

ARKHAROV, V.I.; KUZNETSOV, E.N.

Shape and size of the regions of coherent rearrangement of  
crystal lattices during ordered allotropic transformations.  
Fiz. met. i metalloved. 15 no.5:786-788 My '63. (MIRA 16:8)

1. Institut fiziki metallov AN SSSR.  
(Crystal lattices) (Allotropy)

KUZNETSOV, E. N. (Moscow)

"On the geometry of instantaneously rigid cable nets".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

KUZNETSOV, E.N., kand. tekhn. nauk (Moskva)

Instant-rigid guyed systems. Issl. po teor. sooruzh. no.13:  
231-236 '64. (MIRA 18:2)

KUZNETSOV, E.N. (Moskva)

Geometry of instantly rigid guy nets. Inzh. zhur. 5 no.3:  
580-583 '65. (MIRA 18:7)

L 45776-66 EWP(j)/EWT(m) RM/JW

ACC NR: AP6030704

SOURCE CODE: UR/0195/66/007/004/0732/0734

AUTHOR: Bazhin, N. M.; Kuznetsov, E. V.; Bubnov, N. N.; Voyevodskiy, V. V.

39  
38  
B

ORG: Institute of Chemical Kinetics and Combustion, SO AN SSSR (Institut khimicheskoy kinetiki i goreniya SO AN SSSR)

TITLE: Reaction of the hydrogen atom in the system  $H_2O+H_2SO_4+FeSO_4$ . III. Reaction with saturated organic compounds

SOURCE: Kinetika i kataliz, v. 7, no. 4, 1966, 732-734

TOPIC TAGS: hydrogen atom reaction, methanol, ethanol, isopropyl alcohol, ethylene glycol, isobutyric acid, malonic acid, acetone, free radical

ABSTRACT: Atomic hydrogen obtained by the action of UV light on frozen  $H_2O+H_2SO_4+FeSO_4$  at 77K was previously shown to react with unsaturated organic compounds. In the present paper, the authors studied the reaction with a series of saturated compounds having weak C-H bonds (methanol, ethanol, isopropyl alcohol, ethylene glycol, isobutyric acid, malonic acid, and acetone). The reactions were carried out with 0.1 M solutions of the organic reagents at 90 and 120K, and the products were identified from the EPR spectra. It was found that the reaction between H and methanol, ethanol, isopropyl alcohol, malonic acid, and isobutyric

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UDC: 543.878;546.11-123-145

I 45776-66

ACC NR: AP6030704

acid resulted in the following radicals: 1

$\dot{\text{C}}\text{H}_2\text{OH}$ ,  $\text{CH}_3\dot{\text{C}}\text{OH}$ ,  $\text{H}_3\text{C}-\underset{\text{OH}}{\dot{\text{C}}}-\text{CH}_3$ ,  $\text{HOOC}-\underset{\text{H}}{\dot{\text{C}}}-\text{COOH}$  and  $\text{H}_3\text{C}-\underset{\text{COOH}}{\dot{\text{C}}}-\text{CH}_3$ , respectively. In the

case of methanol, the  $\dot{\text{C}}\text{H}_2\text{OH}$  was further broken down to  $\text{H}\dot{\text{C}}\text{O}$ , but no  $\dot{\text{C}}\text{H}_3$  could be detected.

With acetone, the reaction yielded  $\text{CH}_2-\overset{\dagger}{\text{C}}-\text{CH}_3$  instead of  $\text{H}_3\text{C}-\underset{\text{OH}}{\dot{\text{C}}}-\text{CH}_3$ , while in the case of

ethylene glycol, only  $\dot{\text{C}}\text{H}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$  and no  $\dot{\text{C}}\text{H}_2\text{OH}$  could be detected. The mechanism by which

atomic H at approximately 90K can capture hydrogen from alcohols, organic acids, and ketones is discussed. Orig. art. has: 5 formulas and 1 figure. [26]

SUB CODE: 07/ SUBM DATE: 08Oct65/ ORG REF: 004/ ATD PRESS: 5084

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Card 2/2

L 17989-66 EWT(m)/EWP(j)/T/ETC(m)-6 WW/JW/WE/RM

ACC NR: AP6007776

SOURCE CODE: UR/0195/66/007/001/0161/0165

AUTHOR: Bazhin, N. M.; Kuznetsov, E. V.; Bubnov, N. N.; Voyevodskiy, V. V.

51  
50B

ORG: Institute of Chemical Kinetics and Combustion, SO AN SSSR (Institut khimicheskoy kinetiki i goreniya SO AN SSSR)

TITLE: Reactions of hydrogen atoms<sup>112</sup> in the system water-sulfuric acid-ferrous sulfate.  
II. reactions with unsaturated compounds

SOURCE: Kinetika i kataliz, v. 7, no. 1, 1966, 161-165

TOPIC TAGS: hydrogen, free radical, free radical reaction, unsaturated hydrocarbon

ABSTRACT: Previous work has shown that UV irradiation of FeSO<sub>4</sub> solutions in dilute sulfuric acid at 77K leads to the formation of hydrogen atoms, which are stable at this temperature. In this work, the reactions of such hydrogen atoms at 90K and 120K with acetylene, ethylene, propylene, allyl alcohol and carbon monoxide were studied. The concentrations of hydrogen atoms and of the reaction products were measured by observing the EPR spectra of the samples. Except for acetylene, all EPR measurements were made at 77K. Hydrogen atoms add to acetylene to form vinyl radicals whose hyperfine structure is similar to that obtained by other workers in the photolysis of HI in the presence of acetylene at liquid helium temperatures. In discussing the mode of addition, the authors compare their observations with other work on the addition of hydrogen atoms to deuterated acetylene. Addition of hydrogen atoms to

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UDC: 541.141:546.722'226-145.2

2

L 17989-66

ACC NR: AP6007776

propylene leads almost exclusively to the formation of isopropyl radicals. It was observed that ethyl and isopropyl radicals do not decompose under the influence of UV or visible light under experimental conditions. The spectrum of the reaction product obtained from allyl alcohol is very similar to those of hydrocarbon radicals  $R\dot{C}H_2CH_2$ , and therefore can be ascribed to the radical  $\dot{C}H_2CH_2CH_2OH$ . Since a protonated form of allyl alcohol is involved, the radical in this case must be  $\dot{C}H_2CH_2CH_2OH_2^+$ . The energy decrease due to the increased separation of the unpaired electron and the charge on the hydroxyl group must be sufficient to offset the energy increase of localization of the unpaired electron on a primary rather than on a secondary carbon atom. Addition of a hydrogen atom to CO yields a product whose spectrum consists of a doublet with a separation of approximately 132 e, and can be ascribed to the radical HCO. The radical decomposes under the influence of light, probably to H and CO. The authors conclude that under the above conditions hydrogen atoms can react with unsaturated compounds by adding to double or triple bonds, or to unshared electron pairs. Useful quantitative data concerning unsaturated compounds can be obtained in this manner. Orig. art. has: 2 figures. [vs]

SUB CODE: 07 SUBM DATE: 14Jun65/ ORIG REF: 005/ OTH REF: 006/ ATD PRESS:

4212

Card

2/2



DEMIDOV, G. Ye.; KUZNETSOV, F.A.

Tiered chassis for table and portable electric medical equipment. Med. prom. 17 no.6:49-51 Je'63 (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut meditsinskikh instrumentov i oborudovaniya.

84255

S/076/60/034/009/021/022  
B015/B056

S,4700 also 2209

AUTHORS: Kuznetsov, F. A., Rezhukhina, T. N., and Golubenko, A. N.

TITLE: Determination of the Formation Heat of  $Ce_2O_3$  by the Method of Combustion in the Bomb Calorimeter

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9, p. 2129

TEXT: For the purpose of determining the formation enthalpy of  $Ce_2O_3$ , the reaction heat of the reaction  $Ce_2O_3 + 1/2 O_2 = 2 CeO_2$  was determined. The  $Ce_2O_3$  was obtained by reduction of  $CeO_2$  in a hydrogen current at 1250-1300°C. The reaction heat of this reaction was determined by the diathermic method by means of a calorimeter (volume of the bomb: 0.04 l), and the experimental results of  $Ce_2O_3$  combustion are given in a table. X

After the necessary corrections had been made, the value  $\Delta H_{298.2}^{\circ}$  = -85.43  $\pm$  0.26 kcal/mole was obtained for the reaction, and, according to (Ref. 3),  $\Delta H_{298.2}^{\circ}$  = -260.18  $\pm$  0.33 kcal/mole is substituted for the

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84255

Determination of the Formation Heat of  $Ce_2O_3$  by S/076/60/034/009/021/022  
the Method of Combustion in the Bomb Calorimeter B015/B056

reaction  $Ce + O_2 = CeO_2$ , so that for the formation heat of  $Ce_2O_3$  from the  
elements  $2 Ce + 3/2 O_2 = Ce_2O_3$  the value  $\Delta H_{298.2}^{\circ} = -434.93 \pm 0.99$  kcal/mole  
was obtained. There are 1 table and 5 references: 1 Soviet, 3 US, and 1  
German.

