

The Equation of State of Freon-41 (Methylfluoride)

SOV/76-33-5-6/33

lines the analytical expressions for the elementary functions  $\alpha_0$ ,  $\alpha_1$ , and  $\beta$  were found which are compared to the experimental data in table 2. The equation of state permits an extensive extrapolation towards both sides. The values for  $v''$  of freon-41 were determined on account of the dependences between saturated steam pressure and temperature indicated by Michels (Ref 5). Table 3 shows the values for  $p$  and  $v''$  interpolated for low temperatures. Moreover, the caloric data of freon-41 were computed by means of the equation of state. Tables 4 and 5 show the specific heat and specific inner energy as compared to the values by Michels. There are 5 tables and 6 references, 3 of which are Soviet.

SUBMITTED: August 8, 1957

Card 2/2

VASSERMAN, A.A., KAZAVCHINSKIY, Ya.Z.

Equation of state for air. Inzh.-fiz.zhur. no.4:81-84 Ap '60.  
(MIRA 13:8)

1. Institut inzhenerov morskogo flota, Odessa.  
(Air) (Equation of state)

84922

S/096/60/000/011/008/018  
E 031/E113

11.5300

AUTHOR: Kazavchinskiy, Ya. Z. (Doctor of Technical Sciences)  
TITLE: The Determination of the Elementary Functions in the  
Equation of State of a Real Gas  $\gamma$   
PERIODICAL: Teploenergetika, 1960, No. 11, pp 59-64

TEXT: The results are described of a new investigation which has led to a development of the method described by the author earlier (Ref.1) of representing the equation of state in terms of so-called elementary functions. Let the equation of state be put in the form

$$\sigma = a_0 + a_1 \tau + \beta u + \gamma v,$$

where  $\sigma = pv/RT$ ,  $a_0$ ,  $a_1$ ,  $\beta$ , and  $\gamma$  depend only on the reduced density  $\omega = v_k/v$ , and  $\mu$  and  $v$  are functions of the temperature. Consider first of all the simplest case when the last term can be omitted. In order to determine  $a_0$ ,  $a_1$ ,  $\beta$  three base isothermals are chosen, on which experimental data is most reliable. Then expressions for  $\sigma$  in terms of  $\tau$  and powers of  $\omega$  can be written for each isothermal. On the other hand, expressions can be

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The Determination of the Elementary Functions in the Equation of State of a Real Gas

written for  $\sigma$  from the equation of state. By choosing a suitable value  $\omega_s$  of  $\omega$ , we can determine values of  $\mu$  on each isothermal from the first set of equations and  $\alpha_0, \alpha_1, \beta$  from the second set. Values of  $\mu$  are then easily obtained on all the remaining isothermals, and the equation of state thus derived is the best approximation to the experimental data on these isothermals. In the case when the full equation of state given above must be used, an extra equation is appended to the two sets discussed above, and two values of  $\omega$  must be chosen, but otherwise the principle is the same for the determination of  $\alpha_0, \alpha_1, \beta$  and  $\gamma$ . In the first case  $\mu$  and in the second both  $\mu$  and  $\nu$  are obtained in the form of tables and an indication is given of how analytic expressions can be derived. The method is suitable for all single-phase domains, but separate systems of equations must be formulated for each of the two phases in a two-phase domain. The method gives the best agreement with experimental data. If there are reliable

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81922

S/096/60/000/011/008/018  
E 031/E113

The Determination of the Elementary Functions in the Equation of State of a Real Gas

data on enthalpy and heat capacity, the method allows these to be used to correct the temperature functions found from thermal data. As an example of the use of the method a table of pressure against specific volume is given for water and water vapour for pressures up to 1000 atm. and temperatures up to 900 °C.

There are 1 table and 5 Soviet references.

ASSOCIATION: Odesskiy institut inzhenerov morskogo flota  
(Odessa Institute of Naval Engineers)

Card 3/3

88275

11.3400  
11.3110

S/170/61/004/001/017/020  
B019/B056

AUTHORS: Kazavchinskiy, Ya. Z., Tabachnikov, A. G.

