high electron conductivity. It was found that the addition of copper oxide and antimony oxide to the lead oxide diminishes its resistance but, at the same time, increases its heat conductivity. Such heaters, which are produced on the basis of lead oxide, can be used at temperatures of 1200° - 1300° (at short intervals of application of up to 1500°). There is 1 figure and 1 Slavic reference.

AVAILABLE: Library of Congress

Card 2/2 1. Semiconductors-Heaters 2. Ceramics

SOV/120-58-4-16/30

AUTHORS: Kryzhanovskiy, B. P. and Kuznetsov, A. Ya.

TITLE: A Thermally Stable Film of Tin Dioxide and Its Application (Termostoykaya plenka dvuokisi olova i yeye primeneniye)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 4, pp 76-77 (USSR)

ABSTRACT: A method is described for producing thermally stable semi-conducting films of tin dioxide on ceramics and fused quartz. In distinction to the films described before which are stable only up to 300-350°C, the thermally stable films do not change their electrical properties up to 800-850°C. The high temperature stability is achieved by the introduction of an antimony impurity and subsequent high temperature processing. Thermally stable semiconducting films may be successfully used as heating elements in laboratory practise and industrial manufacturing processes. There is 1 figure and 7 references, 6 of which are Soviet and 1 English.

ASSOCIATION: Gosudarstvennyy opticheskiy institut (State Optical Institute)

SUBMITTED: October 19, 1957.

Card 1/1

15(2) SOV/72-59-11-6/19

AUTHOR: Kuznetsov, A. Ya., Doctor of Chemical Sciences

TITLE: Properties of a Silicic Film

PERIODICAL: Steklo i keramika, 1959, Nr 11, pp 17-20 (USSR)

ABSTRACT: As can be seen from the paper by I. V. Grebenshchikov, T. A. Favorskaya (Footnote 1), this film mainly consists of SiO_2, and forms due to the influence of water on glass. Table 1 gives the thickness of films used in practice. Some boron silicate glasses of the system $Na_2O-B_2O_3-SiO_2$ attain a silicic layer of up to 5-10 mm, and serve as initial materials for the manufacture of porous products and of quartzoid, as can be seen from the paper by I. V. Grebenshchikov, O. S. Molchanova (Footnote 2). S. P. Zhdanov, D. P. Dobychin, A. K. Pogodayev, L. S. Yastrebova, V. S. Molchanov investigated the structure of the films. The dependence of the glass porosity on its chemical composition is given in table 2. Regarding boron silicate glasses, the paper by D. P. Dobychin, N. N. Kiseleva is mentioned. The dependence of the relative humidity on the pore dimensions is shown in table 3. Further, the chemical properties, mechanical strength,

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protective effect, optical properties, adhesion, and chemical composition of the films are described. Table 4 gives the diffusion coefficients of the ions in the film, and table 5 the chemical compositions of the films. In conclusion, the author states that the silicic film changes several surface properties of the glass. In some cases, it is advisable to produce a film by artificial means, namely by treatment with acid solutions. There are 5 tables and 5 references, 4 of which are Soviet.

SOV/80-32-5-42/52

5(2, 4)

AUTHORS: Kuznetsov, A.Ya., Kruglova, A.V., Kryzhanovskiy, B.P.

TITLE: Films of Semiconductive Tin Dioxide With Raised Conductivity

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1161-1163 (USSR)

ABSTRACT: Transparent semiconductive films of tin dioxide on glass are widely used in aviation, sea and land transportation, photoelectric and electroluminescent devices, etc. They are prepared by treating glass heated to 600 - 650°C by alcohol solutions of tin tetrachloride, or by treating glass heated to 400°C by vapors of the products of hydrolysis of tin dichloride. The films have a resistance of several hundred ohms. For films of about ten ohms the thickness of the film must be increased, which deteriorates the transparency, or the electric conductivity must be raised. This can be attained by adding pentavalent metal atoms or fluorine atoms. The introduction of NH_4F in the amount of 3 - 10 weight % into a powder of $SnCl_2$ yields best results. Pyrolytic treatment of the glass increases the specific conductivity to $3 \cdot 10^3$ $ohm^{-1} \cdot cm^{-1}$. The film has a thickness of 0.25 μ and a resistance of 10 ohms. Its transparency is improved.

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Films of Semiconductive Tin Dioxide With Raised Conductivity SOV/80-32-5-42/52

There are: 1 table and 5 references, 4 of which are Soviet and 1 English.

SUBMITTED: July 10, 1958

Card 2/2

5(4)

AUTHOR: Kuznetsov, A. Ya.

SOV/76-33-6-31/44

TITLE: Electroconductivity of Silicic-acid Films on Glass I (Elektroprovodnost' kremnezemistykh plenok na stekle. I)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 6, pp 1374-1377 (USSR)

ABSTRACT: By a reaction of the glass surface with the air moisture, a porous SiO_2-film is produced, the pores of which are filled with the hydrolysis products (Ref 1). A film made of chemically pure SiO_2, the pores of which are filled with solutions of a certain concentration or with water, is most similar to this film as to properties and structure. Such films were applied to samples of melted quartz of ethyl silicate solutions, and then heated to 500-600° for a complete evaporation of organic impurities (Ref 1). In an atmosphere dried with P_2O_5, the samples with these films show a very low electroconductivity $\chi_s(\sim 10^{-18}\Omega^{-1})$. In a moist atmosphere, the value χ_s rises rapidly and attains a constant amount in 40-50 minutes (Fig 1). With an increase in air moisture, χ_s also rises (Fig 2). The isothermal lines of the electroconductivity show no hysteresis, i.e. the SiO_2-film does not react with the moisture.

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From the known film thickness and χ_s, it is ascertained that the specific electroconductivity χ in the first approximation does not depend on the film thickness, i. e. χ_s rises linearly with the film thickness (Table 1). The value χ of an SiO_2-film, the pores of which are completely filled with moisture, exceeds that of pure water by 20-30. This is apparently caused by phenomena of a capillary super conductivity as it is observed in fine-porous diaphragms. Thus, the conductivity of the SiO_2-films depends on the SiO_2-skeleton (which weakens the conductivity) on one hand, and on the additional surface conductivity (which raises the conductivity) on the other hand. Similar observations can be made on optical glass TK-5 which was exposed to an intense destruction by acetic acid; as however, finer capillary pores are formed here, the capillary condensation already takes place at a lower air moisture (Table 2). As, in the beginning, the capillary pores are filled with the diluted medium, glasses of different composition have, in the beginning, the same χ_s-values (Table 3); with time, however, the cations diffuse from the interior of the glass into the film, and the χ-value rises. As the diffusion processes slowly fade out, the surface electroconductivity attains, with time, a constant value. There are 4 figures, 3 tables, and

Electroconductivity of Silicic-acid Films on Glass I SOV/76-33-6-31/44

5 references, 4 of which are Soviet.

