

L 05295-67

ACC NR: AR6031867

without local modulation coils. In the latter case the autodyne frequency is modulated, while spurious AM is eliminated by the transmission of a compensating l-f voltage to the transmitting tube grid. A circuit which automatically binds autodyne frequency to the measured field is connected for measurements of field topography and for especially complex measurements. A block-diagram and a photo of the instrument, as well as a schematic diagram of the h-f unit, are given in the original article. Errors occurring with measurements with the IMP-3 instrument are analyzed. V. Mamayev. [Translation of abstract]

SUB CODE: 20, 09/

Card 2/2

eq/e

ZINGERMAN, Ya. P.

USSR/Physics - Thermoelectron Emission 11 Dec 51

"Experimental Investigation of the Oxide Cathode,"
N. D. Morgulis, Ya. P. Zingerman, Inst of Phys,
Acad Sci Ukrainian SSR, Kiev

"Dok Ak Nauk SSSR" Vol LXXXI, No 5, pp 783-785

Concludes that the thermo-emission of oxide cathodes must be detd by the phys properties of surface layer and not by the entire vol as was earlier (1941) believed. Verifies experimentally the fact of the existence of this layer and clarifies its peculiarities. Indicates the methods for completely solving this problem of verification. Submitted by Acad G. S. Landsberg 15 Oct 51.

210197

Zingerman, Ya. P.
USSR/Electronics - Electronic and Ionic Emission H-2
Abs Jour : Referat Zhur - Fizika, No 5, 1957; 12274
Author : Zingerman, Ya.P.
Inst : Institute of Physics, Academy of Sciences, Ukrainian SSR.
Title : Anomalous Emission Saturation of Effective Thermal Cathodes.
Orig Pub : Ukr. fiz. zh., 1956, 1, No 2, 134-142

Abstract : An investigation was made of the anomalous saturation of the voltage-current characteristics of the effective oxide-barrier and L-cathodes at high temperature and high emission-current density. The measurements of the voltage-current characteristics was made in a diode with a flat anode and with a cathode, the distance d between the two being varied from 0.5 to 1.7 mm. To avoid changes in the physical state of the cathode when drawing a

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ZINGERMAN, Ya.P.; MOROZOVSKIY, V.A.

Investigating the nonuniformity of work junctions on metal surfaces.
Prib.i tekhn.eksp.no.3:65-69 N-D '56. (MLRA 10:2)

1. Institut fiziki AN USSR.
(Electron emission) (Oscillators, Electron-tube)

SOV/112-57-6-13020

Translation from: Referativnyy zhurnal. Elektrotehnika, 1957, Nr 6, p 194 (USSR)

AUTHOR: Zingerman, Ya. P.

TITLE: Electron Emission by Porous Metal Cathodes
(Elektronnaya emissiya metalloporistykh katodov)

PERIODICAL: Tr. In-ta fiziki AN UkrSSR, 1956, Nr 7, pp 24-34

ABSTRACT: Emission from porous metal cathodes consisting of a tungsten sponge of 60-70% density filled with pure BaCO_3 has been studied. The investigation has been conducted at low temperatures with emission currents under 10^{-3} amp. Under these conditions, the space-charge effect and the variations of active-film state are absent. The shape of the experimental curves of electron emission in the accelerating field $\lg I_a = f(\sqrt{E})$ indicates that the emission activity is nonuniform over the cathode surface. A comparison of theoretical and experimental curves has permitted determining the linear dimensions of active spots and the work-function nonuniformity $\Delta \varphi$, which are about 10^{-4} cm and about 0.6-0.7 ev respectively. In order to explain the linearity of the characteristics of initial electron velocities $\lg I_a = f(U)$, however, the

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Electron Emission by Porous Metal Cathodes

nonuniform work-function values should be increased to values over 1 ev. The linearity of these characteristics also testifies to the Maxwellian character of electron-velocity distribution. The value of the work-function nonuniformity determined from the Richardson lines agrees well with the value determined from the accelerating-field curves. The same method was used to determine the mean work-function, equal to 2.1 ev, and the corresponding emission constant $A = 5 \text{ a/cm}^2 \text{ degree}^2$.

Y.H.N.B.

Card 2/2

ZINGERMAN, Ya. P.

"Electron Emission of Porous Metallic Film Thermocathodes," by Ya. P. Zingerman, Physics Institute, Academy Sciences Ukrainian SSR, Izvestiya Akademii Nauk SSR, Seriya Fizicheskaya, Vol 20, No 9, Sep 56, p 1068 (abbreviated report; full text published as follows: first part in Trudy IFAN Ukr SSR, 7, 24 [1956], second part in Ukrain, fiz. zhur., 1, 134, 1956)

The work consists of two parts and it is devoted to experimental studies of thermionic emission of porous metallic film, the so-called L cathodes with an initial pure barium carbonate filling. The electron emission of the above-mentioned cathode is analyzed in the first part of the report in a flat diode system in a retarding and an accelerating field at low temperatures of 600 to 900°K. In this temperature range the ratio of $\log I_a$ to U_a was found to be strictly linear in the retarding field within a wide range of plate current. The electron temperature determined from the slope of this ratio concurred with that of the cathode measured by a thermocouple. However, in the accelerating field the volt-ampere characteristics in the same temperature range exhibited an anomalous Schottky effect. The analysis of these effects allowed the evaluation of the degree of heterogeneity in the distribution of the output work on the surface of the porous metallic film cathode.

The second part of the work carries out an experimental study of the cause of the anomalous saturation of volt-ampere characteristics in a system of a flat diode with a mobile plate measured at a high emissive current density at operating cathode temperatures of 1,300-1,500°K. It was found that independently of the interelectrode distance d , I_a depends only on the value $U_a^{3/2} / d^2$. This fact indicates that the cause of anomalous saturation is due to the gradual saturation of the emissive current on the surface of the thermocathode, heterogeneous in its output work, and not to the Schottky effect.

Sum 1258

AUTHORS: Zingerman, Ya.P. and Soltyk, V.Ya.

109-12-6/15

TITLE: Chemical Action of Oxygen on the Electron Emission of Porous Metal-film Cathodes (L-cathodes) (Khimicheskoye vozdeystviye kisloroda na elektronnyu emissiyu poristogo metallo-plenochnogo katoda)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol. II, No.12, pp. 1512 - 1518 (USSR)

ABSTRACT: The method employed for this investigation is similar to that used by Wagener and Kulik (Refs. 2, 3). This consists of measuring periodically the emission of the investigated cathode during its operation in an atmosphere of gas at a certain, constant, known pressure. The measurement of the emission current was done by means of exponential pulses having a duration of about 100 μ sec and a repetition rate of about 2 p.p.s. The experimental cathodes were of the rod type, having a diameter of 3 to 5 mm; these were filled with a triple oxide and a tantalum-powder activator; their emissivity was of the order of 3 A/cm² at a temperature of 1 000 °C. The effect of the partial oxygen pressure on the emission of the cathodes is illustrated in Figs. 1 to 6. Figs. 1 illustrate the increase in the oxygen pressure as a function of time (in minutes) and the corresponding decay of the emission current. Fig. 2 shows the

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Chemical Action of Oxygen on the Electron Emission of Porous Metal-film Cathodes (L-cathodes)

effect of the oxygen poisoning at a pressure $p = 2.5 \times 10^{-6}$ mmHg at three different temperatures, while Figs. 3 show the poisoning effect and the reactivation of the cathode at $p = 1 \times 10^{-6}$ mmHg and the cathode temperature $T_K = 1010^\circ\text{C}$; similar curves for $p = 1.7 \times 10^{-6}$ and $T_K = 1010^\circ\text{C}$ - Fig. 4. The effect of nitrogen on the emission current of the cathodes is illustrated by the experimental curves of Fig. 7. From these, it follows that the presence of nitrogen is harmless at temperatures higher than 1100°C and at pressures lower than 5×10^{-6} mmHg. It was also found that the presence of hydrogen does not poison the cathode, provided it is operated at temperatures above 850°C and at pressures of less than 10^{-5} mmHg. The main conclusion derived from the investigation is that a satisfactory operation of an L-cathode requires that at operating temperatures of about 1000°C , the partial pressure of oxygen be less than 10^{-7} mmHg. The author expresses his gratitude to Corresponding Member of the Ac.Sc. Ukrainian SSR N.D. Morgulis for his valuable advice.