TITLE: Equation of State for a Stoichiometric Nitrogen - Hydrogen Mixture

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1961, Vol. 4, No. 1, pp. 116-119

TEXT: For the setting up the equation of state of this mixture, all experimental data at present known in connection with the thermal properties of the mixture ( $3H_2 + N_2$ ) (Refs. 1-4), were used. The authors used the following representation for the equation of state:  $PV = \alpha_0 + \alpha_1\theta + \beta\psi$ , where  $\alpha_0$ ,  $\alpha_1$ , and  $\beta$  are elementary functions of the density  $\omega$ ,  $\theta = T(^{\circ}K)/100$  and  $\psi$  is an elementary function which monotonically decreases with temperature. On the basis of the experimental data, the following relations are found:

$$\psi = 10^{-0.0133\theta^3}$$

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Equation of State for a Stoichiometric  
Nitrogen - Hydrogen Mixture

S/170/61/004/001/017/020  
B019/B056

$$\alpha_0 = -0.43696 \cdot 10^{-3} \omega + 0.38723 \cdot 10^{-6} \omega^2 + 4.20581 \cdot 10^{-12} \omega^4$$

$$\alpha_1 = 0.36593 + 0.37496 \cdot 10^{-3} \omega + 0.28155 \cdot 10^{-6} \omega^2 - 0.40823 \cdot 10^{-12} \omega^4$$

$$\beta = 0.17759 \cdot 10^{-3} \omega + 0.07722 \cdot 10^{-6} \omega^2 - 2.60625 \cdot 10^{-12} \omega^4$$

In Table 1, a comparison between the values calculated by the above formula and the experimental data by Michels and Wassenaar (Ref. 3) is made. There are 2 figures, 2 tables, and 6 references: 3 Soviet and 3 US.

ASSOCIATION: Institut inzhenerov morskogo flota, g. Odessa (Institute for Naval Engineers, Odessa)

SUBMITTED: June 14, 1960

Legend to Table 1: Comparison between the calculated values for PV with the experimental values: a) Calculated. b) Experiment. c) Deviation.  
1) Average deviation in %. 2) Maximum deviation.

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S/170/61/004/001/017/020  
B019/B056

Сравнение расчетных значений PV (единицы Амага) с опытными (3)

Таблица 1

r, c	$d_A$	40	80	120	160
0	Расчетные . . . . . <i>a</i>	1,0212	1,0467	1,0762	1,1101
	Опытные . . . . . <i>b</i>	1,0212	1,0467	1,0761	1,1100
	Отклонения, % . . . . . <i>c</i>	0,00	0,00	-0,01	0,01
25	Расчетные . . . . .	1,1172	1,1474	1,1819	1,2209
	Опытные . . . . .	1,1172	1,1475	1,1819	1,2210
	Отклонения, % . . . . .	0,00	0,01	0,00	0,01
50	Расчетные . . . . .	1,2131	1,2480	1,2874	1,3316
	Опытные . . . . .	1,2131	1,2481	1,2874	1,3318
	Отклонения, % . . . . .	0,00	0,01	0,00	0,02
100	Расчетные . . . . .	1,4049	1,4490	1,4980	1,5523
	Опытные . . . . .	1,4049	1,4490	1,4979	1,5522
	Отклонения, % . . . . .	0,00	0,00	-0,01	-0,01
200	Расчетные . . . . .	1,7874	1,8490	1,9163	1,9898
	Опытные . . . . .	1,7871	1,8480	1,9155	1,9893
	Отклонения, % . . . . .	-0,02	-0,05	-0,04	-0,03