SUBMITTED: December 4, 1957

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5 (4), 15 (2) SOV/76-33-7-8/40

AUTHOR: Kuznetsov, A. Ya. (Leningrad)

TITLE: Electrical Conductivity of Glasses of the System Li_2O - SiO_2

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1492 - 1494 (USSR)

ABSTRACT: Television and electronics require glasses with high electrical conductivity (E), especially with an (E) of about 10^{-10} - 10^{-8} $\Omega^{-1}cm^{-1}$ at room temperature. Increasing (E) of the above glasses is obtained by increasing the concentration of alkali ions since the latter are very mobile within the silicate structure of glass. As lithium, contrary to other alkali ions, does not reduce the strength of glass, it is particularly interesting. In the present case, the author measured the (E) of 11 glass samples the Li_2O (I) content of which amounted to 7.9 - 42.57 mol%. (Table). Besides, the glasses contained chemically pure lithium carbonate and powdered crystalline quartz.

The glasses were melted in corundum pots 10 cm^3 large, and the samples were drawn out in the form of glass wires at 1200 - 1400° (in order to prevent crystallization). Their (E) was measured

Card 1/2

by the method of compensation (Ref 2) within the temperature range 80 - 350° (Table). Results showed that the glasses under investigation possessed high (E) and attained values of up to $10^{-10} - 10^{-11}$ $\Omega^{-1}cm^{-1}$ approximately at a (I)-content of 8 - 42 mol%. Their (E) varied exponentially with the composition, and the isothermal lines indicated an abrupt break in the part in which lithium disilicate appeared. Li - Si glasses may form the basis for manufacturing glasses with high electrical conductivity for industrial purposes. There are 1 figure, 1 table, and 6 references, 4 of which are Soviet.

SUBMITTED: December 4, 1957

5 (4)

AUTHOR: Kuznetsov, A. Ya., (Leningrad) SOV/76-33-8-8/39

TITLE: Change in Electroconductivity of Glasses on Crystallization

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1726 - 1729 (USSR)

ABSTRACT: Changes in the electroconductivity (E) on crystallization may be due to two factors: a structural reorganization of the substance in the course of the phase transformation, and a change in the monolithic structure and dispersion degree of the substance by which the values of transition resistances at the grain boundaries change. In order to determine the influence of these factors, the (E) of glasses of the following compositions was determined: $Na_2O \cdot SiO_2$, $Na_2O \cdot 2SiO_2$, $PbO \cdot SiO_2$, and their products of a complete crystallization. Various crystallization experiments showed (Table 1) that in all cases only one phase was separated which corresponded to the silicate in question. The change in (E) is due to the transition of the glass to the solid phase. In case of exothermic crystallization, the strength of the chemical bonds is increased as well as the dissociation of cations in the transition to the solid phase.

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Change in Electroconductivity of Glasses on Crystallization SOV/76-33-8-8/39

It is stated that the increase in dissociation energy ($E = E_{cryst} - E_{glass}$) and the crystallization heat change in the same sense (Table 2). A reduction in (E) on the complete crystallization of glass is due to the solidification of structural bonds and the increase in the cation dissociation energy. Experiments showed that a considerable reduction in (E) is the consequence of the separation of crystals of the meta- or disilicate, while an increase in (E) is noted in case of separation of SiO_2-crystals (Table 3). In partly crystallized substances it is virtually the glass phase which conducts the electric current. The character of the change in (E) in the crystallization process is determined by the chemical composition of the solid phase separating out. There are 1 figure, 3 tables, and 7 references, 3 of which are Soviet.

Card 2/2

S/181/60/002/01/07/035
B008/B011

24.7700

AUTHOR: Kuznetsov, A. Ya.

TITLE: Semiconducting Tin Dioxide

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 35 - 42

TEXT: A brief description is given of syntheses, properties, and ranges of application of SnO_2. The methods developed render it possible to increase the electrical conductivity of tin dioxide (up to $\sigma = 3.10^3$ ohm^{-1}.cm^{-1}) greatly and to obtain this product in the form of foils and pressed finished parts. An increase in the electrical conductivity of SnO_2 was achieved first by a strong disturbance of stoichiometry in the direction of the excess metallic tin and, secondly, by introducing impurities. Thin conductive layers were produced in the following manner on various materials (glass, crystals, ceramics, oxidized metals) by the first-mentioned method: 1) by oxidizing the tin applied to the finished part in the air and at high temperatures; 2) by treating

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the finished part with tin chloride vapors. 3) By means of the hydrolysis of $SnCl_4$-solutions in the presence of reducing agents. A further increase in conductivity was attained by introducing impurities being capable of replacing tin and oxygen atoms in the SnO_2 lattice. They were introduced in the form of NH_4F and $SbCl_3$. The conductivity of the layers was increased up to $\sigma = 5.10^3 ohm^{-1}.cm^{-1}$ by partial substitution of the elements of the SnO_2 lattice. Investigation of the properties (Figs. 1-7) showed that thin layers of semiconductor tin dioxide have a high conductivity and transparency, and that they can be used for a strong increase in the conductivity of transparent materials. The pressed products are high-temperature heaters. The steady values of conductivity at high temperatures were obtained by the introduction of Sb-, Bi-, and Ta-atoms into the SnO_2 lattice. These admixtures which have the ability to replace tin atoms were introduced into SnO_2 powder in the form of chlorides or oxides. From this mass, samples with the desired form were pressed and sintered at 1400°C. By adding small

quantities of compounds from the elements mentioned, it was possible to obtain a heat-resistant material with a conductivity at 20°C of 10^2 $ohm^{-1}.cm^{-1}$ (Fig. 8). By a joint introduction of admixtures a number of rules were established: 1) an intense interaction between the admixture and the lattice of the basic material begins during the thermal dissociation of the admixture. 2) When introducing admixtures into viscous-liquid substances it is expedient to add smaller amounts of easily liquefiable compounds. 3) In oxide semiconductors of n-type conductivity (SnO_2, TiO_2, Ni_2O_3) it is expedient to bring about the metal excess by introducing small amounts of low oxides with subsequent disproportionation into a higher oxide and metal. Experiments with tin dioxide have confirmed the rule defined for the first time by Yu. P. Maslakovets, according to which an active penetration of certain impurities occurs only in the presence of others. The main fields of the application of semiconducting tin dioxide are the glassmaking and ceramic industry as well as electrical engineering. The chemical analysis was carried out by the method devised by V. V. Vasil'yev and R. N. Novikov. There are

4

Semiconducting Tin Dioxide

S/181/60/002/01/07/035
B008/B011

8 figures and 11 references: 7 Soviet.