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109-12-6/15

Chemical Action of Oxygen on the Electron Emission of Porous Metal-film Cathodes (L-cathodes)

There are 7 figures and 12 references, 6 of which are Slavic.

ASSOCIATION: ~~Physicist Institute AS Ukrainian SSR, Kiyev~~
(Institut fiziki AN USSR, g. Kiyev)

SUBMITTED: May 8, 1957

AVAILABLE: Library of Congress

Card 3/3

ZINGERMAN, Ya.P.

AUTHORS: Zingerman, Ya.P. and Morozovskiy, V.A. 109-12-10/15

TITLE: Electron Emission and the Rate of Evaporation of Barium from Porous Metal-film Cathodes (L-cathodes) Having Barium-oxide Dispensers (Elektronnaya emissiya i skorost' ispaeniya bariya iz poristykh metallo-plenochnykh katodov s oksidno-bariyevym napolnitem)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.17, No.12, pp. 1536 - 1543 (USSR)

ABSTRACT: One of the shortcomings of the "classical" L-cathode is the fact that it employs carbonates of rare earths (Ba, Sr and Ca). The electrical properties of the cathode can be improved by introducing into the dispenser a pre-determined quantity of different activating materials (Ta, W, Se, etc.) which serve as the reducing agents. This problem was first investigated by the authors in 1955, and a special method of preparing the cathodes was then worked out. The method consists of building the dispenser in the form of two closely fitting cups and filling them with a mixture of the oxide and a powdered, metallic activator. The "ampule" (dispenser) so prepared is then pressed in a protective atmosphere of nitrogen in order to achieve good vacuum tightness. The present work describes some of the investigations carried out on the

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Electron Emission and the Rate of Evaporation of Barium from Porous Metal-film Cathodes (L-cathodes).

cathodes of that type. The cathode is shown in detail in Fig.1; it consists of: 1) a tungsten plug; 2) the ampule with barium oxide; 3) the lower support; 4) the internal cylinder; 5) the external cylinder; 6) heater, and 7) heater holder. The diameter of the tungsten plug was 3 - 5 mm and the investigated cathodes differed from each other by the composition of the active mixture in the ampule and the porosity of the tungsten plug. The cathode was situated in a special experimental tube (see Fig.2). The electron emission in the tube was measured by means of exponential pulses applied to the anode. The experimental results are shown in Figs. 3, 4, 5, 6 and 7 and in two tables (on pp. 1539 and 1540). From the data obtained, it is concluded that for a given type of plug (e.g. tungsten) and a given material of the ampule, the replacement of tantalum activator by a tungsten activator results in a decrease in the rate of evaporation of barium, while the emission of the cathode remains unchanged. An even greater decrease in the rate of evaporation can be obtained by using a molybdenum activator, but, in this case, the emissivity of the cathode

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Electron Emission and the Rate of Evaporation of Barium from Porous Metal-film Cathodes (I-cathodes).

also decreases. Furthermore, it was found that the activation process in the latter cathode was very difficult. The authors thank Corresponding Member of the Ac.Sc. Ukrainian SSR N.D. Morgulis for his constant interest and valuable advice. There are 7 figures, 2 tables and 7 references, 4 of which are Slavic.

ASSOCIATION: Physics Institute AS Ukrainian SSR, Kiyev
(Institut fiziki AN USSR, g. Kiyev)

SUBMITTED: May 8, 1957

AVAILABLE: Library of Congress
Card 3/3

ZINGERMAN, Y. B.

On some processes in an oxide thermocathode during prolonged operation.
Ukr. fiz. zhur. 2 no. 13-190 April '57. (MIRA 10:6)

1. Institut fiziki Akademii nauk URSR.
(Electron tubes)

SOV/109-3-8-6/18

AUTHORS: Zingerman, Ya.P. and Morozovskiy, V.A.

TITLE: Investigation of the Process of the Penetration of Barium through the Porous Plug of an L-cathode
(Issledovaniye protsessa prokhozheniya bariya skvoz' gubku poristogo metalloplenochnogo termokatoda)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, nr 8, pp 1017 - 1023 (USSR)

ABSTRACT: Measurements were carried out by means of a special tube (Figure 1) which was in the form of a diode; this contained the investigated cathode A and the anode B. The anode was in the form of a movable tungsten plate which could be periodically cleaned inside the tube by raising its temperature up to 2 000 °C by means of the electron bombardment, provided from a tungsten helix. The cathode was fixed on movable supports and could be set in two different, fixed positions. In one of these positions (Figure 1a), the plug of the cathode was in front of the anode; the electron emission and the velocity of the evaporation of barium were measured in this position. In the second position (Figure 1b), the aperture of the cathode chamber was in front of the anode and the amount

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SOV/109-3-8-6/18

Investigation of the Process of the Penetration of Barium through the Porous Plug of an L-cathode

of barium issuing from the aperture was measured. The barium evaporation velocity from the plug and from the cathode chamber were determined by measuring the variation in the work function of the anode which was subjected to a bombardment by barium (issuing from the aperture in the chamber the plug). This method of measurement was described in detail in an earlier work by the authors (Ref 2). The experimental tube of Figure 1 was also used to measure the electron emission of the cathode by using exponential voltage pulses at the anode. The pulses had a time constant of about 100 μ sec and a repetition frequency of 1-2 pps. Three types of cathode were used; the chemical composition of these, their emission density and the evaporation velocity (in $\mu\text{g}/\text{cm}^2\text{h}$) are shown in the table on p 1020. The dependence of the barium vapour pressure on the temperature for the cathode of the first type is illustrated in figure 2; Curve 1 shows the pressure inside the cathode chamber, while Curve 2 gives the pressure above the cathode plug. Similar curves for the cathode of the third type (see the table) are shown in Figure 3.

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the Porous Plug of an L-cathode

The quantities p_K and p_r inside
the chamber and above the cathode plug. The ratio of p_K/p_r as a

function of temperature, for the cathode of the third type,
is plotted in figure 4. From the above investigation, it
is concluded that the migration of barium through the
plug can be explained by two processes. At low pressures,
the mechanism of barium transfer can be explained by the
migration of barium along the walls of the pores of the
tungsten plug. On the other hand, at high barium-vapour
pressures (inside the cathode chamber), the transfer is
caused by the Knudsen-type leakage of the substance through
the pores.

The authors make acknowledgement to Corresponding Member of
the Ac.Sc.Ukrainian SSR N.D. Morgulis for his interest
in this work and for valuable advice.

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SOV/109-3-3-6/18
Investigation of the Process of the Penetration of Barium through
the Porous Plug of an I-cathode

There are 4 figures, 1 table and 10 references, 6 of
which are Soviet and 4 English.

ASSOCIATION: Institut fiziki AN USSR, Kiyev (Institute of
Physics of the Ac.Sc. Ukrainian SSR, Kiyev)

SUBMITTED: January 29, 1958

Card 4/4
1. Barium--Properties: 2. Cathodes (Electron tube)--Performance
3. Barium--Vaporization 4. Thermionic emission

84089

S/181/60/002/009/032/036
B004/B056

9.3120 (1137, 1138, 1331)

AUTHORS: Zingerman, Ya. P., Ishchuk, V. A., Morozovskiy, V. A.