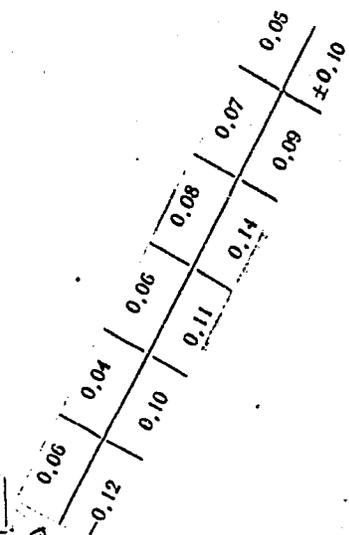
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	200	240	280	320	360	400
	1,1486	1,1923	1,2417	1,2975	1,3615	1,4314
	1,1494	1,1925	1,2422	1,2993	1,3615	1,4315
	0,05	0,02	0,04	0,14	0,07	0,01
	1,2649	1,3143	1,3698	1,4321	1,5011	1,5806
	1,2651	1,3146	1,3709	1,4338	1,5014	1,5821
	0,02	0,02	0,08	0,12	0,09	0,10
	1,3810	1,4361	1,4977	1,5664	1,6433	1,7292
	1,3794	1,4351	1,4983	1,5664	1,6425	1,7275
	-0,12	-0,07	-0,04	0,00	-0,05	-0,10
	1,6121	1,6786	1,7520	1,8333	1,9215	2,0236
	1,6131	1,6803	1,7539	1,8352	1,9210	2,0240
	0,06	0,10	0,11	0,10	0,08	0,02
	2,0699	2,1572	2,2523	2,3563	2,4701	2,5947
	2,0711	2,1574	2,2521	2,3553	2,4689	2,5945
	-0,06	0,01	-0,01	-0,04	-0,05	-0,01

S/170/61/004/001/017/020  
B019/B056



1	Среднее отклонение, %	0,00	0,01	0,01	0,02
2	Максимальное отклонение, %	-0,02	0,05	-0,04	-0,03

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KAZAVCHINSKIY, Ya.Z.; TSOYMAN, G.I.

Method for correlating the law of corresponding states for the purpose of determining the thermodynamic properties of uninvestigated substances. Inzh.-fiz. zhur. 4 no.6:58-63 Je '61. (MIRA 14:7)

1. Institut inzhenerov morskogo flota, Odessa.  
(Thermodynamics) (Freons—Thermal properties)

29991

S/170/61/000/012/001/011  
B125/B138

5.4300 (1273)

AUTHORS: Kazavchinskiy, Ya. Z., Kessel'man, P. M., Rabinovich, V. A.

TITLE: The second virial coefficient and its extrapolation for high temperatures

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, no. 12, 1961, 16-21

TEXT: The present paper deals with the extrapolation of the second virial coefficient well above a temperature range of interest to experiments using the Lennard-Jones potential. From the second virial coefficient

$B = 2\pi N \int_0^{\infty} (1 - e^{-U/kT}) r^2 dr$  and from the Lennard-Jones potential

$U(r) = 4U_0 [(r_0/r)^{12} - (r_0/r)^6]$  it follows that  $B = (2/3)\pi N r_0^3 F(z)$  or

$B = b_0 F(z)$ , (5), for  $z = kT/U_0$ ;  $b_0 = (2/3)\pi N r_0^3$ .  $N =$  Avogadro number,

$k =$  Boltzmann constant,  $U = U(r) =$  potential energy of interaction between two molecules at a distance  $r$ ,  $U_0 =$  minimum potential energy,  $r_0 =$  distance

where  $U = U_0$ . Eq. (5) can be written as  $\log B = \log b_0 + \log F$  (6) and  
Card 1/3

29991

The second virial coefficient ...

S/170/61/000/012/001/011  
B125/B138

coefficient from Eq. (5) even for a temperature range where experimental data are not available. A graphic extrapolation of the theoretical curve was found to be easiest. The second virial coefficient, which has been determined by this method for a wide temperature range, agrees well with corresponding experimental data. The values of the second virial coefficient calculated by a method of T. J. Kihara (Amer. Phys. Soc., 25, 4, 831, 1953), are significantly larger above 400°C than corresponding experimental results. The minimum of the curve  $U_{0k} = f(\log T)$  always corresponds to the Boyle temperature of the substance in question. There are 4 figures, 1 table, and 7 references: 1 Soviet and 6 non-Soviet. The three most recent references to English-language publications read as follows: Hirschfelder J. O., Bird R. B., Spotz E. L. Trans. Amer. Soc. Mech. Eng., 71, 921, 1949; Kihara T. J. Amer. Phys. Soc., 25, 4, 831, 1953; McCormack K. E., Schneider W. G. J. Chem. Phys., 18, 1950. ✓

ASSOCIATION: Institut inzhenerov morskogo flota. g. Odessa (Institute of the Engineers of the Merchant-navy, Odessa)

SUBMITTED: April 19, 1961

Card 3/3

KAZAVCHINSKIY, Ya.Z.; KUDASHEV, V.I.