SUBMITTED: April 3, 1958

Card 4/4

S/181/60/002/010/034/051
B019/B056

9.4300 (1137, 1138, 1143)
26.2421

AUTHORS: Kuznetsov, A. Ya. and Pafomova, L. A.

TITLE: Films of Semiconducting ZrO_2

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 10, pp. 2567 - 2569

TEXT: In the introduction the semiconductor properties of ZrO_2 above 1000°C, its high chemical stability and its refractoriness are pointed out. Experiments made by the authors showed that transparent films of ZrO_2 may be produced either by the treatment of parts with zirconium salt vapors or by hydrolysis. In this way it is possible to obtain layers having a thickness of from 500 to 3000 A and a light transmissivity of 95% on various materials within the visible and ultraviolet range. The surface layers are firm and have a high surface resistivity. The authors tried to increase the electric conductivity of the layers by introducing impurities. This could be done by the introduction of Sn- and Bi-atoms into the ZrO_2 layer. For this purpose, the layers were

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Films of Semiconducting ZrO_2

S/181/60/002/010/034/051
B019/B056

treated with vapors of Sn- and Bi-chlorides. Measurements of the thermoemf proved the p-type conductivity of these layers (10^{-1} - 10^{-3} $ohm^{-1}.cm^{-1}$). Fig. 2 graphically shows the temperature dependence of conductivity, and Fig. 3 the wavelength dependence transmissivity. There are 3 figures and 4 non-Soviet references.

SUBMITTED: January 9, 1960

25663
S/080/60/033/012/022/024
D209/D305

5.1310 1273 2319 also 3009, 3309 3209

AUTHORS: Kryzhanovskiy, B.P., Kuznetsov, A.Ya., and Tret'yakov, D.N.

TITLE: Electrochemical precipitation of metals on glass and porcelain

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960, 2795 - 2796

TEXT: The authors studied the electrochemical precipitation of Cu, Ni, Cr, Cd and Ag on glass and porcelain, a technique now in constant use as a result of the discovery of methods, whereby these materials are made electroconducting and are then employed as electrodes in galvanic baths . Their work is a continuation of previous research by A.Ya. Kuznetsov (Ref. 1: ZL, 1, 1957) and A.Ya Kuznetsov et al (Ref. 2: Zh. pril. khimii, 32, 5, 1959), which showed the expediency of coating objects with SnO_2 to increase their surface electroconductivity. These films of SnO_2 ,whose specific sur-

Card 1/3

Electrochemical precipitation ...

face resistance does not exceed 20Ω, are very suitable for the galvanic precipitation of metals since their resistance R is less than that of the electrolyte. The glass or porcelain is hence coated with SnO_2, treated with 0.2 N NaOH and immersed in the electrolyte, thus forming the cathode on which the desired metal is deposited; the anode is a plate of the same metal. A deposit of Cu with a thickness of 10 μ is obtained by electrolyzing an acid sulfate solution for 1 hour at a current density of 1 - 5 mA/cm^2. The cohesive force of Cu with the porcelain is 150 - 180 kg/cm^2, as compared with 100 - 120 kg/cm^2 for glass. In the case of Ni a white glassy layer, 10 - 15 μ thick, results from the electrolysis of a sulfate solution with NaCl and H_3BO_3 for 40 minutes at a current density of 5 - 10 mA/cm^2. A black precipitate of Ni with a thickness of 20 μ is prepared by electrolyzing a solution of $(NH_4)_2Ni(SO_4)_2$ for 70 minutes. Heating of these films in air at 350° markedly increases their mechanical strength, when the cohesive force of Ni with the glass amounts to 100 - 120 kg/cm^2. Electroly-

Electrochemical precipitation ...

sis of the solution of Ya.V. Vayner et al (Ref. 4: Spravochnik po zashchitno-dekorativnym pokrytiyam (Handbook on Protective Ornamental Coatings), Gos. nauch. tekh. izdat., 1951) with a lead anode at a current density of 20 - 30 mA/cm^2 yields a lustrous deposit of Cr, but the authors were only able to obtain weak films of Cd (cohesive force with glass = 20 kg/cm^2) on electrolyzing sulfate solutions with NaCl, H_3BO_3 and gelatin. A solution of AgCN and KCN is electrolyzed for 1 hour at a current density of 2 - 5 mA/cm^2 for the precipitation of thin but strong layers of Ag. In conclusion the authors note that other ceramic materials of any desired size may also be used in addition to porcelain, provided they are first coated with SnO_2. There are 4 Soviet-bloc references.

SUBMITTED: March 30, 1960

Card 3/3

9.2300 (1156, 1159)
24.7160 (1164, 1385, 1553)

29018
S/120/61/000/004/030/034
E036/E335

AUTHORS: Kryzhanovskiy, B.P. and Kuznetsov, A.Ya.