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

SUBMITTED: May 16, 1960

Card 2/2

S/076/60/034/011/008/024  
B004/B064

AUTHORS: Kuznetsov, F. A. and Rezhukhina, T. N. (Moscow)

TITLE: Specific Heat of Cerium Dioxide at High Temperatures

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 11,  
pp. 2467 - 2468

TEXT: The authors report on the calorimetric measurement of the specific heat of  $\text{CeO}_2$  in the temperature range  $608^\circ - 1172^\circ\text{K}$  by the mixing method.

A preparation of GIREDMET (State Institute of the Rare Metals Industry) with 99.9%  $\text{CeO}_2$  was used. For the average specific heat the experimental data gave  $\bar{c}_p = 0.08895 + 1.42_2 \cdot 10^{-5} T$ , and for the true specific heat,  $c_p = 0.0847_7 + 2.84_4 \cdot 10^{-5} T$ . The calculation was carried out by means of the equation  $c_p = \bar{c}_p + (\overline{dc_p/dT})\Delta T$ . There are 1 table and 3 Soviet references.

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Specific Heat of Cerium Dioxide at High  
Temperatures

S/076/60/034/011/008/024  
B004/B064



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

SUBMITTED: February 12, 1959

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KUZNETSOV, F.A.

report to be submitted for the IUPAC 21st Conference and 13th Intl. Congress of Pure and Applied Chemistry, Montreal, Canada, 24-28 August 1961

ALDANOV, I. P., and ZOROV, Yu. A., Institute of Geochemistry and Analytical Chemistry, Ussr Acad. Sci., "Effect of the structure of the metal-organic complex on the rate of the reaction of metal chalcide compounds as affected by the structure of the metal", 10 to 12 Aug 61, Section 2.2 - 11 Aug 61, morning, 10 to 12 Aug 61, morning, 10 to 12 Aug 61, morning.

AGARSHVILI, Kh. S., and KURBAZ, V. A., Scientific Research Physico-Chemical Institute, Ussr Acad. Sci., "Some aspects of energy transfer in radiation chemistry" (Section A.1, Session II - 7 Aug 61, morning).

BEZDANSKIY, Yu. K., Institute of General and Inorganic Chemistry, Academy of Sciences USSR, "The kinetics of the alkylation processes in the electrolysis of molten salts" (Section 3.1 - 10 Aug 61, morning).

BEZDANSKIY, Yu. K., and KURBAZ, V. A., Institute of General and Inorganic Chemistry, Academy of Sciences USSR, "Electrochemical experiment with molten borate and phosphate" (Section A.1, c, (2), Session I - 11 Aug 61, morning).

BEZDANSKIY, Yu. K., and ZOROV, Yu. A., Institute of General and Inorganic Chemistry, Academy of Sciences USSR, "On the kinetics of diffusion in molten salts" (Section 3.1 - 9 Aug 61, afternoon).

GERASHOV, M. I., Moscow State University, Ussr Acad. Sci., (Co-Chairman, Section A.1, c, (2), Session II(3), 11 Aug 61, afternoon).

GERASHOV, M. I., and ZOROV, Yu. A., Moscow State University, Ussr Acad. Sci., "Thermodynamic properties of calcium and cerium oxides" (Section A.1, c, (3), Session II(4), 11 Aug 61, morning).

GERASHOV, M. I., Institute of Chemical Physics, Academy of Sciences USSR - "Thermodynamic properties of a new kind of radioactive decay of nuclei" (Section A.1 - 7 Aug 61, morning).

GERASIMOV, Yakov Ivanovich; KRESTOVNIKOV, Aleksandr Nikolayevich; SHAKHOV, Aleksey Sergeyeovich. Prinsipialni uchastiye: DUDAREVA, A.G., assistent; LOMOV, A. L., assistent; FEYGINA, Ye.I., assistent; VYGODSKIY, I.A., inzh.; KUZNETSOV, F.A., aspirant; LAVRENT'YEV, V.I., aspirant; CHERNOV, A.N., red.; KAMAYEVA, O.M., red. izd-va; MIKHAYLOVA, V.V., tekhn. red.

[Chemical thermodynamics in nonferrous metallurgy] Khimicheskaya termodinamika v tsvetnoi metallurgii. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii. Vol.2. [Thermodynamics of copper, lead, tin, silver and their most important compounds; a handbook] Termodinamika-medi, svintsa, olova, serebra i ikh vazhnykh soedinenii; spravochnoe rukovodstvo. 1961. 262 p.

(MIRA 14:11)

(Nonferrous metals--Thermal properties)  
(Chemistry, Metallurgic)

KUZNETSOV, F. A., Cand. Chem. Sci. (diss) "Thermo-dynamic Investigation of Acids of Cerium." Moscow, 1961, 16 pp (Instit. of General and Inorganic Chem. im. N. S. Kurnakov) 200 copies (KL Supp 12-61, 256).



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S/076/61/035/004/017/018  
B106/B201AUTHORS: Kuznetsov, F. A., and Rezukhina, T. N.TITLE: Heat capacity of  $Ce_2O_3$  at high temperatures

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 4, 1961, 956 - 957

TEXT: The mean molar heat of  $Ce_2O_3$  in the temperature range of 578-1116°K was measured by the method of mixing in a massive calorimeter. The calorimetric apparatus and the measuring method are thoroughly described in the literature (Ref. 1: M. M. Popov, Termometriya i kalorimetriya, Izd-vo MGU, 1954; Ref. 2: L. A. Zharkova, T. N. Rezukhina, Zh. fiz. khimii, 31, 2278, 1957). The  $Ce_2O_3$  oxide was prepared by a protracted reduction of  $CeO_2$  (99.9% purity) at 1150-1200°C in a hydrogen flow which had been carefully purified from  $O_2$  and  $H_2O$ . The product obtained in this way had a mustard-yellow color. The lattice parameters of the product that were found roentgenographically fitted data contained in the literature. Already after moderate heating,  $Ce_2O_3$  burns in the air to form  $CeO_2$ . For

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S/076/61/035/004/017/018  
B106/B201Heat capacity of  $Ce_2O_3$  ...

this reason, the preparation was carefully freed from gases prior to the calorimetric measurements and sealed in a quartz ampul. The heat capacity of  $Ce_2O_3$  resulted from the difference between the heat amount fed to the calorimeter with the oxide by the heated ampul, and the heat content of the heated empty ampul. The heat value of the calorimeter was determined electrically (1 cal = 4.1840 abs. joules), with an accuracy within  $\pm 0.1\%$ . Results of the calculation of the mean molar heat of  $Ce_2O_3$  from the results of the calorimetric determinations are given in a table (the molecular weight of  $Ce_2O_3$  is 328.26). The results obtained are reproduced with an accuracy of  $\pm 0.5\%$  by equation  $\bar{C}_p = 25.17 + 6.327 \cdot 10^{-3}T$ . With the aid of equation  $C_p = \bar{C}_p + T \cdot d\bar{C}_p/dT$ , which establishes the relationship between actual and mean molar heats, one obtains the following equation for the temperature dependence of the actual molar heat of  $Ce_2O_3$ :

$C_p = 23.31 + 1.265 \cdot 10^{-2}T$ . In a previous paper (Ref. 4: Zh. fiz. khimii, 34, 2129, 1960) the authors and A. N. Golubenko have determined the change  
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S/076/61/035/004/017/018  
B106/B201Heat capacity of  $\text{Ce}_2\text{O}_3$  ...of enthalpy in the reaction  $\text{Ce}_2\text{O}_3 + 1/2 \text{O}_2 = 2 \text{CeO}_2$ , $\Delta H_{298.16}^{\circ} = -85.43 \pm 0.26$  kcal (1). According to another indication in the literature (Ref. 5: E. Huber, Ch. Holley, J. Amer. Chem. Soc., 75, 5645, 1953) the change of enthalpy in the reaction  $\text{Ce} + \text{O}_2 = \text{CeO}_2$ amounts to:  $\Delta H_{289.16}^{\circ} = -260.18 \pm 0.33$  kcal (2). One therefrom obtains for the reaction  $2 \text{Ce} + 3/2 \text{O}_2 = \text{Ce}_2\text{O}_3$  the formation heat of  $\text{Ce}_2\text{O}_3$ : $\Delta H_{289.16}^{\circ} = -434.93 \pm 0.99$  kcal (3). If one compares the temperature dependence of the molar heat of  $\text{Ce}_2\text{O}_3$ , as found in the present work, with the temperature dependence of the molar heat of  $\text{CeO}_2$ , as earlier determined by the authors (Ref. 6: Zh. fiz. khimii, 34, 2467, 1960), and with data contained in the literature on the molar heats of metallic cerium (Ref. 7: Stull, Sinke, Thermodynamic properties of elements, 1957) and of oxygen (Ref. 8: Ya. I. Gerasimov, A.N. Krestnikov, A. S. Shakhov. X

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S/076/61/035/004/017/018  
B106/B201Heat capacity of  $\text{Ce}_2\text{O}_3$ .