Determining the critical density of a real gas from data on the  
state of saturation. Inzh.-fiz.zhur. 5 no.4:31-34 Ap '62.  
(MIRA 15:4)

1. Institut inzhenerov morskogo flota, Odessa.  
(Gas-Density) (Critical point)

KAZAVCHINSKIY, Ya.Z.; TABACHNIKOV, A.G.

Equation of the state for mixtures of imperfect gases. Izv.  
vys. ucheb. zav.; neft' i gaz 5 no.7:77-82 '62.  
(MIRA 16:7)

1. Odesskiy institut inzhenerov morskogo flota.  
(Gas, Natural)

VASSERMAN, A.A.; ZAGORUCHENKO, V.A.; KAZAVCHINSKIY, Ya.Z.

Equation of state for methane - ethane mixtures. Zhur. fiz.  
khim. 36 no.11:2527-2529 N'62. (MIRA 17:5)

1. Odesskiy institut inzhenerov morskogo flota.

KAZAVCHINSKIY, Ya.Z., prof.; KESSEL'MAN, P.M., kand. tekhn. nauk;  
KIRILLIN, V.A., akademik; RIVKIN, S.L., kand. tekhn.  
nauk; SYCHEV, V.V., kand. tekhn. nauk; TIMROT, D.L.,  
prof.; SHEYNDLIN, A.Ye., prof.; SHPIL'RAYN, E.E., dots.;  
BUL'DYAYEV, N.A., tekhn. red.

[Heavy water; its thermophysical properties] Tiazhelaiia  
voda; Teplofizicheskie svoistva. Moskva, Gosenergoizdat,  
1963. 255 p. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur pri  
Moskovskom energeticheskom institute (for Kirillin, Sychev,  
Timrot, Sheyndlin, Shpil'rayn). 2. Vsesoyuznyy nauchno-  
issledovatel'skiy teplotekhnicheskii institut imeni F.E.  
Dzerzhinskogo (for Rivkin). 3. Odesskiy institut inzhenerov  
morskogo flota (for Kazavchinskiy). 4. Odesskiy tekhnologi-  
cheskiy institut (for Kessel'man).

S/170/63/006/001/004/015  
B187/B102

AUTHOR: Kazavchinskiy, Ya. Z.  
TITLE: Determination of the properties of little-investigated substances on the basis of the thermodynamic similarity  
PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 6, no. 1, 1963, 27-33

TEXT: The equation of state for real gases in the dimensionless variables  $\tau = T/T_c$ ,  $\omega = v/v_c$  and  $\sigma = pv/RT_c$  where the index c denotes the critical values, is  $\sigma_c = \sigma_c + \alpha_1(\tau-1) + \Delta\theta$ ; (3). In this equation  $\alpha$  depends on  $\omega$  only, while the nonlinear term  $\Delta\theta$  depends on  $\omega$  and  $\tau$ , and decreases as  $\tau$  increases. Ya. Z. Kazavchinskiy (Teploenergetika, no.7, 1954; no.7, 1958; and no.11, 1960) and Ya.Z. Kazavchinskiy and V.I. Kudashev (IFZh, no.4, 1962) describe methods of determining the quantities in (3) from experimental data. The critical density  $\gamma_c$  which is necessary for the application of the similarity method can be determined according to V.A. Zagoruchenko and Ya.Z. Kazavchinskiy (Khimiya i khimicheskaya tekhnologiya, no.3, 1959). The critical

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Determination of the properties ...