TITLE: Semiconducting layers of copper iodide

PERIODICAL: Pribory i tekhnika eksperimenta no. 4, 1961, p. 178

TEXT: Tin, indium or cadmium oxide layers are widely used at present to provide semiconducting layers on transparent dielectrics. These layers are deposited at 350 - 600 °C. Often, highly conducting dielectrics of materials which soften at low temperatures such as plastics and polymers are required. Recently, it has been found possible to deposit copper iodide layers which have a high conductivity and, at the same time, retain the transparent properties of organic materials (Ref. 4 - B. Vine, P. Meger - Z. phys.Chem., 1951, 198, No. 1-4, 147). The technology which can be carried out in any laboratory is described. First a layer of very pure copper (preferably electrolytic) is deposited in a vacuum of $\sim 10^{-2}$ mm Hg. The integrated transparency should be in the

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Semiconducting layers of copper iodide

range 20 - 35%. The sample is then placed in a closed vessel with the iodine which reacts with Cu even at room temperature, to give a semiconducting layer after 10 - 30 min. To strengthen the sample it is heated for one hour at 70 - 80 °C and again treated in iodine vapour for 10 - 20 min. The transparency of the organic glass is only reduced by 5 to 15%, mainly due to the high coefficient of reflection of the copper iodide, which can be reduced appreciably. The layer has a sheet resistance of 500 to 10^3 Ω. In air due to evaporation of the iodine destroying the stoichiometry the resistance grows gradually to 10^5 - 10^7 Ω. A suitable layer is deposited by cathodic sputtering to make electric contact. The copper iodide layer can be restored at any moment by exposure to iodine vapour at room temperature. To increase the electrical stability an organic lacquer can be applied to the copper-oxide layer which makes diffusion of the iodine difficult.
[Abstracter's note: this is an abridged translation.]

Card 2/3

29618
S/120/61/000/004/030/034
E036/E335

Semiconducting layers of copper iodide

There are 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The two English-language references quoted are: Ref. 3 - E. Umblia - Glass, 1955, 32, No. 12; Ref. 5 - D.A. Lyon - U.S. Patent 2756165, July 24, 1956.

ASSOCIATION: Gosudarstvennyy opticheskiy institut (State Optics Institute)

SUBMITTED: September 25, 1960

Card 3/3

88707

24.7700 1043, 1143, 1136

S/076/61/035/001/005/022
B004/B060

AUTHORS: Kryzhanovskiy, B. P. and Kuznetsov, A. Ya. (Leningrad)

TITLE: The nature of the disturbance of stoichiometry and the electrical conductivity of tin monoxide

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 1, 1961, 80 - 83

TEXT: The authors studied the problem of the changes occurring in the electrical conductivity of metal oxides due to disturbances of the stoichiometric composition. SnO was the compound chosen for the experiments, because the data contained in the literature regarding the temperature limit of its stability are contradictory. In consideration of the fact that the electrical properties of semiconductors are already influenced by small amounts of impurities, the authors checked the dependence of SnO conductivity on the procedure applied to prepare this compound. The following specimens were prepared. 1) Precipitation of $Sn(OH)_2$ from dissolved $SnCl_2$ by an addition of Na_2CO_3 up to the poorly acid reaction of the solution. Boiling of the suspension at 110°C for several hours, decanting, and

Card 1/3

The nature of the disturbance ...

drying. 2) Precipitation of $Sn(OH)_2$ from $SnCl_2$ by means of ammonia. Further treatment like 1). 3) Annealing of $Sn(C_2O_4)_2$ at 320°C in nitrogen atmosphere. 4) Oxidation of a metallic tin layer, applied to glass by the vacuum evaporation of tin, by way of heating to 200°C during 100 hours. The X-ray structural analysis yielded for all specimens the same crystal structure with the lattice constants a = 5.33 A, c = 4.77 A. The resulting powders were pressed with 1000 kg/cm^2. The conductivity of these specimens was measured without further treatment, and after heating up to 150° and 200°C. Specimens 1) and 2) exhibited p-type conductivity, while specimens 3) and 4) exhibited n-type conductivity. After heating up to 200°C, changes appeared, however, that are reproduced in the table. The specimens with p-type conductivity received n-type conductivity. SnO is thus unstable already at 200°C. Below 200°C, SnO has only SnO_2 for an impurity, while above 200°C metallic tin is formed, which gives rise to n-type conductivity. There are 1 figure, 1 table, and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc.

SUBMITTED: April 11, 1959

The nature of the disturbances ...

Legend to the Table. a) Method of production; b) duration of heat treatment (200°C); c) type of conductivity.

Table 1

Время термообработки, часы b)	a) Способ приготовления 1			2			3			4		
	$\sigma \cdot 10^4$, Ω^{-1} см$^{-1}$	$\Delta E_{эл}$, V	Тип проводимости c)	$\sigma \cdot 10^4$, Ω^{-1} см$^{-1}$	$\Delta E_{эл}$, V	Тип проводимости c)	$\sigma \cdot 10^4$, Ω^{-1} см$^{-1}$	$\Delta E_{эл}$, V	Тип проводимости c)	$\sigma \cdot 10^4$, Ω^{-1}	$\Delta E_{эл}$, V	Тип проводимости c)
0,0	1,3	0,42	p	2,9	0,36	p	11,2	0,3	n	0,5	0,22	n
0,5	3,8		n	6,4		n	12,0		n			
1,0	5,0	0,43	n	8,3	0,34	n	12,1	0,29	n	0,55	0,2	n
2,0	6,5		n	8,5		n	12,0		n			
4,0	6,7		n	9,0		n	12,1		n			
7,0	7,2	0,40	n	9,2	0,33	n	12,5	0,28	n	0,5	0,2	n

Table

Card 3/3

26337
S/076/61/035/007/007/019
B127/B102

15.2640

AUTHOR: Kuznetsov, A. Ya.

TITLE: Effect of boron oxide on the electroconductivity of glasses

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 7, 1961, 1478-1480

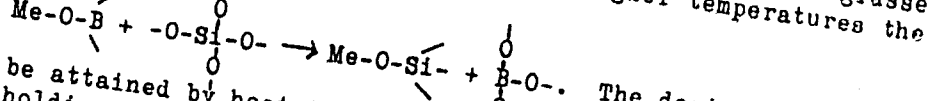
TEXT: The individual dissociation energies of the cations in boron glasses were found to be much higher than in silicate glasses. This increase is due to the following factors: Higher stability of the Me-O-B bond, lower dielectric constant, a denser packing of the structural elements $BO_3(BO_4)$ in the space lattice. The latter is explained by the fact that in the case of boron more oxygen bonds (eight out of fourteen) are used to bind the structural elements than with other anions. According to the author's observations, boron improves the dielectric volume properties of glass. Moisture condensing on the glass gives rise to a hydrolytic process on the glass surface, as a result of which a thin electrolyte layer is formed. This results in a high surface conductivity. In general, when boron oxide was incorporated into the glass, the volume conductivity decreased, the surface

Card 1/3

Effect of boron oxide ...