X

Xhimicheskaya termodinamika v tsvetnoy metallurgii, t. I, Metallurgizdat, 1960), the following equations result for the temperature dependence of enthalpy changes of reactions (1)-(3):

$$\Delta H_T^{\circ} (1) = -85500 + 1.74 T - 1.49 \cdot 10^{-3} T^2 - 0.94 \cdot 10^5 T^{-1},$$

$$\Delta H_T^{\circ} (2) = -259800 + 0.62 T + 0.31 \cdot 10^{-3} T^2 - 1.88 \cdot 10^5 T^{-1},$$

$$\Delta H_T^{\circ} (3) = -434000 - 0.49 T + 2.13 \cdot 10^{-3} T^2 - 2.82 \cdot 10^5 T^{-1}.$$

[Abstracter's notes: essentially complete translation.] There are 1 table and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc. The two references to English language publications read as follows: E. Huber, Ch. Holley, J. Amer. Chem. Soc., 75, 5645, 1953; Stull, Sinke, Thermodynamic properties of elements, 1957.

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

SUBMITTED: October 25, 1960

Card 4/5

REZUKHINA, T.N.; LAVRENT'YEV, V.I.; LEVITSKIY, V.A.; KUZNETSOV, F.A.

Determination of the thermodynamic functions of oxygen-  
containing salts by the electromotive force method. Zhur.fiz.  
khim. 35 no.6:1367-1369 Je '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.  
(Salts) (Electromotive force)

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28653  
S/020/61/139/006/020/022,  
B103/B101

AUTHORS: Kuznetsov, F. A., Belyy, V. I., Rezhukhina, T. N., and Gerasimov, Ya. I., Corresponding Member AS USSR

TITLE: Thermodynamical properties of cerium oxides

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 6, 1961, 1405-1408 X

TEXT: The authors determined thermodynamical data on cerium which, together with data from publications, provide a complete thermodynamical characterization of the system Ce-O<sub>2</sub>. In previous papers (Ref. 4: ZhFKh, 34, 2467 (1960); Ref. 5: ibid. 35, No. 5 (1961); Ref. 6: ibid. 34, No. 9 (1960)), they measured the high-temperature specific heat of CeO<sub>2</sub> and Ce<sub>2</sub>O<sub>3</sub>, and obtained the value  $\Delta H_{298}^{\circ} = -85.43$  kcal. The present paper deals with the thermodynamical properties of cerium oxides in the CeO<sub>2</sub>-CeO<sub>1.5</sub> range of compositions. They used the emf method with a solid electrolyte (Ref. 7, see below). In addition, the authors measured the equilibrium constants of cerium oxides with hydrogen. They used a more convenient

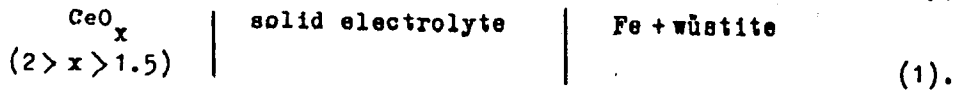
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S/020/61/139/006/020/022  
B103/B101

Thermodynamical properties of...

modification of the apparatus described in Ref. 7 (Ref. 8: T. N. Rezukhina et al., ZhFKh, 35, No. 6 (1961)) for measuring the emf, namely, the cell



Mixed crystals of the system  $ThO_2-La_2O_3$  with a purely ionic conductivity served as electrolytes. The  $CeO_x$  electrodes were pressed out of a mixture of corresponding amounts of  $CeO_2$  and  $Ce_2O_3$  at a pressure of  $10 \text{ t/cm}^2$ . The oxygen content of the preparation was determined by measuring the emf by the method of "active oxygen".  $CeO_x$  was handled in an argon atmosphere. The values of the equilibrium emf of cell correspond to the change of the isobaric potential ( $\Delta \bar{G}_I^0 = -2FE$ ) of the reaction releasing the current:  $(1/\delta)CeO_x + Fe_{0.947}^0 \rightarrow (1/\delta)CeO_{x+\delta} + 0.947 Fe$  (I). A combination of  $\Delta \bar{G}_I^0$  with  $\bar{G}_{II}^0$  of the wüstite formation from the elements:

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Thermodynamical properties of...

$0.947 \text{ Fe} + 0.5 \text{ O}_2 \rightarrow \text{Fe}_{0.947} \text{O}$  (II), for which  $\Delta G_{\text{II}} = -63,570 + 16.06 T$   
(1073 - 1270°K) according to Ref. 10 (see below) and H. Peters, H. H. Möbbius  
(Ref. 11: Zs. phys. Chem., 209, 298 (1958)), makes it possible to

calculate the reaction ( $\Delta \bar{G}_{\text{III}}^{\circ}$ ):  $(1/\delta) \text{CeO}_x + 1/2 \text{O}_2 \rightarrow (1/\delta) \text{CeO}_{x+\delta}$  (III). K

It was found that E varies linearly with temperature for each composition  
of  $\text{CeO}_x$  over the entire range of temperatures:  $E = a + bT$ . The

equilibrium constants  $K_{\text{eq}} = p_{\text{H}_2\text{O}}/p_{\text{H}_2}$  of the reduction of  $\text{CeO}_x$  by hydrogen:

$(1/\delta) \text{CeO}_{x+\delta} + \text{H}_2 \rightarrow (1/\delta) \text{CeO}_x + \text{H}_2\text{O}$  (IV) were measured in a device

described by the authors in ZhFKh, 25, 93 (1951). Since the intermediate  
cerium oxides are pyrophoric, only the constants of  $\text{CeO}_2$  or  $\text{Ce}_2\text{O}_3$  were

measured. By a combination of  $\Delta \bar{G}_{\text{IV}}^{\circ} = -RT \ln K_{\text{eq}}$  with  $\Delta G_{\text{V}}^{\circ}$  of the reaction

of water-vapor formation: ( $\Delta G_{\text{V}}^{\circ} = -59,000 + 13.38 T$ ) it is also possible to

calculate  $\Delta G_{\text{III}}^{\circ}$ . The authors' results agree well with those obtained by

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28653

S/020/61/139/006/020/022  
B103/B101

Thermodynamical properties of...

G. Brauer et al. (Ref. 14, see below). The thermodynamical values describing the reaction  $\text{Ce}_2\text{O}_3 + 1/2 \text{O}_2 \rightarrow 2\text{CeO}_2$  (VI) were obtained by graphical integration of the  $\Delta\bar{G}_{\text{III}}^{\circ}$  isotherms for the composition of  $\text{CeO}_x$  between  $1.5 < x < 2$  for 973, 1073, 1173, and 1273°K. On the basis of these data and of the value  $(\Delta H_{298})_{\text{VI}} = -85.43$  kcal, and considering the temperature dependence of the specific heat of  $\text{CeO}_2$  and  $\text{Ce}_2\text{O}_3$ , the following equation was derived for the range 298-1273°K:

$\Delta G_{\text{VI}}^{\circ} = -85,500 - 4.007 \log T + 1.495 \cdot 10^{-3} T^2 - 0.47 \cdot 10^5/T + 35.8 T$ . After determining  $(\Delta S_{298}^{\circ})_{\text{VI}}$  and assuming  $S_{298}^{\circ} = 16.64$  entropy units for cerium (Ref. 1, see below) and  $S_{298}^{\circ} = 14.89$  entropy units for  $\text{CeO}_2$ , the authors obtain  $(S_{298}^{\circ})_{\text{Ce}_2\text{O}_3} = 30.8$  entropy units. On the strength of this value

and of other data presented above, all thermodynamical values of the reaction  $2 \text{Ce} + 3/2 \text{O}_2 \rightarrow \text{Ce}_2\text{O}_3$  (VII) can easily be calculated. There are

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8/020/61/139/006/020/022  
B103/B101

Thermodynamical properties of...

1 figure, 5 tables, and 14 references: 5 Soviet and 9 non-Soviet. The four most important references to English-language publications read as follows: Ref. 1: D. H. Parkinson, F. E. Simon, F. H. Spedding, Proc. Roy. Soc., 207, 137 (1951); Ref. 7: K. Kiukkola, C. Wagner, J. Electrochem. Soc., 104, 379 (1957); Ref. 10: L. S. Danken, R. W. Garry, J. Am. Chem. Soc., 61, 1398 (1945); Ref. 14: G. Brauer, K. A. Gingirich, U. Holtschmidt, J. Inorg. and Nucl. Chem., 16, 77 (1960). X

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

SUBMITTED: May 5, 1961

Card 5/5

KUZNETSOV, F.A.; REZUKHINA, T.N.

Thermodynamic properties of praseodymium oxides. Zhur. fiz.  
khim. 36 no.6:1364-1367 Je'62 (MIRA 17:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

KUZNETSOV, F.A.; DIDORA, N.F.; CHUSOVA, T.P.; ARTAMONOVA, S.M.

Electrode function of the carbon oxide electrode  $\text{Nd}_2\text{O}_3 - \text{C} - \text{CO}_2$   
in chloride melts containing trivalent neodymium chloride. Izv.  
SO AN SSSR no.7 Ser. khim. nauk no.2:10-14 '64 (MIRA 18:1)

1. Institut neorganicheskoy khimii Sibirskogo otJeleniya AN  
SSSR, Novosibirsk.

4 2 (g)

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"APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928120005-4

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928120005-4"

KUZNETSOV, F.A., kand. khimicheskikh nauk

Microminiaturization of electronic apparatus and problems of  
chemistry. Vest. AN SSSR 34 no.6:51-57 Je '64

(MIRA 17:8)



NIKOLAYEV, A.V.; AFANAS'YEV, Yu.A.; KUZNETSOV, P.A.