S/170/63/006/001/004/015  
B187/B102

$$\begin{aligned} \sigma = & 1 - 1,159638\omega + 0,459182\omega^2 + 0,015030\omega^3 - 0,028015\omega^4 + \\ & + 0,006042\omega^5 + (1 + 0,803333\omega - 0,185328\omega^2 + 0,433764\omega^3 - \\ & - 0,103772\omega^4 + 0,001884\omega^5)(\tau - 1) + (-0,223033\omega + 0,044229\omega^2 + \\ & + 0,295379\omega^3 - 0,128753\omega^4 + 0,012177\omega^5)\left(\frac{1}{\tau^3} - 1\right). \end{aligned} \quad (11)$$

Ethane and isobutane were used as reference gases and the numerical results from (11) were compared with the experimental data obtained by I.A. Beattie, D.R. Douslin, S.W. Levine (Journ. Chem., Phys., v.20, 1619, 1952). The maximum deviation on the isochore of the highest density ( $\omega = 1.65$ ) is 1.4%. For  $\omega < 1.65$  the deviation remains below 0.88% and the mean deviation is 0.18%. The method described allows reliable extrapolation of little-known p, v, T values for substances with respect to density and temperature. There is 1 table.

ASSOCIATION: Institut inzhenerov morskogo flota, g. Odessa (Institute of Naval Engineering Odessa)

Card 3/4

Determination of the properties ...

SUBMITTED: August 3, 1962

S/170/63/006/001/004/015  
B187/B102

Card 4/4

ZAGORUCHENKO, V.A., kand. tekhn. nauk; KAZAVCHINSKIY, Ya.Z., doktor  
tekhn. nauk

Calculation of skeleton tables for steam using equation of state.  
Tepleoenergetika 10 no.8:61-64 Ag '63. (MIRA 16:8)

1. Odesskiy institut inzhenerov morskogo flota.  
(Steam)

S/076/63/037/001/018/029  
B101/B186

AUTHORS: Zhuravlev, A. M., Kazavchinskiy, Ya. Z.

TITLE: Thermodynamic properties of propanol

PERIODICAL: Zhurnal fizicheskoy khimii, v. 37, no. 1, 1963, 181 - 183

TEXT: The following equation of state was derived for propanol:

$$\sigma = \sum_1 a_i \omega^i + \tau(1 + \sum_1 b_i \omega^i) + (1/\tau^8) \sum_1 c_i \omega^i \quad (1), \text{ where } \sigma = pv/RT_{\text{crit}} \cdot \tau$$

$= T/T_{\text{crit}}$ ;  $\omega$  is the reduced density,  $i = 1, 2, 3, 4, 6, 8$ . The coefficients  $a_i$ ,  $b_i$ , and  $c_i$  are tabulated. The following parameters of propanol are assumed to be critical:  $p_{\text{crit}} = 50.16 \text{ atm}$ ;  $v_{\text{crit}} = 0.2198 \text{ l/mole}$ ;  $t_{\text{crit}} = 263.70^\circ\text{C}$ .

The equation holds in the range of reduced densities varying from 0 to 1.6 and between 80 and  $280^\circ\text{C}$ . It permits of extrapolating up to  $360^\circ\text{C}$  if thermal dissociation is not taken into account. The value for the specific heat is given by  $\mu c_{p0} = 4.937 + 0.069664T - 0.000027345T^2 (\text{kcal/mole}\cdot^\circ\text{C})$ .

For lower densities of the saturated vapor ( $0 - 70^\circ\text{C}$ )  $v = 0.637 + (8.206/p)(T/100) - 5.0(T/100) - 43510(T/100)^9$ . Tables showing the thermo-  
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Thermodynamic properties of propanol

S/076/63/037/001/018/029  
B101/B186

dynamic properties of propanol were calculated from Eq. (1). There are 4 tables.

ASSOCIATION: Odesskiy institut inzhenerov morskogo flota (Odessa Institute of Maritime Fleet Engineers)

SUBMITTED: June 24, 1961

Card 2/2

TARABRIN, van Vasil'yevich; KAZAVCHINSKIY, Ya.Z., prof., doktor  
ekhn. nauk, retsenzent; ZAGORUYKO, V.A., inzh.,  
retsenzent; SANOYLOVICH, T.A., red.

[Ship air-conditioning systems] Sudovye ustanovki kondi-  
tsionirovaniia vozdukha. Moskva, Transport, 1964. 161 p.  
(MIRA 17:11)

KAZAVCHINSKIY, Ya.Z., doktor tekhn. nauk, prof.