TITLE: \checkmark The Electronic and Adsorption Properties of Films⁶ of
Barium Atoms on Tungsten \checkmark

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2276-2286

TEXT: In an earlier paper (Ref. 1), the authors described a new method of studying the kinetics of adsorption processes. In the present work, this method was used for the adsorption of barium on tungsten surfaces. The experimental tube and the measuring methods are described in Ref. 1. A target made from a polished, 0.5 mm thick sheet of high-purity tungsten, whose surface was purified by electron bombardment at $T > 2600^\circ\text{K}$, was used. The target surface in this case had a microcrystalline structure (size of the microcrystals 50 - 100 μ). In individual cases, 20 μ thick tungsten sheets were used, and the microcrystals attained a size of 0.2 - 0.7 mm after the electron bombardment. "БАТИ" ("BATI") getter pills with 99% of Ba were used as a barium source. The investigations were carried out at $(1 - 2) \cdot 10^{-9}$ torr. The change in the work function of the tungsten during

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The Electronic and Adsorption Properties of
Films of Barium Atoms on Tungsten

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B004/B056

covering with barium atoms was measured by means of an electron beam. The dependence of $\Delta\psi$ on the surface concentration n of Ba was determined by two methods: a) By measuring the desorption heat Q as a function of n ; b) by measuring $\Delta\psi$ as a function of the adsorption time t in a constant atom stream N_1 . The experimental data are given in Fig. 1: Ion current recorded by an ЭПТ-09 (EPP-09) potentiometer as a function of t and of the temperature of the W target (300 - 1650°K); Fig. 2: surface concentration n of the barium atoms as a function of time and temperature; Fig. 3: desorption heat Q and modification of the work function $\Delta\psi$ as a function of n ; Fig. 4: $\Delta\psi$ as a function of t and temperature; Fig. 5: $\Delta\psi$ as a function of t and temperature in a W target purified by heating; Fig. 6: $\Delta\psi$ in a target purified by electron bombardment; Fig. 7: Q as a function of the coating degree ν . The dependence of $\Delta\psi$ on temperature and on the manner of treating the target (occurrence of a minimum for $\Delta\psi(n)$ at low temperatures), which was found in this paper, is explained by the change in the impurity content of the adsorbed barium film. The impurities are probably atoms of the residual gas whose stream is of the same order of magnitude also at 10^{-9} torr as the stream of barium atoms. This could be

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B004/B056

experimentally proven by the adsorption of Ba on a W target covered with an adsorbed residual gas film (Fig. 8). Electron bombardment leads to a lower durability of the residual gas on the target (Fig. 9). The change in $\Delta\psi$ is related to the dipole effect p of the adsorbed atom. The following relation is obtained from equation $\Delta\psi = 4\pi pn$ (2): $n^{3/2} = (p_0/5\alpha)(1/p) - 1/2\alpha$

(4), where α is the lattice constant. This interrelation was confirmed by experimental verification (Fig. 10). The authors drew the following conclusions: The adsorption of the barium atoms on the tungsten surface is not activated. The condensation coefficient equals unity, and with a covering degree of from $\nu \approx 1$ to $\nu \approx 1.5$ it does not depend on the latter nor on temperature. In the adsorption of barium atoms on W bombarded with electrons, the value of $\Delta\psi$ monotonically approaches a limit which is near the work function for compact Ba. This limit is attained in the case of

monatomic covering $n \approx (5 - 6) \cdot 10^{14}$ atom/cm². The authors thank I. M. Dykman, Candidate of Physical and Mathematical Sciences, for his assistance and discussions. There are 10 figures and 11 references: 6 Soviet, 2 US, 3 British, and 1 German. X

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The Electronic and Adsorption Properties of
Films of Barium Atoms on Tungsten

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S/181/60/002/009/032/036
B004/B056

ASSOCIATION: Institut fiziki AN USSR, Kiyev (Institute of Physics of
the AS UkrSSR, Kiyev)

SUBMITTED: February 22, 1960

X

Card 4/4

89281

S/181/61/003/001/014/042
B006/B056

26.2312

AUTHORS: Zingerman, Ya. P. and Morozovskiy, V. A.

TITLE: An ionization method of investigating the kinetics of adsorption processes on the surface of solids

PERIODICAL: Fizika tverdogo tela, v. 5, no. 1, 1961, 123-131

TEXT: As the conventional methods of investigating the adsorption and desorption have several drawbacks, the authors have developed a new experimental method which is based upon measuring the intensity of atom beams by means of their ionization by electron impact. The fundamentals of this method, the method itself, and the experimental means are described in the present paper. The ionization method of investigating the kinetics of sorption processes, suggested by Zingerman, is described on the basis of Fig. 1. Fig. 1a schematically shows the main elements of the tube used for the experiments: 1) is the source of the atom or molecule beam, 2) is the diaphragm through which the latter passes, 3) is a recording and measuring device, 4) is an ionization chamber, and 5) is the target-adsorbent. The beam may be quickly shut off by 6). As 4) adjoins 5), not only the direct

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B006/B056

An ionization method of...

atom beam, but also the reflected and desorbed atoms (coming from the target surface) fly through the chamber. Therefore, the ion current in the collector circuit is due to ionizations by both direct and reversed atoms. These two intensity components for the atom fluxes N_1 and N_2 are given by $I_1 = \alpha_1 N_1$ and $I_2 = \alpha_2 N_2$; α_1 is related to the ion charge, the impact ionization cross section of the atom, the intensity and geometry of the bombarding electron beam, the flux intensity distribution in the ionization chamber and the temperature of the sources of N_1 and N_2 . It is therefore possible, by measuring I_1 and I_2 and their dependence on time and temperature of the adsorbents, to obtain the entire complex of experimental data necessary for investigating the kinetics of sorption processes. The experimental realization of this idea met with a number of difficulties which are described in detail. Provided certain conditions are satisfied, they may be avoided. In compliance with these conditions, a tube was constructed, which is shown in Fig. 2. The target is a hot tantalum cylinder (I) which may be placed above the auxiliary tungsten electrode (V), above the ionization chamber (II), or above the electron gun (VI). The ionization chamber

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An ionization method of...

is a three-electrode system (cathode, anode, collector). The entire system is surrounded by a cylindrical shield (electron reflector). The ionization chamber has an operating volume of only 0.5-0.6 cm³. By means of a Ba beam the tube operated under the following conditions: $V_{an} = 200$ v, $V_{cath} = -90$ v, $I_e = 4 - 5$ ma. The Ba ion flux was 10^{10} atoms/cm².sec, which corresponds to an ion current of $\approx 10^{-13}$ a. IV denotes the molecule gun (the electron gun, VI, serves for measuring the work function by the contact-potential method), and III is the shutter for shutting off the atom beam. Studies of the $\Delta I(t)$ and $n(t)$ curves by means of this tube are finally discussed. Fig. 4 shows ΔI as a function of the duration of adsorption of Be atoms on W; the dependence of the surface concentration of the Be atoms on the adsorption time was determined from these curves; Fig. 5 shows the $n(t)$ curves thus obtained. As the adsorption of Be on W does not essentially affect the work function of W, the determination of the adsorption properties of the system W-Be is practically impossible by the use of conventional methods (electron emission, contact-potential difference); by means of the method described here, however, this is well possible. The authors thank Professor N. D. Morgulis, Corresponding Member AS UkrSSR, for discussions.

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S/181/61/003/001/014/042
B006/B056

An ionization method of...

Ya. M. Kucherov is mentioned. There are 5 figures and 6 references:
3 Soviet-bloc and 2 non-Soviet-bloc. X

ASSOCIATION: Institut fiziki AN USSR, g. Kiyev (Institute of Physics,
AS UkrSSR, Kiyev)

SUBMITTED: February 22, 1960 (initially)
May 3, 1960 (after revision)

Card 4/6

22039

S/181/61/003/004/005/030
B102/E214

26.2531
26.2312

24.7400 (1160, 1143)

AUTHORS: Zingerman, Ya. P., Ishchuk, V. A., and Morozovskiy, V. A.