Calculation of the enthalpy change during extraction according to the standard enthalpies of formation. Izv. SO AN SSSR no.3 Ser. khim. nauk no.1:115-117 '65. (MIRA 18:8)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.

KUZNETSOV, F.A.; SMIRNOVA, T.P.

Thermodynamic characteristics of thin films. Vych. sist.  
no.15:39-46 '65. (MIRA 18:6)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN  
SSSR.

TOPIC TAGS: crystal growth, zinc sulfide, transport reaction, crystallography

Twining is studied in the case of zinc sulfide crystals grown from the

...ment violated several ...

L 23695-66

EWT(1)/EWT(m)/ETC(f)/EWG(m)/T/ENP(t)/ETC(m)-6 JSP(c) 30/34/33

ACC NR: AR6005217

SOURCE CODE: UR/0058/65/000/009/EO47/EO47

AUTHOR: Kuznetsov, F. A.; Smirnova, T. P.

TITLE: Thermodynamic characteristic of thin films

SOURCE: Ref. zh. Fizika, Abs. 9E411

REF SOURCE: Sb. Vychisl. sistemy. Vyp. 15, Novosibirsk, 1965, 39-46

TOPIC TAGS: thermodynamic property, metal film, silver, thermal activation, relaxation process

TRANSLATION: An electrochemical method is proposed for measuring the emf for the investigation of the thermodynamic properties of thin films (F). Using a silver film as an example, it is shown how to estimate the aggregative instability quantitatively with the aid of the given method. The dependence of the thermodynamic activity of the film on its thickness is obtained. The substance and the film begin to differ noticeably in thermodynamic characteristics from the compact state at a thickness of 5000 Å. The dependence of the velocity of the process of the structural relaxation on the activity of the film, the intensity of its interaction with the electrolyte, and the heat treatment are all considered. A. Porotikov.

SUB CODE: 20

Card 1/1

36956-66 EWT(m)/EWP(t)/ETI IJP(c) JVAW/JG  
ACC. NR: AP6014895 SOURCE CODE: 0076/65/039/012/2973/2977

35  
B

AUTHOR: Kuznetsov, F. A.; Smirnova, T. P.

ORG: AN SSSR, Siberian Branch, Institute of Inorganic Chemistry  
(AN SSSR, Sibirskoe otделение, Institut neorganicheskoy khimii)

TITLE: Thermodynamic properties of silver films

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 12, 1965, 2973-2977

TOPIC TAGS: thermodynamic property, metal film, silver

ABSTRACT: The properties of films produced by vacuum spraying often change with time. This is due to the fact that condensates are often formed under conditions which deviate from the equilibrium. The aim of the present article is to find a general method for quantitative evaluation of the instability of a film. In the general case, the relaxation process can be described by the equation

$$A_L \rightarrow A_\Delta \quad (1)$$

where  $A_L$  is the substance in the film;  $A_\Delta$  is the substance in a state corresponding to a minimum of the free energy which can be identified with a compact state. As a measure of the instability of the film we

Card 1/2

UDC: 541.13

L 36956-66

ACC NR: AP6014895

adopt the difference in the free energies in the above states

$$G_A - G_L = \Delta G_{\text{relax}} \quad (2)$$

Starting with the above statement of the problem, the article derives expressions for the thermodynamic stability of the film. It also presents an expression for the dependence of the thermodynamic activity of films produced under the same conditions on their thickness. Orig. art. has: 12 formulas and 5 figures.

SUB CODE: 20/ SUBM DATE: 23Aug64/ ORIG REF: 003/ OTH REF: 002

Card 2/2 *llb*

L 40312-66 EWT(1)/EWT(m)/T/E-P(t)/ETI IJP(c) GG/JW/JD

ACC NR: AR6019915

SOURCE CODE: UR/0275/66/000/602/B020/B020

AUTHOR: Kuznetsov, F. A., Smirnova, T. P. 45  
5

TITLE: Thermodynamic characteristics of thin films A

SOURCE: Ref zh. Elektronika i yeye primeneniye, Abs. 2B145

REF SOURCE: Sb. Vychisl. sistemy. Vyp. 15. Novosibirsk, 1965, 39-46

TOPIC TAGS: thermodynamic characteristic, thin film, electromotive force, *electrochem-*  
*measurement* *ical analysis*

ABSTRACT: An electrochemical method has been introduced for measurement of the electromotive force in studying the thermodynamic properties of thin films.  
[Translation of abstract] A. P. [KP]

SUB CODE: 20/ SUBM DATE: none

Card 1/1 *MLP*

UDC: 539.293:621.317.799



L 02350-67 EWT(1)/EWT(m)/I/EWP(t)/ETI IJP,c) JD/GG

ACC NR: AR6025736

SOURCE CODE: UR/0058/66/000/004/A069/A069

AUTHOR: Belyy, V. I.; Kuznetsov, F. A.

46

TITLE: Polishing of single crystals by etching with gaseous hydrogen halides

B

SOURCE: Ref. zh. Fizika, Abs. 4A584

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 2-3

TOPIC TAGS: germanium, silicon, etched crystal, halide, hydrogen compound, crystal growing, surface finishing

ABSTRACT: This is a review of known procedures for obtaining polished Ge and Si surfaces by gas etching. The possibility of obtaining a polished surface of Ge with the aid of gaseous hydrogen iodide and bromide is demonstrated experimentally; the limits of the polishing regions are established. The obtained surfaces are homogeneous, and the deviations from planarity amount to several hundred Angstroms. For the three most important processes of epitaxial growing of films from the gas phase, namely iodide, chloride, and bromide, gaseous polishing etchants are obtained, which can be successfully incorporated in the growth technology, and make it possible in each of the processes to reduce to a minimum the number of components participating in the growing. [Translation of abstract]

27 27

SUB CODE: 20

Card 1/1 *AK*

L 02349-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AR6025737

SOURCE CODE: UR/0058/66/000/004/NO69/NO69

AUTHOR: Kravchenko, V. S.; Andreyeva, A. A.; Kuznetsov, F. A.

50  
B H

TITLE: Influence of substrate finishing conditions on the quality of epitaxial film of germanium in the chloride method

SOURCE: Ref. Zh. Fizika, Abs. 4A585

REF SOURCE: Sb. Simpozium. Protsesty sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 15-16

TOPIC TAGS: germanium, epitaxial growing, semiconducting film, surface finishing

ABSTRACT: An investigation was made of the influence of the preparatory operations prior to growing on the perfection of epitaxial germanium films. The perfection of the films was investigated as a function of the conditions for finishing the substrates of Ge in hydrogen and for etching the latter in a mixture of dry hydrogen chloride with hydrogen. It is found that when the substrates are treated in hydrogen at 850C, the optimal treatment time is 40 minutes. When the substrates are polished by etching with a mixture of hydrogen chloride and hydrogen, mirror-smooth films containing no stacking faults are obtained. [Translation of abstract]

SUB CODE: 20

Card 1/1

L 02345-67 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) GG/WW/JE/JG  
 ACC NR: AR6025734 SOURCE CODE: UR/0058/66/000, 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, 021, 022, 023, 024, 025, 026, 027, 028, 029, 030, 031, 032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 047, 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 070, 071, 072, 073, 074, 075, 076, 077, 078, 079, 080, 081, 082, 083, 084, 085, 086, 087, 088, 089, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 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391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

AUTHOR: Kuznetsov, F. A.

TITLE: Quantitative study of film growth processes in transport reactions

SOURCE: Ref. zh. Fizika, Abs. 4A577

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 16-17

TOPIC TAGS: microelectronic thin film, film processing, semiconducting film, transport phenomenon

ABSTRACT: Transport reactions are among the most promising methods of radio-electronic film technology. A study of the laws governing these processes and the quantitative relations between the fundamental parameters of the synthesis process and the properties of the sample is of tremendous significance. In view of the complexity of this dependence, it is expedient to consider particular quantitative correlations. One of the most important parameters of a transport process is growth rate. The accuracy of estimates of the growth rate of real processes, based on existing theories of chemical transport, is insufficient from the point of view of problems involved in the control of the technology of film devices. The reproducibility of experimental data on growth rates is low. Therefore the prime problem of chemistry and technology of semiconducting film devices is to ascertain the conditions under which crystal synthesis from the gas phase can be carried out with reproducible growth rates. [Translation of abstract]

SUB CODE: 20  
 Card 1/1

L 02344-67 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) GG/WW/JD/JG  
 ACC NR: AR6025733 SOURCE CODE: UR/0058/66/000/004/A068/A068

AUTHOR: Smirnova, T. P.; Toropovskaya, I. N.; Kuznetsov, F. A.

TITLE: Investigation of the stability of thin metallic films

SOURCE: Ref. zh. Fizika, Abs. 4A576

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 36

TOPIC TAGS: metal film, silver, thermodynamic characteristic, thermal stability, solid kinetics, annealing, metal aging

ABSTRACT: The question of using the e.m.f. method to the investigation of the thermodynamic properties of thin films is considered. This method makes it possible to estimate quantitatively the aggregative instability of films and afford the opportunity of finding the connection between the quantities determining the instability and the kinetic characteristics of structural relaxation processes. Processes of thermal aging of films are investigated and the dependence of the thermodynamic characteristic of silver films on the annealing temperature is obtained. [Translation of abstract]

SUB CODE: 20, 11

Card 1/1

KUZNETSOV, F. D.