Some remarks on N.I. Belokon's book "Thermodynamics." Izv.  
vys. ucheb. zav.; energ. 7 no.2:110-113 F '64.

(MIRA 17:3)

1. Odesskiy institut inzhenerov morskogo flota.

KAZAVCHINSKIY, Ya.Z.

Application of classical representations to a new system of  
validation of the second law of thermodynamics. Inzh.-fiz.  
zhur. 7 no. 3:128-133 Mr '64. (MIRA 17:5)

1. Institut inzhenerov morskogo flota, Odessa.

KAZAVCHINSKIY, Ia. S.

Representation of the equation of state of a real gas by  
elementary functions and methods for their determination.

Inzh. fiz. zhur. 7 no.6:129-134 '64.

(MIRA 17:12)

1. Institut inzhenerov morskogo flota, Odessa.

KAZAVCHINSKIY, Ya.Z.

Choice of the reference point when studying the thermodynamic  
similarity of gases. Dokl. AN SSSR 161 no.5:1127-1130 Ap '65.  
(MIRA 18:5)

1. Submitted October 24, 1964.

L 2023-66 EWT(m)/EPF(c)/EWP(j)/T/ETC(m) RPL WW/JW/WE/RM

ACCESSION NR: AP5022388

UR/0170/65/009/003/0348/0353  
536,752

AUTHOR: Kazavohinskiy, Ya. Z. 44, 55

TITLE: Use of thermodynamic similitude for investigation of the properties of gas mixtures

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 9, no. 3, 1965, 348-353

TOPIC TAGS: thermodynamics, thermodynamic state equation, methane, bu-  
tane

ABSTRACT: The article proposes a new concept in the theory of thermodynamic similitude. Instead of taking the critical point as the similitude reference point, any given point may be taken on the Boyle curve which is sufficiently distant from the ideal state of the gas. The gases investigated were methane and butane and their dimensionless parameters are calculated for each gas alone and for binary mixtures. Comparison of results obtained by the new method with existing data indicates that the method is promising. If the discussion is limited to binary mixtures, the problem of the analytical description of their behavior over a considerable range of density change, on the basis only of the equations of the components, reduces essentially to the problem of determining the generalized  
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ACCESSION NR: AP5022388

relationship for the mixture temperature at the reference point as a function of the temperatures of the components and of the molar composition of the mixture, and determining an analogous relationship for the density of the mixture at the reference point. Orig. art. has: 8 formulas and 2 tables

ASSOCIATION: Institut inzhenerov morskogo flota, g. Odessa (Naval Engineering Institute, Odessa)

SUBMITTED: 00

ENCL: 00

SUB CODE: TD, OC

NR REF SOV: 001

OTHER: 005

Card 2/2

KAZAVCHINSKIY, Ya.Z.

On the article: Using classical concepts in the new system  
of substantiation of the second law of thermodynamics."  
Inzh.-fiz. zhur. 9 no.3:409-412 S '65. (MIRA 18:9)

ACC NR: M6036725

Monograph

UR/

Vasserman, Aleksandr Anntol'yevich; Kazovchinskiy, Yakov Zakharovich; Rabinovich, Viktor Abramovich

Thermophysical properties of air and its components (Teplofizicheskiye svoystva vozdukh i yego komponentov) Moscow. Izd-vo "Nauka". 1966. 374 p. biblio., diagr., (4 in pocket), tables. (At head of title: Akademiya nauk SSSR) Errata slip inserted. 3400 copies printed.

TOPIC TAGS: air, thermal property, thermodynamic analysis, thermodynamic function, power plant, gas property, gas dynamics, gas viscosity

PURPOSE AND COVERAGE: This book is intended for scientists, designers, engineers, technicians, and students engaged in research, design, and study of thermal power installations and the separation of gases from a gas mixture. This book presents a method for setting up an equation with which to define the state of an actual gas by means of elementary functions derived from experimental thermal data. The resultant equations are sufficiently accurate to be used for determining thermal and caloric values. Such values were determined for air, nitrogen, oxygen, and argon, and their thermodynamic characteristics data have been arranged in tabular form. Diagrams indicating the state of each substance are also given. Experimental data on the viscosity and heat conductivity of air and its components are analyzed and inferences are drawn. The authors express gratitude to A. Ye. Sheyndlin, V. I. Yepifanova and V. I. Nikolayev for

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UDC: 546.217

ACC NR: AM6036725

their advice. There are 65 references, 20 of which are Soviet.