26337
S/076/61/035/007/007/019
B127/B102

conductivity increased. The maximum effect was observed at a borate content of 7 mole%. The transition from the trigonal system of boron oxide to the tetrahedral one is accompanied by an anomalous change in electric conductivity. Another peculiarity was observed in borosilicate glasses: Above 400°C SiO_2 and B_2O_3 are in equilibrium, at higher temperatures the following reaction takes place:



be attained by heat treatment. The author's experiments showed that holding of borosilicate glass at low temperatures leads to an increase of the Me-O-B bonds and a decrease of conductivity. High-temperature treatment shifted the equilibrium concentration to higher silicate contents and increased the conductivity by the 15 - 20 fold. Mention is made of L. Poling, N. P. Bogoroditskiy, G. I. Skanavi. There are 1 figure, 2 tables, and 13 references: 12 Soviet and 1 non-Soviet. The reference to English-language publication reads as follows: Seddon, Tippet, J. Soc. Glass technol., 16, 450, 1932.

Card 2/3

15.2640

27681
S/076/61/035/009/004/015
B101/B110

AUTHOR: Kuznetsov, A. Ya.

TITLE: Surface electroconductivity of lead glasses

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 1935 - 1937

TEXT: L. Yu. Kurts (Izv. AN SSSR, Otd. khim. n., 5, 811, 1940) found that in glasses of the system Na_2O - PbO - SiO_2 the surface conductivity $\varkappa_s$ in moist air first rises and then drops to a constant value. The author of the present paper examined whether this effect also occurred in industrial PbO-containing glasses. Tests were conducted with glasses of types Ф2 (F2), ТФ3 (TF3), ЗС-4 (ZS-4), and Nonex, as well as with a laboratory-made glass of the composition $PbO \cdot 2SiO_2$. Plane-parallel glass plates were polished, cleaned with distilled water and alcohol, and heated at 400°C. 12 mm long metal foils, 6 mm distant from each other, were used as electrodes. The surface conductivity was measured at 20°C with a d.c. bridge. Air moisture was 50% or 90%. Fig. 1 shows results for 90% moisture. With increasing moisture, the maxima grow larger and

Card 1/3

Surface electroconductivity...

appear after a shorter time already. The glass composition affects the maximum only. Glasses containing alkali oxides (F2, TF3) besides PbO show flat maxima. Explanation: When the glass surface is moistened, a SiO_2 film forms, through which capillary tubes are passing. With a moisture > 40%, water is adsorbed in these capillary tubes. The glass hydrolyzes. The soluble $Pb(OH)_2$ first increases the conductivity, but soon it precipitates again as poorly soluble $xPbO \cdot yH_2O$, thus reducing the conductivity. With high alkali content, part of the alkali is bound as plumbite; the rest of free alkali increases the conductivity, thus flattening the maximum. The low values of $\varkappa_s$ (10^{-8} - 10^{-9} $ohm^{-1} \cdot cm^{-1}$) are pointed out. The $\varkappa_s$ of $PbO \cdot 2SiO_2$ approaches that of quartz. There are 2 figures and 6 Soviet references.

SUBMITTED: October 5, 1959

Card 2/3

ACCESSION NR: AP4048368 S/0032/64/030/011/1369/1370

Kuznetsov, B. P.; Kuznetsov, [illegible]

Conductive transparent layers on organic glass and polymer

Zavodskaya laboratoriya, v. 30, no. 11, 1964, 1369-1370

TOPIC TAGS: coating, copper sulfide coating, transparent conductive coating, polymer film, organic glass, low temperature coating, window pane

ABSTRACT: A low-temperature method for coating dielectrics with a low conductive transparent film [illegible] was developed for the purpose of improving [illegible] with respect to nonsweating [illegible] panes, safety [illegible] electrostatic charge, [illegible] retaining the [illegible] of the polymers. [illegible] organic glass, polymer film, paper, [illegible] was accomplished by the evaporation of metallic copper in vacuum (5×10^{-4}--5×10^{-5} mm Hg) from a tungsten evaporator and subsequent treatment with sulfur vapors

Card 1/2

ACCESSION NR: AP4048368

[illegible]--80C. A transparent conductive layer of [illegible] forms on the [illegible] surface in 2--6 hr. The [illegible] was [illegible]. Copper-sulfide coatings 0.01--[illegible] thick were obtained [illegible] surface resistance of [illegible], [illegible]% transparency, [illegible] high refractive index [illegible] [illegible] and [illegible] currents (4 w/cm² and 10 amp/mm²) and liquid-[illegible] cooling) and is stable in air at temperatures up to 70--80C. [illegible] copper-sulfide coating can be protected from mechanical and chem- [illegible] by [illegible] layer [illegible] transparent [illegible]. [illegible] as [illegible] figure.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MT, GC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3127

Card 2/2

L 15757-66 EWP(e)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/WH

ACC NR: AP5027461 (A) SOURCE CODE: UR/0032/65/031/011/1366/1366

AUTHOR: Kryzhanovskiy, B. P.; Kruglova, A. V.; Kusnetsov, A. Ya.

ORG: none

TITLE: Electroconductive transparent coatings on mica

SOURCE: Zavodskaya laboratoriya, v. 31, no. 11, 1965, 1366

TOPIC TAGS: mica product, electric conductivity, vaporization, specialized coating

ABSTRACT: Strong, well-adhering layers of SnO_2 cannot be produced on mica with existing methods despite the fact that SnO_2 coatings on silicate glasses are widely used. A method was developed for the production of strong, transparent layers on micas, involving the removal of hygroscopic water by heating muscovite for 2.5-4 hr at 450-500 C (heating at >550 C affects the liberation of 4.5% of the water of crystallization and swelling of the mica) with a heating and cooling rate of 150-200 C per hour. After cooling, the mica surface was coated with a layer of SiO_2, TiO_2, or Zr_2O (0.1-0.3 μ thick) produced from alcohol solutions: SiO_2 from 3-4% solution of silicon ethyl ether in dry ethyl alcohol; TiO_2 from 3% alcohol solution of ethyl ether or thiotitanate; and ZrO_2 either from 3% solution of

1/2

L 15757-66

ACC NR: AP5027461

$ZrOCl_2$ in 94-98.5% ethyl alcohol or 3% solution of $ZrOCl_2(C_2H_5O)_2$ ether in 99.5% alcohol] by using the chemical illumination method described by I. V. Grebenshchikov (Prosvetleniy optiki, OGIZ, 1946). The coating was heated for 0.5-1 hr at 150-200, and then applied on a fixed layer of SiO_2, TiO_2, or ZrO_2 of the electroconductive transparent SnO_2 layer by heating mica at 400C in vapors from the hydrolysis of $SnCl_2$. Into the initial $SnCl_2$ 4-6% ammonium fluoride was added to increase the transparency and electric conductivity of the coating. Layers of SnO_2 with an electric resistivity of 20-30 ohm and a transparency of 80-85% could be produced by this method.