Kuznetsov, F. D.

"Reflex Influences from the Uterus on the Organs of Respiration and Blood Formation." L'vov State Medical Inst. L'vov, 1955. (Dissertation for the Degree of Candidate in Medical Science)

So: Knizhnaya letcpis', No. 27, 2 July 1955

ACC NR: AR6030490

SOURCE CODE: UR/0275/66/000/006/B012/B012

AUTHOR: Romyantsev, Yu. M.; Rubaylo, A. I.; Kuznetsov, F. A.

TITLE: Rate of epitaxial growth of GaAs-films

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 6882

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 34-35

TOPIC TAGS: gallium arsenide, ~~semiconductor~~, epitaxial growing, semiconducting film, *semiconductor research, phosphide*

ABSTRACT: An outfit for GaAs-film growing by the open iodide process and experimentation methods involved were improved. The effect of a supersaturating flow on the rate of growth, at a constant temperature, and the effect of growth temperature on the rate of growth, at a constant supersaturating flow, were investigated. Within an initial iodine pressure of 1--3 torr, the rate of growth is directly proportional to the supersaturating flow. With higher backing temperatures, the rate of growth had a tendency to decrease which apparently was due to variations in the microrelief of the backing during preparatory high-temperature operations. Yu. P. and others. [Translation of abstract]

SUB CODE: <sup>20</sup>~~209~~

Card 1/1

UDC: 621.315.592:548.28:546.19:681

ACC NR: AR6030489

SOURCE CODE: UR/0275/66/000/006/B012/B012

AUTHOR: Rumyantsev, Yu. M.; Starshinova, N. P.; Kuznetsov, F. A.

TITLE: Investigation of optimal conditions for growing GaAs-films on Ge

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 6879

REF SOURCE: So. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 35

TOPIC TAGS: gallium arsenide, ~~semiconductor~~ single crystal growing,

*semiconductor research, phosphide*  
ABSTRACT: GaAs-films were grown on Ge by the open iodide method with hydrogen used as a carrier. The effect of process parameters (growing temperature, iodine pressure) upon the resulting film was investigated. The conditions of growth of single-crystal mirror-smooth GaAs-films were determined. It was found that the GaAs rate of growth on Ge is considerably lower than the rate of epitaxial GaAs growth under similar conditions. Yu. P. and others. [Translation of abstract]

SUB CODE: <sup>20</sup>~~11.119~~

Card 1/1

UDC: 621.315.592.548.552.546.191.681

KUZNETSOV, F.A.; SMIRNOV, N.I.

Extraction in spray towers. Trudy LTI no.60:190-205 '60.

(MIRA 14:6)

1. Kafedra tekhnologii sinteticheskogo kauchuka i osnovnogo organicheskogo sinteza Leningradskogo tekhnologicheskogo instituta imeni Lensoveta i Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni akademika S.V. Lebedeva.  
(Extraction (Chemistry))

KUZNETSOV, F.A.; LILEYEVA, A.K.; SMIRNOV, N.I.

Coefficients of fatty acid distribution. Trudy LTI no.60:206-209  
'60. (MIRA 14:6)

(Acids, Fatty) (Extraction (Chemistry))



KUZNETSOV, F. A.

Cand Tech Sci - (diss) "Study of mass transfer in extraction in sprayer columns." Leningrad, 1961. 11 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Order of Labor Red Banner Technological Inst imeni Lensovet); 180 copies; price not given; (KL, 7-61 sup, 239)

KUZNETSOV, F.A.; LILEYEVA, A.K.; SMIRNOV, N.I.

Equilibrium of extraction processes in some systems. Zhur.  
prikl.khim. 34 no.8:1829-1834 Ag '61. (MIRA 14:8)

1. Kafedra tekhnologii osnovnogo organicheskogo sinteza i  
sinteticheskikh kauchukov Leningradskogo tekhnologicheskogo  
instituta imeni Lencoveta.

(Systems (Chemistry))  
(Extraction (Chemistry))

KUZNETSOV, F.A.; SMIRNOV, N.I.

Study of extraction in an experimental atomizer. Zhur.prikl.  
khim. 34 no.9:1954-1958 S '61. (MIRA 14:9)

1. Kafedra tekhnologii osnovnogo organicheskogo sinteza i  
sinteticheskikh kauchukov Leningradskogo tekhnologicheskogo  
instituta imeni Lensoveta.

(Extraction (Chemistry))

KUZNETSOV, F.A.; SMIRNOV, N.I.

Quantitative laws of extraction processes. Zhur.prikl.khim. 34  
no.9:2311-2313 S '61. (MIRA 14:9)  
(Extraction (Chemistry))

L 29795-66 EWT(m)/EWP(t)/EWP(k)/ETI IJP(c) JD/HW

ACC NR: AP6015066

(N)

SOURCE CODE: UR/0363/66/002/005/0838/0843

AUTHOR: Rubaylo, A. I.; Rumyantsev, Yu. M.; Kuznetsov, F. A.

50  
B

ORG: Institute of Inorganic Chemistry, SO, Academy of Sciences, SSSR (Institut neorganicheskoy khimii SO Akademii nauk SSSR)

TITLE: Study of the process of growing GaAs epitaxial films by the open iodide method

17-21 4

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 5, 1966, 838-843

TOPIC TAGS: gallium arsenide, epitaxial growing, single crystal growing

ABSTRACT: The dependence of the growth rate on the thermodynamic conditions was studied in growing GaAs single-crystal films on GaAs substrates in the open process; hydrogen was used as the carrier gas. Three groups of factors were found to affect the reproducibility of the growth rate: constancy of the thermodynamic parameters of the process, constancy of the substrate microstructure, and the presence or absence of conditions promoting crystallization of the transported substance on the walls of the apparatus up to the zone of the substrate. The dependence of the

Card 1/2

UDC: 546.681'191

L 29795-66

ACC NR: AP6015066

growth rate of the GaAs epitaxial films on the supersaturation was shown to be linear. The nature of the dependence of the growth rate on the crystallization temperature at a constant supersaturation was shown to be determined by the change in the surface state during the high-temperature preparative stages of the technique. The data obtained lead to the conclusion that the growth of GaAs epitaxial films on GaAs can be described by the model of the Burton-Cabrera-Frank theory (W. Burton, N. Cabrera, and F. Frank, Phil. Trans. Roy. Soc. A243, 299 (1951). Orig. art. has: 4 figures and 1 table.

SUB CODE: 20,07/ SUBM DATE: 28Jul65/ ORIG REF: 001/ OTH REF: 009

Card 2/2 *IV*

L 47309-66 EWT(m)/EWP(t)/ETI LJP(c) ID/JG

ACC NR: AR6025742

SOURCE CODE: UR/0058/66/000/004/A070/A070

AUTHOR: Rumyantsev, Yu. M.; Rubaylo, A. I.; Kuznetsov, F. A.

TITLE: On the rate of epitaxial growing of gallium arsenide films

SOURCE: Ref. zh. Fizika, Abs. 4A593

REF SOURCE: Sb. Simpozium. Prohessy sinteza i rosta kristallov i plenok poluprovod-  
nik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 34-35

TOPIC TAGS: gallium arsenide, semiconducting film, epitaxial growing, temperature dependence, surface property

ABSTRACT: Improvements have been made in the apparatus for growing GaAs films by the open iodide process and in the procedure for carrying out the experiments. Investigations were made of the dependence of the growth rate on the supersaturating current at constant growth temperature, and of the dependence of the growth temperature at constant supersaturating current. In the investigated range of variation of the initial iodine pressure (1 - 3 mm Hg), the growth rate is directly proportional to the supersaturating current. With increasing substrate temperature, the growth rate has a tendency to decrease, and this, in the authors' opinion, is connected with the change of the microrelief of the substrate surface during the time of the preparatory high-temperature operations. [Translation of abstract]

SUB CODE: 20

Card 1/1 afs

147308-66 EWT(1)/EWT(m)/TAENP(1) ETI T.P./

ACC NR: AR6025741

SOURCE CODE: UR/0058/66/000/004/A070/A070

AUTHOR: Rumyantsev, Yu. M.; Starshinova, N. P.; Kuznetsov, F. A.

54  
B

TITLE: Investigation of optimal conditions for growing gallium arsenide films on germanium

v1 v1 10

SOURCE: Ref. zh. Fizika, Abs. 4A592

REF. SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 35

TOPIC TAGS: gallium arsenide, single crystal growing, semiconducting film, germanium

ABSTRACT: The growing of the GaAs films on Ge was carried out by the open iodide method using hydrogen as a carrier gas. The influence of the parameters of the process (growth temperature, iodine pressure) on the character of the obtained films was investigated. A certain interval is obtained for the growth conditions of single-crystal mirror-smooth films of GaAs on Ge. It is found that the growth rate of GaAs on Ge is much smaller than the rate of of epitaxial growing of GaAs under analogous conditions. [Translation of abstract].

SUB CODE: 20

Card 1/1 afs



KUZNETSOV, F.F., laureat Stalinskoy premii, doktor tekhnicheskikh nauk.

[Prospects for technical development in housing and public construction during the fifth five-year plan] Perspektivy razvitiia tekhniki zhilishchno-grazhdanskogo stroitel'stva v piatoi piatiletke. Moskva, Izd-vo "Znanie," 1953.