TITLE: Adsorption of atoms of the alkaline-earth group on polycrystalline tungsten

PERIODICAL: Fizika tverdogo tela, v. 3, no. 4, 1961, 1044-1053

TEXT: With regard to the adsorption of alkaline earth by tungsten, the literature is still very incomplete and the published data diverge. Therefore, the authors planned an exhaustive investigation of the thermionic and adsorption properties of atomic films of all alkaline earths on tungsten. The system W - Ba was already studied by them in a previous article (Ref. 1: FTT, II, 9, 2276, 1960) where, as here, the method used was one newly developed by the authors. The method is called "ionization method for the investigation of adsorption kinetics on surfaces of solid bodies" and is described in Ref. 6 (FTT, II, 12, 1960). The results of investigations relative to the adsorption of the residual alkaline earth on tungsten are given in the present paper. The ionization method was used to study the adsorption of Mg and Be; for Sr

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S/181/61/003/004/005/030
B102/3214

Adsorption of atoms ...

and Ca the simpler method of contact potential difference was used, which is based on the measurement of the change in the work function of tungsten during isobaric adsorption. This latter method was proposed and described in Ref. 4 (Yu. S. Vedula, V. M. Gavrilyuk, UFZh, 3, 632, 1958). The metals Sr, Ca, and Mg were obtained from SrO, CaO, and MgO, respectively, by thermal reduction with tantalum. Be was obtained from repurified chemically pure Be metal by evaporation. The tungsten target was an optically polished tungsten plate of high purity, purified in vacuo after electron bombardment at $T > 2600^{\circ}\text{K}$. It had a polycrystalline structure in the final state with a crystallite size of 50-100 μ . The results of the investigations are illustrated in the form of diagrams, some of the typical ones being reproduced here. Numerical data are collected in a table. For example, Figs. 3 and 4 show the work function $\Delta\phi$ as function of the surface concentration n of the adsorbed atoms. The theoretical relations $\Delta\phi = 4\pi p_0 n / (1 + 9\alpha n^{3/2})$; $n^{3/2} = 4\pi p_0 n / 9\alpha \Delta\phi - 1/9\alpha$, as well as the values $\Delta\phi_0$ and n_0 in the maximum of the curve $\Delta\phi(n)$: $\Delta\phi_0 = 4\pi p_0 n_0 / 3$ and $n_0 = (9\alpha/2)^{-2/3}$ are correctly reproduced by the results of measurement;

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S/181/61/003/004/005/030
B102/B214

Adsorption of atoms ...

p_0 denotes the dipole moment for $n = 0$ and α the polarizability of the adsorbed atoms. The experimental results lead to the following conclusions: 1) The condensation coefficient of Ba, Mg, and Be on W in a large range of T and n equals one. If the flux of the atoms being adsorbed is constant, the rate of adsorption is constant, which indicates the mobility of the adsorbed atoms in the surface layer. 2) On adsorption of Be on W the adsorbed atom shows no marked dipole moment. The work function of a thin atomic layer of Be on W equals 4.53 ev. 3) The adsorption of Ba, Sr, Ca, and Mg on polycrystalline W which has been heated to remove gas impurities and subjected to electron bombardment, shows a monotonic decrease of $\Delta\phi$ of W during the formation of a monatomic coating. Adsorption of the same atoms on a cold ($T \approx 300^\circ\text{K}$) W surface leads to the usual maximum of the $\Delta\phi(n)$ curve, which is a consequence of interaction of the adsorbed atoms with the residual gas on the W surface. 4) The change of $\Delta\phi$ on adsorption of Ba, Sr, Ca, and Mg on W can be described theoretically if the dipole moment of the adsorbed atom at $n = 0$, its polarizability, and the surface concentration n_M of the adsorbed atoms in a monatomic layer are taken into consideration. 5) Desorption of

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B102/B214

Adsorption of atoms ...

alkaline earth from W is characterized by a linear decrease of the desorption heat Q with increasing n . This must be explained as due to the adsorption inhomogeneity of W, and not to a change in the interaction energy of the adsorbed atoms. The electrostatic binding between alkaline earth and W appears to be unimportant for adsorption. The authors thank Yu. G. Ptushinskiy, Candidate of Physical and Mathematical Sciences, and Engineer B. A. Chuykov for the mass-spectrometric analysis. There are 7 figures, 1 table, and 11 references: 7 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics AS UkrSSR, Kiyev)

SUBMITTED: May 24, 1960

Card 4/⁴₁₅

18 8310

38943
S/181/62/004/007/015/037
B102/B104

AUTHORS: Zingerman, Ya. P., and Morozovskiy, V. A.

TITLE: Interaction of molecular oxygen with the surface of tungsten

PERIODICAL: Fizika tverdogo tela, v. 4, no. 7, 1962, 1833-1840

TEXT: The adsorption of molecular oxygen on solid tungsten was investigated by a version of the ionization method used for investigating the kinetics of adsorption which the authors published in PTT, v.3, 123, 1961. Data relating to the kinetics of adsorption are derived from measurements of the time dependence of the ion current $I = I_1 + i_o + i_g$.

The components of I are the currents of molecules striking the target, the currents of molecules elastically reflected from the target, the currents of molecules thermally desorbed by the target, and the currents of the residual gas molecules in the ionization chamber. Using the relations between current and flux: $I_1 = \alpha_1 N_1$, $i_o = \alpha_o v_o$, $i_g = \alpha_g v_g$, and $\Delta I = I_1 + i_o + i_g$ as well as the quantities illustrated in Fig. 3 it is possible to describe the surface concentration of adsorbed molecules by

Card 1/03

Interaction of molecular oxygen ...

S/181/62/004/007/015/037
E102/B104

$$n(t) = \int_0^t (N_1 - v_o - v_g) dt = \int_0^t \left[\frac{I_1}{\alpha_1} - \frac{I_0}{\alpha_0} - \frac{I_g}{\alpha_g} \right] dt. \quad (6).$$

Since $N_1 = v_{o\infty} + v_{g\infty}$, it follows that

$$n(t) = \int_0^t \left[\frac{i_{o\infty} - i_o}{\alpha_o} + \frac{i_{g\infty} - i_g}{\alpha_g} \right] dt, \quad (9).$$

If $\alpha_o = \alpha_g$, then $n(t) = \frac{1}{\alpha_g} \int_0^t (\Delta I_\infty - \Delta I) dt = S/\alpha_g$, and the reflection coefficient is given by $k(t) = i_o(t)/(i_{o\infty} + i_{g\infty})$. If N_1 is known, it is possible to calculate $\alpha_g = (i_{o\infty} + i_{g\infty})/N_1$. The validity of these relations is based on the experimental arrangement fulfilling certain conditions. This was carefully checked, the necessary linearity of $I_1(P_I)$ and $\Delta I_\infty(N_1)$ being verified. P_I denotes the oxygen pressure in

Card 2/3

Interaction of molecular oxygen ...

S/181/62/004/007/015/037
B102/B104

the source chamber. The apparatus proved suitable for work with molecular beams in a very high vacuum (up to $3-5 \cdot 10^{-10}$ mm Hg) and also for investigations on N_2 , CO, etc. There are 6 figures.

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics
AS UkrSSR Kiyev)

SUBMITTED: February 10, 1962

+

Card 3/4 3

DYKMAN, I.M.; ZINGERMAN, Ya.P.; ISHCHUK, V.A.; MOROZOVSKIY, V.A.

Nonequilibrium electron emission from a p - n-junction in silicon. Fiz. tver. tela 4 no.8:2015-2025 Ag '62. (MIRA 15:11)

1. Institut fiziki AN UkrSSR, Kiyev.
(Electrons--Emission) (Junction transistors)

39979
S/181/62/004/008/024/041
B102/B104

26.2531
AUTHORS:

Zingerman, Ya. P., and Ishchuk, V. A.

TITLE:

Adsorption of barium atoms on tungsten

PERIODICAL:

Fizika tverdogo tela, v. 4, no. 8, 1962, 2212-2213

TEXT: The authors continue to study the dependence of the tungsten work function ϕ on the degree θ of coating. For W-Ba, W-Ca, W-Sr, W-Mg the $\phi(\theta)$ curves had been found to depend greatly on the W surface temperature during the coating process (cf. FTT, 2, 2276, 1960; 3, 1044, 1961), and here the system W-Ba was again investigated under somewhat modified conditions (better vacuum 10^{-10} mm Hg, controlled gas source; use of highly purified polycrystalline $20\text{-}\mu$ W film - short-period annealing at 3000, long-period at 2500°K). Results: The mean work function of tungsten is a monotonic function of the quantity of adsorbed Ba atoms. The presence of gas impurities in the coating leads to the occurrence of a minimum in $\phi(\theta)$. Thus it is confirmed that the presence of electro-negative gas molecules in the adsorbed layer of alkaline-earth metals causes a

Card 1/2

Adsorption of barium atoms on tungsten

S/181/62/004/008/024/041
B102/B104

reduction of the tungsten work function. There is 1 figure.