SUB CODE: 11/ ORIG. REF: 004/

2/2 SNV

L 43902-66 EWT(m)/EWP(e) WH

ACC NR: AP6015653 (A) SOURCE CODE: UR/0413/66/000/009/0063/0063

37
B

INVENTOR: Kuznetsov, A. Ya.; Orlova, L. A.

ORG: none

TITLE: Method of increasing the mechanical strength of glass, Class 32, No. 181249

SOURCE: Izbreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9, 1966, 63

TOPIC TAGS: optic glass, glass treatment

ABSTRACT: An Author Certificate has been issued for a method of increasing the mechanical strength of glass by treating it in a hot alkaline solution. To increase the mechanical strength of optical oxygen free glass, a potassium hydroxide solution of 0.5 normal concentration at 45—55C is used as the pickling solution. [Translation] [NT]

SUB CODE: 11/07/ SUBM DATE: 13Mar65/

Card 1/1 UDC: 621.746.27

L 06307-67 EWT(m)/EWP(e) WH/GD

ACC NR: AT6027136 SOURCE CODE: UR/0000/65/000/000/0041/0045

AUTHOR: Kuznetsov, A. Ya.; Tsekhomskiy, V. A.; Tunimanova, I. V.

39
13+1

ORG: none

TITLE: Semiconducting silicate glasses based on titanium oxides

SOURCE: AN SSSR. Otdeleniye obshchey i tekhnicheskoy khimii. Issledovaniya v oblasti khimii silikatov i okislov (Studies in the field of chemistry of silicates and oxides). Moscow, Izd-vo Nauka, 1965, 41-45

TOPIC TAGS: titanium dioxide, aluminum oxide, silicate glass, semiconducting material

ABSTRACT: Semiconducting glasses of the system $CaO-Al_2O_3-TiO_2-SiO_2$ containing various amounts of aluminum metal (added to create reducing conditions during melting at 1500°C) were studied. ESR spectra showed that the Ti^{3+} ion constitutes the base of the reduced phase in the glasses. The latter were divided into two groups: (1) those with a variable TiO_2 content in the initial glass and (2) those with a constant TiO_2 content (20 mole %) and a variable Al_2O_3 content. In all cases, an increase in the Ti^{3+} content of the glass was found to increase the electric conductivity. The activation energy of conductivity decreases with rising TiO_2 conduct in the initial glass, then remains approximately the same as the content of Ti^{3+} ions increases in glasses containing the same total amount of titanium; the preexponential factor ($\log \rho_0$) decreases with rising content of Ti^{3+} ions. The data show that in all cases only a

Card 1/2

L 06307-67
ACC NR: AT6027136

small part of the total Ti^{3+} ions participate in the electric conductivity. Whereas in the initial glasses Al_2O_3 has almost no effect on the electric conductivity, in the reduced glasses the conductivity drops by 5 orders of magnitude as the Al_2O_3 content increases from 5 to 20%. The mechanisms of these phenomena are discussed. Orig. art. has: 2 figures, 3 tables and 1 formula.

SUB CODE: 11/ SUBM DATE: 28Apr64/ ORIG REF: 005/ OTH REF: 004

Card 2/2 gd

KUZNETSOV, B.

New motion pictures on building. Zhil. stroi. no.5:24 '59.
(MIRA 12:8)
(Motion pictures in industry)

KUZNETSOV, B.

Figures that spur one on. Okhr.truda i sots.strakh. no.1:29-30 Ja '59. (MIRA 12:2)

1. Zamestitel' predsedatelya zavkoma Mytishchinskogo mashinostroitel'nogo zavoda.
(Mytishchi--Machinery industry--Hygienic aspects)

KUZNETSOV, B.; LYSENKO, B.

Work methods of P. Sapunov's crew. Prof.-tekh. obr. 19 no.8:14-17 Ag '62. (MIRA 15:12)
(Orel Province—Corn (Maize))

KUZNETSOV, B., inzh.; SLUTSKER, Ya., inzh.

The 2 STSN-6 and STSP-6 sugar beet precision planters. Trakt. i sel'khozmash. 33 no.8:38-40 Ag '63. (MIRA 16:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyastvennogo mashinostroyeniya (for Kuznetsov). 2. Spetsial'noye konstruktorskoye byuro zavoda "Krasnaya zvezda" (for Slutsker).

KUZNETSOV, B. (Stalingrad)

Soldering aluminum parts. Radio no.12:40 D '54. (MLRA 8:1)
(Solder and soldering)

KUZNETSOV, B.

USSR/ Electronics - Television

Card 1/1 Pub. 89 - 19/27

Authors : Kuznetsov, B.; Pribysh, S.; and Mokhov, V.

Title : Exchange of experience-Techniques regarding tubes, transformer and cathode

Periodical : Radio 1, page 45, Jan 1955.

Abstract : A bracket for holding a tube in place is described. A method for finding the number of turns in the winding of a radio or television transformer is explained. A method is presented for obtaining a clear picture when the cathode connection is broken, through the use of an independent transformer. Illustrations, schematic drawing.

Institution : .....

Submitted : .....

KUZNETSOV, B.

Soldering of Aluminum Parts. Radio Engineering, #6:39:June 55

KUZNETSOV, B.

A difficult route. Za rul. 14 no.5:6-7 Ag '56. (MLRA 10:1)
(Automobile drivers--Competitions)

KUZNETSOV, B.

"Grand Prix" of the Central Automobile and Motorcycle Club of the U.S.S.R. Za rul.18 no.9:9-11 S'60. (MIRA 13:10)
(Motorcycle racing)

KUZNETSOV, B. (Odessa)

Surprises in Odessa. Za rul. 18 no.10:14-15 O '60. (MIRA 14:1)
(Odessa—Motorcycle racing)

KUZNETSOV, B.

"A fanatic of motor sport." Auto motor 14 no.24:29 D '61.