31 p.

(MLBA 6:10)  
(Building)

**KUZNETSOV, Y.F., inzhener.**

Using the **ET-352** ditcher for cutting frozen ground. Stroi.prom.  
32 no.10:11-14 0 '54. (MLRA 7:11)

1. **Magnitostroy.**  
(Excavating machinery) (Frozen ground)

MALIAR, S.M.; FRIDENTAL, S.Kh.; KATSNEL'SON, Ye.A.; KUZNETSOV, F.F.;  
LIBER, V.P.; DEGTYAREV, I.T.

Fork lift with hydraulic control for the T-107 tractor loader.  
Rats. i izobr.predl. v stroi. no.89:6-9 '54. (MIRA 9:6)  
(Lumbering--Machinery) (Loading and unloading)

KUZNETSOV, F.F.; MALYAR, S.P.; LIBER, V.P.

Detachable equipment for ditch digging machinery to be used in  
working frozen ground. Rpts. 1 isobr.predl. v stroi. no.125:18-23  
'55. (Excavating machinery) (Frozen ground) (MIRA 9:7)

KUZNETSOV, F.I.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1706  
AUTHOR BAKAEV, J.U.N., KUSNEZOV, F.I.  
TITLE On the Determination of the Domain of the Stable Operation of an  
Inertial System of Television Synchronization.  
PERIODICAL Radiotekhnika, 11, fasc. 11, 17-24 (1956)  
Issued: 12 / 1956

The stability of the synchronizing inertial device is investigated which was dealt with by the works by G.V.KIJAKOVSKIJ (Radiotekhnika, 6, fasc.6, 1951). The block scheme of this system is described as well as the differential equations belonging to this system. These equations are nonlinear, and for their solution the averaging method is employed. It is pointed out that KIJAKOVSKIJ assumed that the voltage on the collecting capacity in the intervals between the synchronizing impulses does not change. This assumption leads to errors. He made the concrete statement that the regulating voltage on the net of the reaction tube appeared to be independent of the porosity of the synchronizing impulse signals. In reality, however, such a dependence exists. In close connection herewith is also the selection of a wrong scheme of investigation. KIJAKOVSKIJ replaces the phase detector by a source of electromotoric force without any inner resistance and by an integrating RC chain, which is supposed not to exercise any reaction on the phase detector and on the voltage generated by it. In order to bring the conditions of analysis into line with the experiment, KIJAKOVSKIJ introduces a cathode repeater into

Radiotekhnika, 11, fasc. 11, 17-24 (1956) CARD 2 / 2 PA - 1706

the experimental scheme. However, he disregards the fact that the latter eliminates the reaction of the RC chain on the detector which is of essential importance for the entire investigation. In practical schemes a cathode repeater is not necessary nor is it ever used.

As a special case the phenomenon of a partial and total shifting of frequency in the system is dealt with. Next, the aperiodic state in the system is investigated. Low values of the coefficient

$\gamma^2 \beta^2 = \Delta \omega, RC$  ( $\omega_1$  is a frequency) correspond to the high degree of extinction in the system. For the solution of the system of equations with small multipliers the method of the small parameter is usually employed. As a relation may easily be established between this method and that of averaging, the method of the small parameter is somewhat modified on this basis.

Finally, the limiting cycle and the conditions for their existence are determined by means of this method. From what has been said it may be seen that a limit for the disturbance of the device exists and that it cannot be exceeded.

INSTITUTION:

ROMAN, L.I., dots.; KUZNETSOV, F.I., kand.med.nauk

Profuse hematuria in pregnancy. Ped. akush. i gin. 22 no. 1:3 of  
cover '60. (MIRA 13:8)

(HEMATURIA) (PREGNANCY, COMPLICATIONS OF)

21967 KUZNETSOV, F. I. K metodu-like obosnovaniya ratsional'noy skhemy izveryaniykh mostov. Sbornik statey po obshchetechn. voprosam (Trudy Ural'skogo Lesotekhn. in-ta) Sverdlovsk, 1949, s. 123-27.

SO: Letopis' Zhurnal'nykh Statey, No. 27, Moskva, 1949.



KUZNETSOV, F. I.

Roads

Mechanizing the construction of logging roads, Les prom., 12, No. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, \_\_\_\_\_ 1953, Uncl.

KUZNETSOV, Fedor Ivanovich, kandidat tekhnicheskikh nauk; ORESHKIN, B.S.,  
redaktor; NIKOLAYEVA, I.I., redaktor izdatel'stva; SHITS, V.P.,  
tekhnicheskii redaktor

[Speedy construction of logging roads] Skorostnoe stroitel'stvo lesno-  
voznykh dorog. Moskva, Goslesbumizdat, 1956. 127 p. (MIRA 9:12)  
(Forest roads)

KUZNETSOV, F.I., kandidat tekhnicheskikh nauk; NEKRYLOV, B.V., inzhener.

Ballast loader for narrow-gauge railroads. Mekh.trud.rab. 11  
no.5:20-22 My '57. (MIRA 10:7)  
(Railroads, narrow-gauge) (Cranes, derricks, etc.)

L 9990-63

EWI(1)/EWG(k)/BDS/EEC(b)-2--AFFTC/ASD/ESD-3--Pz-4--AT/IJP(C)  
S/0142/63/006/002/0173/0181

ACCESSION NR: AP3000333

63  
62

AUTHOR: Kuznetsov, F. K.

TITLE: Temperature measurement of a p-n junction <sup>1</sup>

SOURCE: Izv. VUZ: Radiotekhnika, v. 6, no. 2, 1963, 173-181

TOPIC TAGS: p-n junction, junction temperature, reverse current

TEXT: Methods of determining the temperature of a collector p-n junction from measurements of either reverse current or forward voltage drop across the junction are proposed and checked experimentally. It was first established by test that, at a given temperature, the distribution of reverse current (or forward voltage) values was approximately normal for all transistors tested. Next there was introduced the relationship, established

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ACCESSION NR: AP3000333

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earlier, that  $I_{sub t}$  is equal or approximately equal to  $I_{sub 0} e^{sup ct}$ , where  $I_{sub t}$  is reverse current at temperature  $T$ ,  $I_{sub 0}$  is current at an initial or reference temperature  $T_{sub 0}$ ,  $c$  is a constant association with the particular transistor type, and  $t$  is the temperature increment ( $T - T_{sub 0}$ ). Since the most probable values of  $I_{sub 0}$  and  $c$  can be determined for a given transistor, the correlation of  $I_{sub t}$  with temperature is thus established, with predictable error probabilities, so that measured values of  $I_{sub t}$  can be calibrated directly as temperature. An analogous procedure yields the correlation between voltage drop at the junction and junction temperature. Verification was carried out on 40 transistors of P-13, P-14, P-15, and P-16 types, immersed in a temperature-regulated (to 2%) oil bath. Comparison of calculated and measured junction temperatures indicates a confidence of 99% that 1) the error in temperature calculated from reverse currents will not exceed + or - 10% and 2) the error in temperatures calculated from forward voltage drop will not exceed + or - 17%. The latter figure can be improved to about + or - 5% by regulating forward current to keep it at its initial temperature value. Orig. art. has: 9 formulas,

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L 9990-63  
ACCESSION NR: AP3000333

2 figures, and 2 tables.

ASSOCIATION: Kafedra radiopredayushchikh ustroystv Kiyevskogo ordena  
Lenina politekhnicheskogo instituta (Department of Radio Transmitting  
Equipment, Kiev Polytechnic Institute)

SUBMITTED: 04Jul62 DATE ACQ: 13Jun63

ENCL: 00

SUB CODE: 00 NO REF SOV: 009

OTHER: 00

ja/AA  
Card 3/3

KUZNETSOV, F.K.

Determination of some transistor parameters. Izv. vys. ucheb.  
zav.; radiotekh. 7 no.1:110-112 Jan-F'64. (MIRA 17:5)

"APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928120005-4

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928120005-4"



ASSOCIATION

03 Jun 63

ENCL: 00

SUB CODE: EC, ID

AUTHORS: Senchenkov, A. P., Kusnetsov, P. M. SOV/89-5-2-4/36

TITLE: Measurements of the Neutron Spectrum in the Thermal Column of the Atomic Power Station Reactor (Izmereniye spektra neytronov v teplovoy kolonne reaktora atomnoy elektrostantsii)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 2, pp. 124-129 (USSR)

ABSTRACT: A monochromator is described which consists of 19 pertinax- and 2 brass disks with soldered-on cadmium. The profiles of the disks correspond to the so-called "profile of equal resistance". Length of the rotor: 53 cm, diameter: 27 cm, total weight: 55 kg. The maximum number of revolutions amounts to 12 000 revs per minute. Along the surface of the rotor 297 slits at an angle of  $1,6^\circ$  each are located; their width amounts to 0,8 mm and their depth to 13 mm. The rotor moves within a vacuum chamber ( $< 0,5$  torr). The rotor is revolved by means of a three-phase asynchronous motor with a power output of 2,5 kW. The monochromator permits measurement of the neutron spectra within the energy range of 0 - 0,5 eV. The neutron spectrum of the thermal column of the reactor of the atomic power station is measured together with the monochromator described. At neutron

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Measurements of the Neutron Spectrum in the  
Thermal Column of the Atomic Power Station  
Reactor

SOV/89-5-2-4/36

velocities of 600, 1 000 and 1 650 m/sec the spectrum shows a  
marked jump.