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics of the
AS UkrSSR Kiyev)

SUBMITTED: March 28, 1962

Card 2/2

S/0181/64/006/004/1172/1181

ACCESSION NR: APL028448

AUTHORS: Zingerman, Ya. P.; Ishchuk, V. A.

TITLE: The role of the surface layer in the interaction of molecular oxygen with a tungsten surface

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1172-1181

TOPIC TAGS: adsorption, oxygen, tungsten, molecular beam, chemisorption, work function, surface layer

ABSTRACT: The authors measured the work function as a means of studying the interaction between a molecular beam of oxygen and a tungsten surface especially freed from impurities by heating at 3000K in a vacuum of about 10^{-9} cm Hg. It was found that the curves defining the change in work function with time of adsorption differ in a number of features: in the temperature interval 300-850K they differ at each end of the interval both in initial angular coefficient of the function and in limiting value, but the change in work function is steady; between the extremes, the change in function is not steady but reaches a maximum more rapidly the higher the temperature of the target during adsorption; the initial steepness of the work-function curve remains constant throughout this temperature interval except at the 850K boundary, where it declines sharply and again remains constant in the

Card 1/2

ACCESSION NR: AP4028448

higher temperature interval (850-1040K); in this second interval a plateau is reached on the curve, the value depending on the temperature of the target; regardless of the value of the plateau, the curves after the plateau are roughly parallel. These features indicate that the formation of a chemisorption oxygen film with a work function of about 1.8-1.9 eV on a tungsten surface is an active process at low temperatures (300-850K) associated with the transition of the adsorbent film from one adsorbent state to another. The adsorption of oxygen at a tungsten surface at temperatures above 850K is accompanied by the introduction of oxygen into the near-surface layer of metal. In the temperature range 850-1040K, the amount of introduced oxygen increases with temperature to possibly 2 or 2.5 times the quantity of oxygen adsorbed on the surface. Orig. art. has: 8 figures.

ASSOCIATION: Institut fiziki AN UkrSSR, Kiev (Institute of Physics AN UkrSSR)

SUBMITTED: 10Nov63

ENCL: 00

SUB CODE: SS, M1

NO REF SOV: 003

OTHER: 012

Card 2/2

ZINGERMAN, Ya.F.; ISHCHUK, V.A.

Use of the electron-stimulated desorption method in studying
oxygen-tungsten interaction. Fiz. tver. tela 7 no.1:227-237
Ja '65. (MIRA 18:3)

1. Institut fiziki AN UkrSSR, Kiyev.

ZINGERMAN, Ya.P.; ISHCHUK, V.A.

Role of a subsurface layer in the interaction of molecular oxygen with a tungsten surface. Fiz. tver. tela 6 no. 4: 1172-1181 Ap '64. (MIRA 17:6)

1. Institut fiziki AN UkrSSR, Kiyev.

L 8590-66 EWT(m)/T/EWP(b)/EWA(a)/EWP(t) IJP(c) JG/JD
ACCESSION NR: AP5019898

UR/01/21/65/0017/008/2569/2571

AUTHOR: Zingerman, Ya. P.; Ishchut, V. A.; Krutikina, T. A.

TITLE: Some features of the interaction between oxygen and the surface of single-crystal tungsten

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2569-2571

TOPIC TAGS: oxygen, tungsten, single crystal, surface active agent, metal oxidation, adsorption

ABSTRACT: This is a continuation of earlier work (FTT v. 6, 1172, 1964 and v. 7, 227, 1965) on the interaction between oxygen and polycrystalline tungsten. The purpose of the present investigation is to determine the effect of the crystallographic planes on the interaction of oxygen with tungsten. It is shown that the interaction of oxygen with tungsten is dependent on the crystallographic planes of the tungsten surface.

L 8590-66

ACCESSION NR: AP5019898

the two surfaces. On the closer packed [110] face there was no interaction between the adsorbed oxygen atoms and the tungsten atoms. The decrease in the work function of the [100] surface is also discussed. The authors thank D. A. Gerasimovich for indexing the single-crystal targets by the slow-electron-diffraction method. Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki AN UkrSSR, Kiev (Institute of Physics AN UkrSSR)

ENCL: 00

OTHER: 003

SUBMITTED: 09Apr65

NR REF SOV: 002

SUB CODE: 88

124-57-1-1101

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 153 (USSR)

AUTHOR: Zingerman, Yu. M.

TITLE: Graphic Determination of the Influence Numbers for the Forces Acting Within the Elements of a Three-dimensional Bar System (Graficheskoye opredeleniye chisel vliyaniya dlya usiliy v elementakh prostranstvennoy sterzhnevoy sistemy)

PERIODICAL: Tr. Khabarov. in-ta inzh. zh. -d. transp., 1956, Nr 9, pp 182-191

ABSTRACT: Bibliographic entry

1. Structures--Stresses--Bibliography 2. Beams--Stresses
--Mathematical analysis

Card 1/1

ZINGERMAN, Yu.M., kand. tekhn.mauk

Using the projection method of kinematic analysis of spatial
mechanisms with lower pairs, Trudy Khab. IIT no.10:68-78
'59. (MIRA 12:7)

(Mechanical movements)

ZINGERMAN, Yu.M., dotsent, kand. tekhn. nauk

Determination of the moment of force relative to an axis in
an orthogonal projection. Trudy Khab. III no.16:176-108 284
(MIRA 1831)

ZINGERMAN, Yu.M., assistant.

Graphic determination of influence numbers for stresses in elements
of three-dimensional rod systems. Trudy Khab.IIT no.9:182-191 '56.
(Mechanics, Analytic) (MLRA 9:12)

ZINGERMAN, Yu. M.

ZINGERMAN, Yu. M.: "A graphic solution of the problems of spatial kinematics, based on the projection method." Min Higher Education USSR. Moscow Machine-Tool and Tool Inst imeni I. V. Stalin. Moscow, 1956.
(Dissertation for the Degree of Candidate in Technical Sciences).

SO: Knizhaya letopis', No 23, 1956

ZINGERMAN, Yu. M., assistant.

Determining displacements of joints in space bar systems using
the methods of descriptive geometry. Trudy Khab. III no. 7:98-124
'54. (MLBA B:1)

(Structures, Theory of)

VALKOVA, Z.; TRNKA, V.; VAVRA, J.; ZINGEROVA, O.

Cystometric examination of children with enuresis. *Cesk. pediat.* 17
no.3:216-224 Mr '62.

1. I detska klinika katedry nem. pediatrie v Prase, prednosta prof.
dr. J. Svejcar, DrSc.

(ENEURESIS *physiol*) (BLADDER *physiol*)

137 AND 138 (1954)

PROCESSING AND PROPERTY INDEX

ca

30

Unified synthetic rubber. T. L. Zil'berovich and B. Ya. Oshpovskii. *Russ. Chem. Rev.* 1950, April 30, 1950. Na birinyi rubber without the incorporation of antioxidants is rolled into thin sheets, kept in O₂ or an O₂-N₂ gas for several days at ordinary or elevated temp., and prepd. for vulcanization in the usual manner.

ALB-51A METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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ZINGHER, S.; TEODOROVICI, G.

Some considerations relative to the biosynthesis of penicillinase and obtainment of antipenicillinasic serum. p. 101.

REVISTA DE CHIMIE. Bucuresti, Rumania. Vol. 10, no. 2, Feb. 1959.

Monthly List of East European Accessions. (EEAI), LC. Vol. 8, no. 9, Sept. 1959.
Uncl.

TEODOROVICI, Gr., dr.; ZINGER, S., dr.

Penicillinases and antipenicillinases. Microbiologia (Bucur)
3 no.5:395-403 S-O'58.