1. "Za rulyem" foszerkesztoje.

KUZNETSOV, Boris Aleksandrovich, assistent

Use of a phase-sensitive detector with a dual triode in tensometric measurements. Izv. vys. ucheb. zav.; elektromekh. 3 no.3:158-161 '60. (MIRA 13:10)

1. Kafedra obshchey elektrotekhniki i elektricheskikh mashin Donetskogo industrial'nogo instituta.
(Tensiometers) (Electronic circuits)

DAVYDOV, N.I., kand.tekhn.nauk; AFANASOV, S.N., inzh.; RINKUS, E.K., inzh.; KUZNETSOV, B.A., inzh.

New circuit for the control of combustion in drum boilers with shaft mills. Teploenergetika 7 no.10:57-63 O '60. (MIRA 14:9)

1. Vsesoyuznyy teplotekhnicheskiy institut i Teploelektrotsentral' Mosenergo.

(Boilers--Furnaces) (Automatic control)

S/196/61/000/009/049/052
E194/E155

AUTHOR: Kuznetsov, B.A.

TITLE: The power characteristics of multi-speed induction motors

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.9, 1961, 10, abstract 9L 52. (Tr. Ural'skogo politekhn. in-ta, Sb.106, 1960, 53-64)

TEXT: It follows from an analysis of the relationship of braking conditions in multi-speed induction motors that the effectiveness of utilisation of regenerative braking depends upon the ratio between the speed steps and also on the ratio of the rotor resistance to that of the stator. When the latter ratio is at its optimum in respect of power regeneration, the initial slip will be of the same ratio. Hence it is in practice inadvisable to use partial switching which gives an initial slip greater than this ratio, because of the excessive power consumption and motor heating. In designing motors with multi-speed connections, maximum utilisation of regenerative braking conditions is achieved by making the ratio of rotor to stator resistance equal to or

Card 1/2

The power characteristics of ... S/196/61/000/009/049/052
E194/E155

greater than the initial slip which occurs during retardation and speed switching of the motor. The upper limit is a rotor to stator resistance ratio of 3, because further increase has little effect in reducing losses in the motor.
6 figures, 4 literature references.

[Abstractor's note: Complete translation.]

Card 2/2

81409

S/020/60/132/06/34/068
B004/B005

5.3200

AUTHORS: Kuznetsov, B. A., Yelkina, N. D.

TITLE: The Mechanism of the Heterogeneous Exchange of Acetone and Water in the Gaseous Phase

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 6, pp. 1344- 1347

TEXT: In a previous paper (Ref. 1), the authors investigated the exchange of acetone and HBr in the gaseous phase, and derived a reaction scheme for this process. To check this scheme and to clarify the general rules governing the exchange between compounds having an undivided electron pair and an active hydrogen atom, the kinetics of the isotope exchange between acetone and water, acetone and ammonia, was investigated. With respect to the latter process, the authors only state that no exchange occurred when using the method described in Ref. 1. The exchange of acetone and water was studied by means of tritium. At a specific activity q_{HTO} = $= 4.52.10^6$ imp/min.mm, a very slow exchange was observed, the kinetics of

Card 1/3

The Mechanism of the Heterogeneous Exchange of Acetone and Water in the Gaseous Phase

S/020/60/132/06/34/068
B004/B005

which was studied. The acetone-water mixture was added into the experimental apparatus, the acetone was separated from the water after the reaction. The T content in acetone was determined by means of a counter, the T content in water by measuring the activity of the hydrogen obtained by reduction of HTO via magnesium at 470°C. The experimental results are shown in Fig. 1 (dependence of the exchange rate on the pressure of acetone) and Fig. 2 (dependence of the exchange rate on temperature). The experiments were carried out in part in an empty quartz vessel, in part in a quartz vessel filled with quartz splinters. In the latter case, the surface was 16 times larger, the reaction rate 100 times higher than with the empty vessel. From this fact the authors conclude that the acetone-water exchange occurs via the hydroxyl groups of the quartz surface. The authors measured the exchange of acetone and water with the hydroxyl groups (Fig. 3). These results lead to the conclusion that the acetone-water exchange occurs via acetone compounds chemically adsorbed on the quartz under action of the hydroxyl groups of the quartz surface and the adsorbed water. There are 3 figures and 5 references: 5 Soviet and 1 German.

Card 2/3

81409

The Mechanism of the Heterogeneous Exchange of Acetone and Water in the Gaseous Phase