The temperature of the neutron gas was determined as being  
354<sup>o</sup>K by the method of the least square, whereas graphite has a  
temperature of 304<sup>o</sup>K. There are 3 figures and 13 references, 4 of  
which are Soviet.

SUBMITTED: January 11, 1958

Card 2/2

S/089/61/010/004/015/027  
B102/B205

211800

AUTHORS: Glazkov, Yu. Yu., Dubovskiy, B. G., Kuznetsov, F. M.,  
Semenov, V. A., Pen Fan

TITLE: Study of thermal-neutron spectra in physical reactors by  
means of monochromators

PERIODICAL: Atomnaya energiya, v. 10, no. 4, 1961, 381-383

TEXT: The experiments described in this "Letter to the Editor" were carried out in a uranium-graphite reactor, in the center of which a sub-critical assembly was installed. In order to determine the optimum diameter of the sub-critical assembly, the experiments were made at different diameters of the assembly. The monochromators used for the purpose were designed for measuring thermal-neutron spectra in physical low-power reactors (cf. A. P. Senchenkov, F. M. Kuznetsov, Atomnaya energiya, 5, vyp. 2, 124 (1958)). The number of neutrons recorded by the detector per second was calculated from the relation

$$N = \frac{n(v_0)v_0}{4} \frac{1}{2\pi} Sdh \frac{d}{H} \frac{S}{L} \frac{h}{L} \frac{v_0^2 \eta \delta}{(\omega_{r_{op}})^2} \nu \frac{n}{60},$$

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Study of...

where  $N$  is the number of counts of the detector per second,  $n(v_0)v_0$  the neutron flux in the center of the reactor per unit interval of velocity,  $n$  the speed of the rotor per minute;  $S$ ,  $L$ , and  $h$  are the width, length, and height of the collimator;  $d$  is the width of the rotor gap,  $H$  the length of the rotor,  $r_{op}$  the distance between the axis and the center of the rotor gap,  $\nu$  the number of rotor gaps,  $v_0 = \omega r_{op} / \alpha_0$  the velocity of fission neutrons for a given angle of rotation  $\alpha_0$  and a given angular velocity  $\omega$  of the rotor,  $\eta$  the efficiency of the detector for neutrons of velocity  $v_0$ , and  $\delta$  a coefficient accounting for the absorption of neutrons of velocity  $v_0$  in air. The resolution of the monochromator is given by

$$\frac{\Delta v}{v_0} = \frac{v_0}{\omega r_{op}} \left[ \frac{S}{L} + \frac{1}{3} \frac{d}{H} + \frac{1}{4} \frac{h}{r_{op}} \left( 1 + \frac{H}{L} \right) \frac{\omega r_{op}}{v_0} \right],$$

where  $\Delta v$  is the half-width of the resolution curve and  $S/L + d/3H$  the half-width of the statistical transmission curve. The resolutions of the

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Study of...

monochromator for  $\omega = 5000$  rpm are compiled in a table. The medium column gives the neutron energy. Uranium enriched to 1.2% was used in the sub-critical assembly, whereas the uranium used in the outer zones of the reactor was enriched to 2% (see Fig. 1). The neutron spectrum was taken for three different sizes of the central sub-critical assembly. These spectra, as well as the neutron distribution in a lattice consisting entirely of working channels with uranium enriched to 2%, vary only slightly. All of them attain a maximum at  $v_0 = 3$  km/sec and drop to zero

at 7-8 km/sec. Fig. 3 shows the temperature of the neutron gas versus the number of working channels with uranium enriched to 1.2% in the sub-critical assembly. It is seen that the spectrum of the assembly having 37 cells is equal to that of a critical assembly consisting of working channels only. The authors tested assemblies with 13, 25, and 37 cells. The assembly having 37 cells had an equivalent radius of 68 cm, the moderation length was 17 cm, and the diffusion length was 14 cm. Such a monochromator can therefore be used to determine thermal-neutron spectra in low-power reactors. The effective temperature of the neutron gas can be calculated with an error of  $\pm 4\%$ , provided the spectrum

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22612

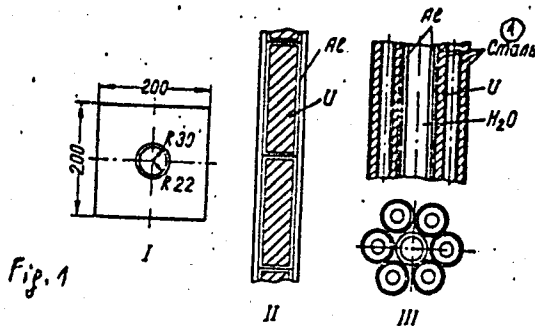
Study of...

S/089/61/010/004/015/027  
B102/B205

deviates only slightly from the Maxwellian spectrum. There are 3 figures, 1 table, and 1 Soviet-bloc reference.

SUBMITTED: December 7, 1960

Legend to Fig. 1: I - cell;  
II - channel with uranium  
enriched to 2 %; III - channel  
with uranium enriched to 1.2 %;  
1) steel.



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KUZNETSOV, F. M.

25372

S/C89/61/011/001/001/010  
B102/B214

211000

AUTHORS:

Glazkov, Yu. Yu., Gerasova, L. A., Dubovskiy, B. G.,  
Krasin, A. K., Kisil', I. M., Kuznetsov, F. M., Serebrennikov,  
Yu. M., Shelud'ko, V. P., Sharapov, V. N., Pen Fan

TITLE:

Investigation of the physical characteristics of the lattice  
of a uranium - graphite reactor by means of a subcritical  
insert

PERIODICAL:

Atomnaya energiya, v. 11, no. 1, 1961. 5-11

TEXT: This paper gives a description of the experiments carried out since  
the beginning of 1958 to investigate the physical characteristics of the  
lattice of a uranium-graphite reactor by means of a subcritical insert.  
A quadratic lattice (period 200 mm) was studied; the graphite block was 2.2m  
high and had a diameter of 4 m; its holes had diameters of 44 or 75 mm  
depending on the uranium rods used. Above and below were reflectors, 60 cm  
thick; the dimensions of the side-reflector could be varied according to  
the composition of the core. The inner and the outer parts of the core

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Investigation of the ...

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were different: The inner part had always rods of 2%-enriched uranium, and the outer one the subcritical insert as a part of the lattice of the reactor studied. The rods of the natural as well as the 2%-enriched uranium were 1 m long. To measure the lattice parameters of a reactor of the type Beloyarskaya GRES (Beloyarsk State Regional Electric Power Plant) ring-shaped sections (1 m long) of the fuel element (up to 1.2% enriched uranium) simulating the real elements were built in the subcritical insert. Each fuel element channel contained six such elements arranged round a central tube. The reactor of the GRES also had vaporization and steam-superheating channels; these were simulated by having the central tube filled with water for the former, and having it without water for the latter. The characteristics of the systems studied were as follows:

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Investigation of the ... Inner part of the core (subcritical insert)			Outer part of the core	
Number of fuel elements	Equivalent radius, cm	Equivalent radius, cm	Number of the uranium rods with the enrichment	Equivalent parts of the whole core, cm
44	ring shaped elements up to 1200 rods (radius rods 100 cm high)	10	100	100
21	rod shaped rods only 100 cm high	10	100	100
13	"	10	100	100
6	"	10	100	100
1	"	10	100	100
20	rods of natural uranium diam 1.25 cm	10	100	100
homogeneous lattice	-	-	100	100

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Investigation of the ...

In order to be able to measure the neutron flux in the core of a subcritical reactor the neutron flux in the general part of the reactor must be measured directly or indirectly. This is done by means of suitable probes of the dimensions of the reactor, and it is not possible to measure the neutron flux in the general part of the reactor directly, because the spectrum of the thermal neutrons in the center of the reactor as depending on the dimensions of the reactor was determined by measuring the neutron temperature according to one of the following methods depending: boron filter method, filter method, direct measurement by means of a microthermometer. The neutron temperatures in the center of 15 and 25 rods were found to be 370 $\pm$ 15 K (filter method), and 335 K and 315 K (filter method). Also, the resonance escape probability in  $^{235}\text{U}$  ( $\rho$ ), the fast fission factor ( $\mu$ ), and the thermal utilization factor ( $k$ ) as well as the cadmium ratio  $R_{Cd}^1$  for  $^{235}\text{U}$  ( $R_{Cd}^1$ ) for copper ( $R_{Cd}^{\text{Cu}}$ ) and for gallium ( $R_{Cd}^{\text{Ga}}$ ) were determined. The results are given in Table 3. The results of the experimental and theoretical determinations of  $\mu$  are the following:

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B102/B214

Investigation of the ...