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Ch. 7. Thermal conductivity of air and its components -- 322

SUB CODE: 20/      SUBM DATE: 3(May)66/      ORIG REF: 158/      OTH REF: 264

Card 2/2

ACC NR: AP7001897

SOURCE CODE: UR/0020/66/171/004/0898/0900

AUTHOR: Kazavchinskiy, Ya. Z.

ORG: none

TITLE: Use of approximate thermodynamic similarity in an analytical description of the properties of real gases on the basis of limited experimental data

SOURCE: AN SSSR. Doklady, v. 171, no. 4, 1966, 898-900

TOPIC TAGS: equation of state, real gas, thermodynamic calculation

ABSTRACT: The object of the paper was to derive from limited experimental data a sufficiently accurate equation of state on the basis of the deviation of the gas being studied and of an analog of this gas from thermodynamic similarity. A system of equations of state  $Z_1(\rho, T)$  approximate in different ways the behavior of the gas considered; they are obtained by using a series of reference points of similarity on Boyle's curves for both gases. These approximating functions are then used to find the following sufficiently accurate equation of state of the gas studied:

$$Z = Z_0(\rho, T) + a_1[Z_1(\rho, T) - Z_0(\rho, T)] + a_2[Z_2(\rho, T) - Z_0(\rho, T)] + \dots + a_n[Z_n(\rho, T) - Z_0(\rho, T)].$$

Card 1/2

UDC: 536.752

APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721330010-4"

where  $a_i$  are constants,  $Z$  is the compressibility of the gas,  $\rho$  its density and  $T$  its temperature. A computer is used to determine constants  $a_i$ . If it is found that this equation does not fit the experimental data with a sufficient degree of accuracy, it can be regarded as a first approximation and used as a kind of "thermodynamic analog" for deriving a new system of approximating functions  $Z_1(\rho, T)$ ; the latter are then used to obtain a more accurate equation of state as the second approximation. The proposed method of deriving an equation of state permits a reliable extrapolation of experimental data for pure substances and gas mixtures of constant composition in terms of densities and temperatures within the range of applicability of the equation of state of the thermodynamic analog. The paper was presented by Academician Kirillin V. A., 11 Mar 66. Orig. art. has: 9 formulas.

SUB CODE: 07/ SUBM DATE: 10Mar66/ ORIG REF: 002

Card 2/2

KAZAYEV, Yu. G., assistant

Use of vasectomized rams as indicators of estrus. Trudy AZVI  
10:124-126 '57. (MIRA 12:8)

1. Iz kafedry akusherstva (sav.kafedroy - dots. B.S.Volzhenin)  
Alma-Atinskogo zoovetinstituta.  
(Artificial insemination)

KAZAYEV, Yu. G., Candidate Vet Sci (diss)-- "On the use of vasectomized lambs as test animals in conducting artificial insemination of Merino sheep under the conditions of southern Kazakhstan". Alma-Ata, 1959. 12 pp (Min Agric USSR, Kazakh Vet Inst im N. E. Bauman), 100 copies (KL, No 23, 1959, 170)

POPOV, P.V., assistant; KAZAYEV, Yu.G., assistant

Structure of the placenta in bison cows. Trudy AZVI 9:388-389  
'56. (MIRA 15:4)

1. Iz kafedry akusherstva (zav. kafedroy - kand.veterinarnykh nauk,  
dotsent B.S.Volzhenin) Alma-Atinskogo zooveterinarnogo instituta.  
(Placenta) (Bison)

SHELMANOV, T.Sn.; KAZAKHSTAN, F.K.

Picture of the peripheral blood in the healthy population of  
the southeastern zone of Kazakhstan. Izv. AN Kazakh. SSR Ser.  
med. nauk no.2:78-80'63. (MIRA 16:10)  
(ALAKUL'SKIY DISTRICT—BLOOD—ANALYSIS AND CHEMISTRY)

KAZAYEVA, Ye.V.