S/020/60/132/06/34/068
B004/B005

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

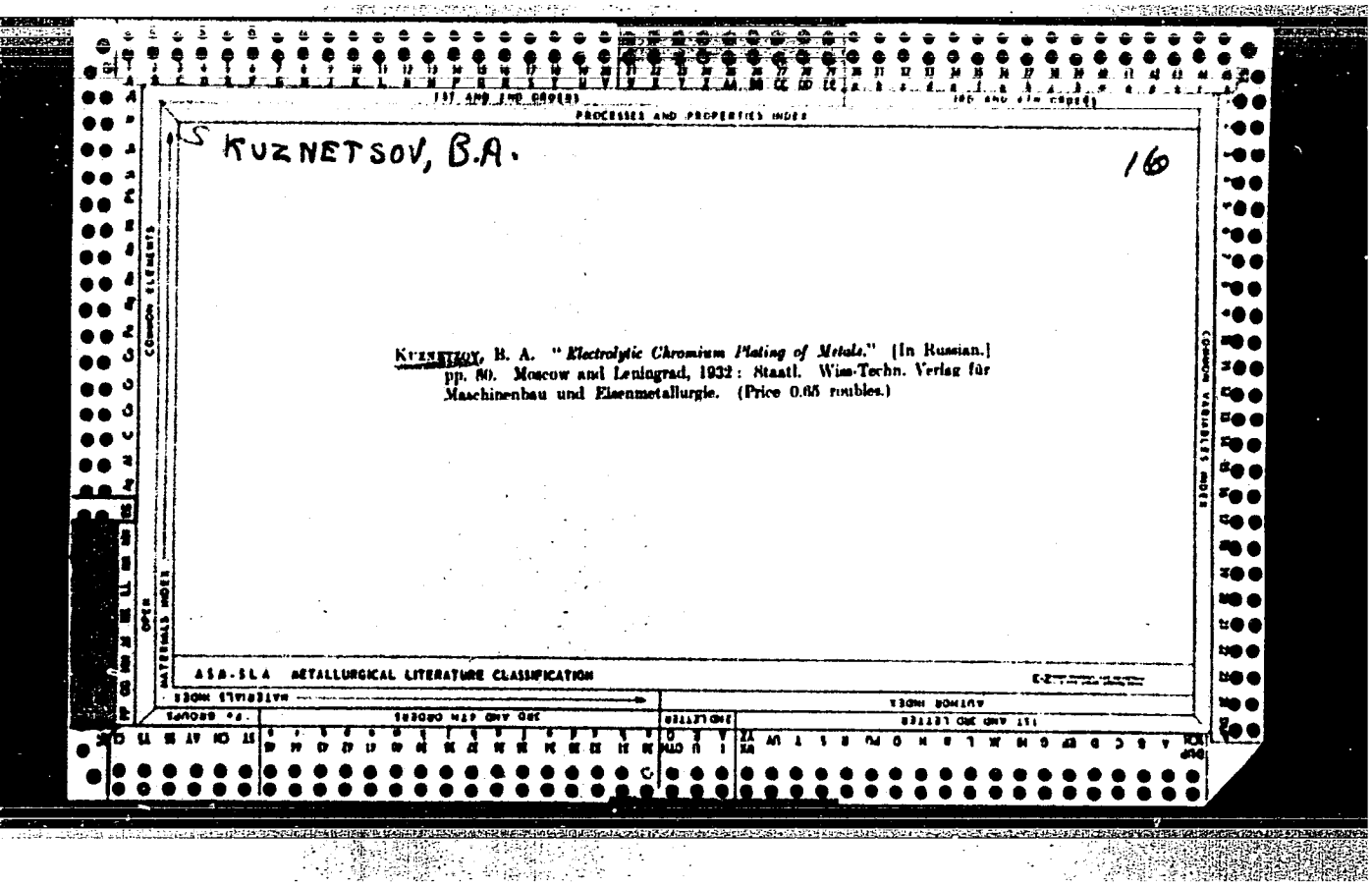
PRESENTED: February 24, 1960, by V. N. Kondrat'yev, Academician

SUBMITTED: February 19, 1960

Card 3/3

KUZNETSOV, B.A.

Materials on the mammals of Central Asia. Trudy MOIP. Otd. biol. 10:116-156 '63. (MIRA 17:4)



KUZNETSOV, B.A.

16

KUZNETSOV, B. A. "*Electrolytic Chromium Plating of Metals.*" [In Russian.] pp. 80. Moscow and Leningrad, 1932: Staatl. Wiss-Techn. Verlag für Maschinenbau und Eisenmetallurgie. (Price 0.65 roubles.)

USSR/Metallurgy - Fatigue Testing, Nature of Fatigue — Jan 53

"Studying the Nature of Fatigue by Optical Method," S. O. Tsobkallo, B. A. Kuznetsov

Zhur Tekh Fiz, Vol 23, No 1, pp 3-16

Uses specimens made of silver chloride and testing machine of special design for studying process of fatigue in metals. Discusses existing theories of fatigue failure and concludes that most correct theory is one based on assumption of gradual decrease in local strength ("loosening") with increasing number of load reversals.

270T88

USSR/Chemistry - Isotopes, Reaction Kinetics 21 Sep 53

"The Influence of the Structure of Alkyl Iodides on the Rate of Their Isotopic Exchange with Ions and Atoms of Iodine," M.B. Neyman, B.A. Kuznetsov, and Yu.M. Shapovalov, Inst of Chem Physics, Acad Sci USSR

DAN SSSR, Vol 92, No 3, pp 611-614

Using I^{131} in both the ionic and atomic form, studied the effect of the structure of normal as compared with iso-propyl iodide on the rate of exchange with iodine. Iso-propyl iodide exchanges

268T5

iodine with iodine in the ionic form 20-25 slower than normal propyl iodide. The rate of isotopic exchange of iodine in isopropyl iodide with atomic iodine is 25 times faster than that of normal propyl iodide. Presented by Acad N.N. Semenov 17 Jun 53.

268T5

RYSKIN, S.Ye.; FOGEL', A.A., kand.tekhn.nauk, red.; KUZNETSOV, B.A., kand. tekhn.nauk, retsenzent; SOKOLOVA, L.V., tekhn.red.

[Tempering machines and induction heaters] Zakalochnye stanki i induktsionnye nagrevateli. Pod red. A.A.Fogelia. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.i sudostroit.lit-ry, 1954. 37 p. (Bibliotechka vysokochastotnika-termista, no.11)

(Induction heating) (Tempering) (MIRA 12:3)

KUZNETSOV, B.A.

Category : USSR/Solid State Physics - Mechanical Properties of Crystals and Polycrystalline Compounds E-9

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3980

Author : Kuznetsov, B.A.
Title : Study of the Fatigue of Silver Chloride by an Optical Method

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 5, 1034-1044

Abstract : An investigation was made of the distribution of the internal stresses and of the structure of the changes that occur in monocrystalline and polycrystalline specimens of silver chloride during the process of reversible flexures at a frequency of 50 cycles. The process of fatigue damage of silver chloride can be subdivided into three stages. The first stage is characterized by a gradual increase in the optical path difference on the edges of the specimen and a reduction of this difference at the center, and terminates with such a distribution of the optical path difference over the section of the specimen, as would be observed in the case of static loading that does not exceed the elastic limit. In the second stage, which occurs at greater stresses in the cycle, there appear dark lines, which are formed mostly at the edges of the specimen and on the

Card : 1/2

Category : USSR/Solid State Physics - Mechanical Properties of Crystals and Polycrystalline Compounds E-9

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3980

boundaries of the grains. The optical path difference diminishes in the portions containing such lines and increases in the neighboring portions. The third stage begins at the instant that a fatigue crack is formed and ends with the failure, which in the case of polycrystalline specimens always occurs on the grain boundaries. In specimens that have been subjected after a certain number of cycles to an intermediate annealing at 500° for five hours, the changes in the microstructure and the optical path differences develop considerably faster during further tests, than in specimens that are not annealed. It is proposed that in the first stage of the fatigue process there occurs ordinary plastic deformation by shear along the slippage planes, accompanied by a strengthening of the material; in the second stage, the principal role is played by some other form of plastuc deformation, leading to a crumbling and weakening of the material, and in the final analysis, the fatigue failure.

Card : 2/2