Position of the channel

	Value of $\mu$	
	experimental	theoretical
Central channel of an insert of 21 channels with water	1.040±0.006	1.033
One channel with water in the center of a thermal graphite column of 70 cm diameter	1.036±0.005	1.030
Central channel of an insert of 21 channels without water	1.042±0.006	1.035

Q for the GRES type reactor was found to be 0.64 (for channel with water) and 0.65 (without water). It was found that, in order to adjust the neutron spectrum in the center of the subcritical insert so that it is characteristic of the given uranium - graphite lattice, it is necessary so to choose the dimensions of the insert so that its equivalent radius is

$\sqrt{3}(\sqrt{1+L^2})$  cm ( $\sqrt{L}$  is the slowing down length in the moderator and L the diffusion length). To measure  $\mu$  it is sufficient to arrange one cell of the lattice under study in the center of the reactor with 2% enriched uranium. The authors thank Ye. F. Makarov, G. M. Vladykov, G. I. Sidorov,

Cará 5/8

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B102/B214

Investigation of the ...

V. N. Fofanov, V. V. Vavilov, V. A. Semenov, A. N. Galanin, M. V. Bakhtina, M. K. Timonina, A. T. Anfilatov, Yu. S. Ziriyukin, Yu. I. Starykh and A. P. Dolgolenko for collaboration; and A. V. Kamayev, M. Ye. Minashin, G. Ya. Rumyantsev and I. G. Morozov for their interest and discussions. There are 3 figures, 4 tables, and 12 references: 8 Soviet-bloc and 4 non-Soviet-bloc. The three references to English-language publications read as follows: M. Kuche. Nucl. Sci. Engng. 2, No. 1, 96 (1957); D. Klein et al. Nucl. Sci. Engng. 2, No. 4, 403 (1958); J. Volpe et al. Nucl. Sci. Engng. 2, No. 6, 360 (1959).

SUBMITTED: December 12, 1960

Legend to Table 3: 1) number of the cells in the insert, 2) homogeneous lattice, 3) construction of the elements and enrichment of the uranium, 4) ring-shaped elements with water, 1.2%, 5) idem, 6) the same without water, 7) 35 cm thick rods of natural uranium, 8) 35 mm thick rods of 2% enriched uranium, 9) experimental, 10) calculated, 11) in the fuel element (according to fragment accumulation), 12) in the graphite of the central cell, 13) in the fuel element. \*calculated according to V.V. Orlov; \*\*in agreement with the measurements of M.B. Yegiazarov.  
Card ~~6/8~~

DUBOVSKIY, B.G.; KAMAYEV, A.V.; VLADYKOV, G.M.; KUZNETSOV, F.M.; NOZIK, V.Z.;  
PALAMARCHUK, Yu.D.; POPOV, G.A.; VAVILOV, V.V.

Interaction in subcritical reactors. Atom. energ. 16 no.1;16-20 Ja  
'64. (MIRA 17:2)



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Card 2/2

L 16175-66 EWT(m)/EFF(n)-2/EWP(t) IJP(c) JD/WW/JG  
ACC NR: AT6002492 SOURCE CODE: UR/0000/65/000/000/0001/0013

AUTHOR: Kamayev, A. V.; Kuznetsov, F. M.; Vladykov, G. M.; Dubovskiy, B. G.

2/6  
B+1

ORG: Physics-Power Institute, Obninsk (Fiziko-energeticheskiy institut)

TITLE: Providing nuclear safety during operations involving fissionable materials

79, 65  
SOURCE: Obninsk. Fiziko-energeticheskiy institut. Doklady, 1965. Obespecheniye yadernoy bezopasnosti pri rabote s delyashchimisya veshchestvami, 1-13

TOPIC TAGS: fissile material, nuclear fission, chain reaction, nuclear safety, uranium, uranium compound, neutron absorption

ABSTRACT: During work with fissionable materials, due consideration must be given to the problem of nuclear safety, i. e., exclusion of a possible start of uncontrolled fission chain reactions. The authors investigate the nuclear safety problem for the cases of 1) work with uranium of unknown concentration; and 2) work with large masses of uranium solutions in the presence of neutron absorbers. Recommendations are given for salts or solutions of U<sup>235</sup> (1) and for 90% enriched uranyl nitrate solutions in the presence of boron carbide or cadmium rods (2). The discussion is based on the curves presenting a) the critical mass of the solution in a cylindrical core versus the height-to-diameter ratio of the cylinder; b) the minimum critical dimensions of systems with enriched uranium  
55, 27 2  
Card 1/2

L 16175-66

ACC NR: AT6002492

solutions; c) the increase in critical mass of a  $\phi 40$  cm cylindrical container (with and without reflectors) with a central absorber; d) efficiency of circularly and lattice organized boron rods in the presence of reflectors; and e) efficiency of boron and cadmium partition walls (with and without reflectors). The safety methods may be extended to the  $U^{235}$  and  $Pu^{239}$  cases. Orig. art. has: 8 figures and 2 tables.

SUB CODE: 18 / SUBM DATE: none/ORIG REF: 001 / OTH REF: 002

Card 2/2



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ENCLOSURE  
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[Handwritten mark]

ACC NR: AM6032824

(A)

Monograph

IR/

Dubovskiy, B. G.; Kamayev, A. V.; Kuznetsov, F. M.; Vladykov, G. M.; Gurin, V. N.; Murashov, A. P.; Markelov, I. P.; Kochergin, V. P.; Vaymugin, A. A.; Sviridenko, V. Ya.; Diyev, L.V.; Bogatyrev, V.K.; Vavilov, V. V.; Frolov, V. V.

Critical parameters of systems with fissionable materials and nuclear safety; a handbook (Kriticheskiye parametry sistem s delyashchimisya veshchestvami i yadernaya bezopasnost'; spravochnik) Moscow. Atomizdat. 1966. 225 p. biblio. , diagrs., tables. 9000 copies printed.

TOPIC TAGS: nuclear safety, nuclear reactor, homogeneous nuclear reactor, heterogeneous nuclear reactor, chain reaction

PURPOSE AND COVERAGE: This handbook is intended for specialists concerned with the problems of assuring nuclear safety as well as for persons calculating, designing, operating, and studying the physics of nuclear reactors of various types, as well as for students in associated departments. The book discusses methods of creating and maintaining conditions which will exclude the possibility of an accidentally chain reaction during the processing, storage, and transportation of fissionable materials. The book is based mainly on the results of studies published before 1965. In addition to information on critical parameters of systems with fissionable materials, the authors considered it useful to include in the handbook the fundamental concepts of criticality, principles for assuring nuclear safety, a review of cases of the occurrence of uncontrolled chain reactions,

Card 1/2

UDC: 621.039.519.4/621.039.58

ACC NR: AM6032824

and the basic standards for nuclear safety. The authors express appreciation to M. P. Rodionov, T. I. Sukhoverkhova, M. A. Gavrilova, and L. V. Antonkina for their valuable assistance. There are 64 references, 30 of which are Soviet.

TABLE OF CONTENTS (Abridged)

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Ch. I. Basic concepts of nuclear safety -- 5

Ch. II. Review of experimental data on critical parameters of systems with fissionable materials -- 14

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Ch. VII. Basic standards for assuring nuclear safety -- 214

References -- 223

SUB CODE: 18/      SUBM DATE: 20May66/      ORIG REF: 030/      OTH REF: 034

Card 2/2



KUZNETSOV, F.O.; LEBEDEV, N.N.; MOISEL', I.Sh.; TSUKERMAN, V.A.

Using coaxial photocells for recording high-speed luminous  
phenomena. Prib.i tekhn.eksp. 6 no.5:132-134 SMO '61. (MIRA 14:10)  
(Photoelectric measurements)

**KUZNETSOV, P.S.**

Correctly determine the volume of twisting production. Tekst.  
prom. 18 no.8:63 Ag '58. (MIRA 11:10)

1. Starshiy ekonomist shelkovoy fabriki "Krasnaya rabotnitsa."  
(Spinning machinery)

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ORG: none

TITLE: Visual methods of x ray inspection of welded seams

SOURCE: Khimicheskoye i neftyanoye mashinostroyeniye, no. 1, 1967, 44-47

TOPIC TAGS: x ray detection, x ray equipment, weld defect

ABSTRACT: Due to the labor and material cost of photo x-raying welds in chemical and petroleum equipment, most manufacturers now actually examine only 10--15% of welded seams. Visual x-ray inspection is expanding with the use of fluorescent or luminous screens, scintillation detectors, and electrooptical shadow converters, all of which methods are 10--15 times more efficient than photo x-raying and allow 100% inspection of all welds. For fluorescent-screen radiology of steel products more than 12 mm thick the Soviet industry uses betatrons as the radiation source, whereas foreign, e.g., British, industry prefers linear accelerators, but both are too cumbersome for use on welded pipe. A description is given of x-ray apparatus with fluorescent screen. The apparatus cannot be used with steel more than 12 mm thick. A much better type is the British fluoroscope with a Marconi superorthicon image tube, used to detect shrink holes in steel blooms. In the Soviet Union, radiology

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with scintillation detectors is being developed at the VNIIntroskopiya, Moscow, and NIIIntroskopiya at Tomsk Polytechnic Institute (NIIIntroskopiya pri Tomskom politekhnicheskome institute). The x-ray amplifier produced by the Müller company in Hamburg is described. This method of visual inspection is called the most efficient. The Soviet Union is now producing serially the ERGA-S roentgenograph, developed at the NIIelektrografiya Vilnius, which detects flaws in steel up to 30-mm thick, employing selenium plates which can be used repeatedly. Orig. art. has: 6 figures.

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