ZINGHER, S.

IONESCU, C.; ICHIM, A.; ZHINGHER, S. Allicin, a phytoncide from *allium sativum*.
p. 213

Vol. 2, No. 3/4, July/Dec. 1954

Bucuresti, Rumania

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, No. 10,
Oct. 1956

1. ZINGLTIS, A., GRAUDINA, V., GRUZIS, A.
2. USSR (600)
4. Sapropelites
7. Dry distillation of sapropel in a pilot plant with external heating. Latv. PSR Zin. Akad. Vestis 4, '51.

ZINGITIS, Arturs; EVERSS, I., red.

[Combustion of fuel] Kirinama sadedzināsana. Rīga, Latvijas
Valsts izd-va, 1963. 214 p. [In Latvian] (MIRA 17:6)

CHOPIK, V.I.; ZINGEL', I.Ye.; TSELOVAL'NIK, I.N.

Purification of 2nd carbonation juice by means of bentonites.
Sakh. prom. J4 no. 12:11-13 D '60. (MIRA 13:12)

1. PKFI L'vovskogo sovmarkhoza (for Chopik).
2. Krasnyanskiy sakharney zavod (for Zingel', Tseloval'nik).
(Sugar manufacture)

L 15804-66 ENT(1)/FCC/DNA(H) CW

ACC NR: AP6006656

SOURCE CODE: UR/0203/66/006/001/0037/0042

AUTHOR: Zingler, A.

ORG: Institute of Henry Hertz, Academy of Sciences of the GDR (Institut Gertsalha Gertsal Akademii nauk GDR)

TITLE: Investigation of the dispersion of the normal diurnal rate of critical frequencies of the ionospheric F2 layer

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 1, 1966, 37-42

TOPIC TAGS: critical frequency, solar particle, ionospheric layer, solar flare, solar activity, Gauss law

ABSTRACT: Causes of diurnal variations of f_oF₂ are either of solar or of terrestrial origin. The scattering of f_oF₂ values is caused by solar particles penetrating into the ionospheric layers, by ionization radiation, by thermal effects, and by energy transfer. Solar flares of long duration occurring during a maximum of solar activity cause the largest diurnal rate of f_oF₂ variations. The diurnal rate of f_oF₂ variations is calculated using a formula...

for mean variations, and the error
VDC: 550.388.2
Card 1/2

L 1560a-66

ACC NR: AP6006656

special formula. The dispersion of variations is determined from the distribution of errors according to the Gauss law. The application of this law makes it possible to determine the gradients of the amplitude and phase for the function of $f_0 F_2$. The yearly rate of the dispersion distribution is presented graphically in the original article to the maximum and minimum of solar activity. The difference between the extreme states is about 0.5 Mc, and the distribution is similar

SUB CODE: 03/ SUBM DATE: 12Mar65/ ORIG REP: 004/ GEN REF: 001
SOV REF: 001/ ATD PRESS: 4260

Card 2/2 *in*

L 12855-66 EWT(1)/FCC/EWA(h)
ACC NR: AP6002747

SOURCE CODE: (9) UR/V
GDR (Institute)

AUTHOR: Zingler, A.

ORG: Heinrich Hertz Institut, Academy of Sciences, GDR (Institut Genrikha Gertsia Akademii nauk GDR)

TITLE: Harmonic analysis of the daily variation in critical frequencies of the F2 layer

SOURCE: Geomagnetizm i aeronomiya, v. 9, no. 6, 1965, 1025-1033

TOPIC TAGS: F layer, ionospheric propagation, critical frequency, diurnal variation, harmonic analysis

The author studies the diurnal variation in critical frequencies of the F2 layer as a function of season and solar activity. The basis of the study is a Fourier series for $f_oF2(\lambda)$ in which the various parameters are calculated from harmonic analysis of the diurnal variation. The analysis shows that the diurnal variation in critical frequencies of the F2 layer changes with the season of the year and solar activity, with a spread of 0.4—1.0 mc. Simple empirical interpolation formulas are derived on the basis of experimental data for approximating this variation. A comparison of the results of these

UDC: 550.388.2

ACC NR: AP6002747

formulas with the data in the literature shows satisfactory agreement. The relationships are sufficiently accurate for predicting short radio wave propagation. orig. acc. has 7 figures, 2 tables, and 13 formulas (14)

SUB CODE: 044 08 SERM DAT: 12Mar65/ ORIG REF: 901/ CTH REF: 007
ATT PRESS: 181

Card 2/2 H11

CA

20

Increasing the output of rotary kilns operating on natural gas. I. I. Zingman, Ya. B. Kiselev, S. G. Sokolaki, and M. G. Hais. *Tekhnicheskii Zhurnal*, No. 4, 19-20(1981).--The output of a rotary kiln fired by natural gas of 8007 kcal./cu.m. was raised from 27.3 to 30 tons/hr. by reducing the primary air intake (for combustion) to 15% of total air. Shortening the chain zone and hanging the chains closer together reduced the escaping dust and extended the service of the chains. Better combustion was achieved by redesigning the burner. M. Hais: V

AVAYEV, Sergey Aleksandrovich, kand. tekhn. nauk; BELOV, Vladimir Pavlovich; ZINGMAN, Aleksandr Aleksandrovich; MILOVIDOV, Nikolay Nikolayevich; SIDOROV, Yuriy Pavlovich; SIMIGIN, Petr Andreyevich; GANTUNG, S.V., retsenzent; KRYLOV, A.P., retsenzent; CHUGREYEVA, V.N., red.; VINOGRADOVA, G.A., tekhn.red.

[Automatization of technological processes in the cotton industry] Avtomatizatsiia tekhnologicheskikh protsessov khlopchatobumazhnoi promyshlennosti. Moskva, Gizlegprom, 1963. 279 p. (MIRA 16:11)

(Cotton machinery) (Automation)

AVAYEV, Sergey Aleksandrovich; ZINGMAN, Aleksandr Abramovich; KOZLOV, B.P.,
retsensent; ROZANOV, S.F., retsentsent; BELOV, V.P., retsentsent;
SHEYNGART, M.D., red.; SHVETSOV, S.V., tekhn. red.

[Fundamentals of the automation of technological processes in the
textile and other light industries] Osnovy avtomatizatsii tekhn-
logicheskikh protsessov v tekstil'noi i legkoi promyshlennosti.
Moskva, Izd-vo nauchno-tekhn.lit-ry RSFSR, 1961. 378 p.

(Automatic control) (Factories—Equipment and supplies) (MIRA 14:12)

ZINGMAN, L.I.; KISELEV, Ya. Ye.; SOZANSKIY, S.G.; ENTIS, M.G.

Increasing the output of a rotary kiln working on natural gas.
TSement 17 no.4:19-20 J1-Ag '51.
(Kilns, Rotary) (MLRA 9:8)

ZINGOR, Radomil, inż.

Conference on foundation engineering of panel constructions.
Poz stavy 12 no.11:500-503 '64.

ZINGLER, A.

Harmonic analysis of the diurnal variation of critical frequencies in the F2 layer. Geomag. i aer. 5 no.6:1025-1033 N-D '65. (MIRA 19:1)

1. Institut Genrikha Gertsya AN Gernanskoy Demokraticheskoy Respubliki. Submitted March 12, 1965.

ZINGORENKO, G. I.

The hydromechanization of caisson works. Moskva, Gos. transp.
zhel-dor. izd-vo, 1949. 207 p. (50-32153)

TG199.Z55

ZINGORENKO, G. I.

ANDREYEV, V. G., inzhener; ZINGORENKO, G. I., inzhener.

Bridge for the subway across the Moscow River. Gor.khoz.Mosk.
31 no.8:9-14 Ag '57. (MIRA 10:9)

(Moscow--Bridges)

ANDREYEV, V.G., inzh.; ZINGORINCO, G.I., inzh.; RUDOMAZIN, H.N., inzh.

Constructing a bridge over the Moskva River in Lushniki.
Transp. stroi. 8 no. 9:9-15 8 '58. (MIRA 11:10)
(Lushniki--Bridges, Concrete)

AUTHORS: Andreyev, V.G., Zingorenko, G.I. and Rudomazin, N.N. SOV/97-58-11-1/11
(Engineers)

TITLE: New Two-Tier Bridge in Moscow (Novyy zhelezobetonny dvukh"yarusny most v Moskve).

PERIODICAL: Beton i Zhelezobeton, 1958, Nr.11, pp.401-410 (USSR)

ABSTRACT: This reinforced concrete bridge over the Moskva river in the Luzhniki district of Moscow is nearing completion. On one side of the bridge is a 44 m long ramp and a 653 m long raised road carried on reinforced concrete supports. This road is in the precincts of the sports ground. The bridge spanning the river is 198 m long. On the other side of the bridge a similar raised road continues leading into a new road cut through the Lenin Hills. Here the Vorob'yevskiy road viaduct is situated. The top tier of the bridge is 21 m wide and is used for vehicle traffic. The bottom tier carries two underground railway lines. The bridge is constructed predominantly from precast reinforced concrete. Elements for the construction of the bridge were manufactured in factories

Card 1/4

New Two-Tier Bridge in Moscow.

SOV/97-59-11-1/11

of Glavmosstroy. They were assembled with bridge cranes of 50 m span and 45 t capacity, derrick cranes of 35 t capacity and lorry-mounted cranes. The work was started by Mintransstroy in May 1957. It was aimed to build a very light bridge as the permanent loading is only 70% of the maximum loading. The frame was constructed of concrete mark 500, the cross members of concrete mark 400 and a considerable number of other non-structural members were made from Keramzit concrete mark 200. Fig.1 shows the lay-out; Fig.2, perspective view of the bridge, and Fig.3 the constructional scheme of the same. The central span of the bridge is 108 m and the end spans are 45 m each. Two methods of calculation were used which gave similar results (diagrams in Fig.4). Fig.5 shows 2 precast segmental arches of an 'E' cross section forming part of an inner arch. The tie consists of a precast reinforced concrete unit (Fig.7), the reinforcement being a 45 mm diameter cable, formed from 3 mm diameter wires, with breaking limit of 180 kg/mm². This reinforcement is grouped together, situated

Card 2/4

New Two-Tier Bridge in Moscow.

SOV/97-58-11-1/11

along the tie-unit and clipped to it at intervals of 2.2 m (Fig.6). This exposed reinforcement will be examined after 18 months to 2 years to ascertain the magnitude of elongation and will be concreted in after rectification. The precast prestressed stiffening beams are tensioned by a series of hydraulic jacks (Fig.7). The larger stiffening beams between the internal arches are tensioned to a total stress of 4000 t by ten 500 t capacity hydraulic jacks. A similar tensioning is applied to the external arches by four jacks effecting a tension of 1650 t. Fig.8 shows a cross-section of the bridge at the lower tier level, Fig.9 the lay-out of the beams in the upper tier; Fig.10, cross-section of the upper tier of the bridge; Fig.11, the saddle detail of the arch frame. This type of saddle does not introduce complementary moments due to forces acting in the horizontal plane. The scaffolding used for the assembly of the bridge was erected on the river bank; this scaffolding was "Mostotrest" standard steel construction. The total weight of the bridge construction is 5000 t. The

Card 3/4

New Two-Tier Bridge in Moscow.

SOV/87-58-11-1/11

assembled unit was transported by means of special supports onto pontoons and placed on the bridge piers (Fig.12). Fig.14 shows the lay-out of the pontoons. The bridge piers were constructed on reinforced concrete piles, 40 x 40 cm in cross section, driven 12-15 m below the base of excavation (Fig.15). Each pier is carried on 256 piles. The height of the piers, including the foundation, is 8 m; their length is 40.5 m. The elevated road was constructed from precast stanchions, situated 23.7 m apart and bridged over by cantilevered trusses, the latter spanning 13.5 m and cantilevered out for 5.62 m on both sides (Figs.16 and 17). The roadway is formed of prestressed reinforced concrete "U" shaped beams weighing 38 t (Fig.18). These beams are covered with precast slabs which are joined with in situ concrete (Fig.19). There are 19 figures.

Card 4/4

ZINGORENKO, G.I.; FAYNSHEYN, I.S., inzh.

Some results of development in Soviet bridge engineering.
Transp. stroi. 8 no.1:1-5 Ja '58. (MIRA 12:12)

1. Glavnyy inzhener Glavmostostroya (for Zingorenko).
(Bridge construction)

ZINGORENKO, G.I.; KRYL'TSOV, Ye.I.; SILIN, K.S.

Building foundations of piers for bridges made of precast reinforced concrete shells. Transp. stroi. 14 no.2:9-14 F '64. (MIRA 17:4)

1. Glavnyy inzh. Glavnogo upravleniya po stroitel'stvu mostov Ministerstva transportnogo stroitel'stva SSSR (for Zingorenko).
2. Nachal'nik Gosudarstvennogo proyektno-izyskatel'skogo instituta po izyskaniyam i proyektirovaniyu bol'shikh mostov Gosudarstvennogo proizvodstvennogo komiteta po transportnomu stroitel'stvu SSSR (for Kryl'tsov).
3. Rukovoditel' otdeleniya iskusstvennykh sooruzheniy Vsesoyuznogo nauchno-issledovatel'skogo instituta transportnogo stroitel'stva Ministerstva transportnogo stroitel'stva (for Silin).

ZINGORENKO, G.I.

~~SECRET~~
Some problems in lowering construction costs of bridges.
Transp.stroi. 9 no.10:16-17 0 '59. (MIRA 13:2)

1. Glavnyy inzhener: Glavmostostroya.
(Bridge construction--Costs)

ZINGORENKO, Grigoriy Isaakovich, laureat Gosudarstvennoy premii,
zasl. stroitel' RSPSR; MAMAYEVA, Yelena Aleksandrovna,
inzh.; KARAY SHEV, I.A., red.

[Industrial construction of large bridges] Industrial'-
noe stroitel'stvo bol'shikh mostov. Moskva, Transport,
1964. 339 p. (MIRA 17:6)

PUKHOV, V.I., professor; ZINICHENKO, I.I.; PAKHAR'EDV, A.G.

Basic methods of the elimination of coenurosis and echinococcosis
in sheep. Veterinarika 33 no.4:31-34 Ap '56. (MLRA 9:7)

1. Stavropol'skaya krayevaya nauchno-issledovatel'skaya veterinarnaya
opytnaya stantsiya.
(Sheep--Diseases) (Worms, Intestinal and parasitic)

OZERSKAYA, V.N., kand. vet. nauk; ZINICHENKO, I.I., kand. vet. nauk;
FALYUSHIN, V.S., mladshiy nauchnyy sotrudnik

New anthelmintics against Haemonchus infestation of sheep.
Trudy VIGIS 11:210-227 '64. (MIRA 18:12)

ZINICHENKO, I. I., Cand Vet Sci -- (diss) "Data on ^{the} epizootology and prophylaxis of coenurosis and echinococcus of sheep in Stavropol'skiy Kray."

Mos, 1957. 18 pp (All-Union Order of Lenin Acad Agr Sci im V. I. Lenin, All-Union Inst of Helminthology im Academician K. I. Skryabin), 100 copies

(KL, 17-58, ¹¹¹~~100~~)
^

ZINIKHINA, Ye. A.

SEMENOVA, L.P., ZINIKHINA, Ye. A. (Kuybyshev (obl.), Artsibushevskaya ul.
d.161, korr.402)

Retrosternal appendicitis. Vest.khir. 80 no.4:134-136 Ap'58 (MIRA 11:5)

1. Iz kliniki fakul'tetskoy khirurgii (zav. - prof. S.L. Libov) i
kafedry rentgenologii i radiologii (zav. - prof. Ye. L. Kevesh)
Kuybyshevskogo meditsinskogo instituta.

(APPENDICITIS, case report

in appendix herniating through diaphragmatic hiatus
(Rus))

(HERNIA, DIAPHRAGMATIC, compl.

appendicitis in appendix herniating through hiatus
(Rus))

KEVESH, Ye.L., prof.; ZINIKHINA, Ye.A. (Kuybyshev)

X-ray diagnosis of celomic cysts of the pericardium. Klin.med.
40 no.5:52-55 '62. (MIRA 15:8)

1. Iz kafedry rentgenologii i radiologii (zav. - prof. Ye.L.
Kevesh) Kuybyshevskogo meditsinskogo instituta.
(PERICARDIUM---TUMORS) (CYSTS)

ZINGRENKO, A.M.

AID P - 4546

Subject : USSR/Electronics
Card 1/2 Pub. 90 - 9/9
Author : Zingrenko, A. M.
Title : Distortions in the duration of telegraph pulses under the influence of fluctuating errors in a FM system.
Periodical : Radiotekhnika, 3, 70-80, Mr 1956
Abstract : The author develops a formula for the change of frequency which results from the action of fluctuating errors in the FM transmission of signals. He determines the rms distortions on the width of the conducting band of the receiver filter. He also demonstrates the relation between the width of the conducting band and the deviations in the frequency and speed of telegraphing. The author finds the optimal value for the relation of the band width to the frequency deviation of the receiver filter at which the least rms distortions would be obtained. Eight diagrams, 2 Soviet references (1951, 1955).

AID P - 4546

Radiotekhnika, 3, 70-80, Mr 1956

Card 2/2 Pub. 90 - 9/9

Institution : None

Submitted : Je 10, 1955

ZINIC, S.

"Atomic energy in oil prospecting and production."

p. 319 (Nafta) Vol. 8, no. 10, Oct. 1957
Zagreb, Yugoslavia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4,
April 1958

ZINICH, Vasilii Nikolayevich [Zynych, V.M.]. Prinimial uchastie
KRIVOKOBYL'SKIY, I.F. [Kryvokobyl's'kyi, I.F.]; BROVENKO,
F.M., kand. sel'khoz. nauk, red.; ONOPRIYENKO, M.M., red.;
POTOTSKAYA, L.A. [Potots'ka, L.A.], tekhn. red.

[Business accounting combined with operational control
within individual production units; based on the example
of the "Zoria komunizmu" Collective Farm, Kosov District,
Stanislav Province] Vnutrihospodars'kyi rozrakhunok z
operatyvnym kontrolem; na prykladi kolhospu "Zoria komu-
nizmu," Kosivs'koho raionu, Stanislavs'koi oblasti. Kyiv,
Vyd-vo UASHN, 1962. 58 p. (MIRA 16:5)
(Collective farms--Finance)

ZINICHENKO, A., red.; MULLARI, O., tekhn. red.

[Traffic regulations for the streets and roads of the
U.S.S.R.] Pravila dvizheniia po ulitsam i dorogam
Soiuza SSR. Izd. 3. Tallin, Estonskoe gos.izd-vo, 1963.
119 p. (MIRA 17:1)

(Traffic regulations)

VANKER, Kh.; [Vanker, H.]; VEYNPALU, E. [Veinpalu, E.]; VERNIK, L.
ZINICHENKO, A., red.

[Health resorts of the Estonian S.S.R.] Kurorty Estonskoi
SSR. Tallinn, Eesti Raamat, 1964. 166 p. (MIRA 18:4)

BASHKOVICH, L., inshener; ZINICHEV, V., inshener.

Safety techniques in lumbering. Sel'.streit.11 no.7:20-21 JI '56.
(MLRA 9:9)

1.Glavkolkhozstroy Ministerstva gorodskogo i sel'skogo stroitel'stva RSFSR.

(Lumbering--Safety measures)

9.9300

25957

S/141/61/004/001/017/022
E133/E435

AUTHORS: Zinichev, V.A., Ryzhov, Yu.A. and Yudin, O.I.
TITLE: A method of studying the scattering of radiowaves in the troposphere at large angles
PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol.4, No.1, pp.177-178

TEXT: In most experimental work on the troposphere, measurements are made at small angles of elevation of the antenna. Reception at points below the radio-horizon then depend on a large variety of factors (diffraction round the Earth's surface, reflection from inhomogeneous atmospheric layers etc). The experiments described in this paper examined one of these - the scattering of radiowaves by turbulent inhomogeneities in the troposphere. The method was based on the use of antennae at large angles of elevation (20 to 60°) and with narrow directional beams (~40°). The transmitter and receiver were thus placed relatively close together (25 km). Under these circumstances, only scattering by turbulent inhomogeneities is important. The major difficulty in the experiment is that the direct signal at the receiver, and its internal noise, are larger than the scattered signal. It is
Card 1/2

A method of studying ... 25957

S/141/61/004/001/017/022
E133/E435

therefore necessary to use a synchronized impulse method in order to distinguish the signal. A wavelength of 3 cm was used with parabolic reflectors of 4 m diameter. A ferrite modulator was used at the input of the receiver and a stroboscopic arrangement at the output as a detector. It is known that this increases the signal to noise ratio. Preliminary experiments have so far been carried out at an angle of elevation $\sim 30^\circ$. The scattered power corresponded to a transmission coefficient of about 10^{-20} . This agrees with the theoretical values derived in Ref. 2 (R.A. Silverman, J. Appl. Phys., 27, 690 (1956)) and Ref. 3 (V.I. Tatarskiy, AN SSSR, M., 1959) on the basis of the theory of locally homogeneous turbulence. The authors thank M.M. Kobrin for suggesting the problem and for advice. There are 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to an English language publication reads as follows: R.A. Silverman, J. Appl. Phys., 27, 690 (1956).

ASSOCIATION: Nauchno-issledovatel'skiy radiofizichaskiy institut pri Gor'kovskom universitete (Scientific Research Institute on Radiophysics at the Gorkiy University)
 SUBMITTED: July 8, 1960
 Card 2/2

ZINICHEV, V.A.; RYZHOV, Yu.A.; YUDIN, O.I.

Method for investigating radio waves in the troposphere at wide angles. *Izv.vys.ucheb.zav.; radiofiz.* 4 no.1:177-178 '61.

(MIRA 14:8)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

(Ionospheric radio wave propagation)
(Microwaves)

ZINIKHINA, Ye.A. (Kuybyshev)

Clinical and roentgenological diagnosis of arteriovenous aneurysms
of the lung. Klin.med. no.12:103-107 '61. (MIRA 15:9)

1. Iz kafedry rentgenologii i radiologii (zav. - prof. Ye.L.
Kevesh) Kuybyshevskogo meditsinskogo instituta.
(ANEURYSMS) (LUNGS---DISEASES)

ZINIKHINA, Ye.I.

Clinical X-ray diagnosis of epithelial cysts of the mediastinum.
Vest. rent. i rad. 39 no. 3:7-12 My-Je '64.

(MIRA 18:11)

1. Kafedra rentgenologii i radiologii (zar. - prof. Ye.I. Kevash) Kuybyshevskogo meditsinskogo instituta.

S/124/61/000/008/022/042
A001/A101

AUTHOR: Zinin, A.I.

TITLE: Propeller stands

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 8, 1961, 40, abstract 8B254
("Tr. Kuybyshevsk. aviats. in-t", 1959, no. 8, 11 - 16)

TEXT: The author analyzes the accuracy of measuring torque and thrust of propeller turbine engines during their tests on stands with air propellers. He points out possibilities of accuracy increase. In conclusion the author arrives at a result that torque determinations can be more expediently performed in tests on stands with hydraulic brakes, and propeller stands can be used for adjusting the engines.

G. Maykapar

[Abstracter's note: Complete translation]

Card 1/1

ZININ, B.

Results of economy. Avt. transp. 37 no.7:8-9 JI '59.

(MIRA 12:10)

(Transportation, Automotive)

ZININ, B., inzhener; SMELYANSKIY, R., inzhener.

Special truck trains for transporting bricks on trays.
Avt. transp. 34 no.7:8-9 J1 '56.

(MLRA 9:10)

(Bricks--Transportation)

PETRUKHIN, C. and ZININ, B.

"Complex brigades for technical servicing and current repair in automobile management," Automobile, 1951.