Oxygen as an indicator of the dynamics of water masses.  
Trudy AANII 218:65-109 '60. (MIRA 15:2)  
(Russia, Northern--Water--Composition)

KAZAYN, A. A.

KAZAYN, A.A.

LEONIDOV, N.K.

89(0) **PLANS I ZHIVE EKSPLOATACIJE** 807/1497  
 Abstrakte iz oblasti nauke i tehnickih ispravosti  
 Beograd, 1968. 117-197, 1-1. (Calligraphy of the USSR, 1917 - 1977, Vol. 1)  
 Moscow, Kvalifikatsiya, 1968. 745 p. 5,000 copies printed.  
 Ed. (Title page): L. P. Svetits, Academician; M. (Inside book): G. V. Popova;  
 Sub. Ed.: G. Babar.

**IMPORT:** The book is intended for scientific workers and engineers in metallurgical plants and in the machine-building industry. It may also be used by students in advanced courses in metallurgical vases.

**CONTENT:** This collection of articles covers extensively practical and theoretical developments in Soviet metallurgy during the last 60 years. The author deals with the discovery and development of the major ore deposits and the growth of the metal industry in various parts of European and Asiatic USSR. Research institutes, laboratories, their location, and the names of the scientists and engineers involved are listed. Many papers contain so many references and names of various personalities that it was considered beyond the scope of the coverage of each article to list them. The authors claim that the processes, methods and theories described in this book reflect the most recent developments in Soviet metallurgy.

**Calligraphy of the USSR (cont.)** 807/1497

**Shchegolev, E.S.** Investigations of Extraction of Titanium Dioxide From Complex Paper, and Textile Industries. New sources and methods had to be found to produce this material. Titanium dioxide is a common source of titanium as extraction is easier than from titanium. There are very large reserves of titanium sulphates available in the USSR. The more complex salts and oxides. Soviet scientists are able to have developed laboratory methods for obtaining titanium oxides. The text contains basic scientific and chemical equations. It is stated in conclusion that more research is needed in this field to satisfy industrial requirements. The author claims that it is imperative to improve methods of extracting from aluminium sludge in order to obtain a concentration of  $TiO_2$  of not less than 75 percent. There are 19 Soviet references.

**Shchegolev, E.S. and A.B. Shvener.** Investigation of the Electrochemistry of Titanium. The All-Union Institute for aluminum and magnesium conducted various experiments on electrochemical extraction of titanium from titanium tetrachloride. As a result several methods were developed to produce chlorine.

**Shchegolev, E.S. (cont.)** 807/1497

Initially high purity metallic titanium comparable to that produced by the Herold method. There is 1 Soviet reference.

**Shchegolev, E.S.** Metallurgy of Sintered Titanium and alloys are described in the text. The properties of sintered titanium are listed. As the properties of sintered titanium are related to the properties of the starting materials. The method used was to obtain high-purity crystals of titanium. The method used was to break up by thermal processing the large stable compounds of these elements, in this case  $TiCl_4$  and  $TiF_4$ , the latter being similar to split at lower temperatures. Another method involves the reduction of the compound by an active element such as hydrogen. Other approaches to the synthesis of sintered titanium are mentioned. A method of obtaining sintered titanium is proposed by Chokhal'diy in Poland. It is explained as to its application in the construction of a composition diagram. In conclusion it is pointed out that further experiments in this field are necessary to discover the properties of new materials, their compounds and solid solutions. There are 15 references, 13 Soviet, 1 English, and 1 French.

**Shchegolev, E.S.** The Metallurgy of Noble Metals. The article deals with the extraction and processing of gold, platinum and several other rare metals. Experimental work of this nature is

KAZAYN, A.A.

Kazayn, A.A., and A.D. Khromov (Institute of Metallurgy, Academy of Sciences USSR). Investigation of the Processes of Electrolytic Production of Titanium, p. 103. Titan i yego splavy. vyp. II: Metallurgiya titana (Titanium and Its Alloys. No. 2: Metallurgy of Titanium) Moscow, Izd-vo AN SSSR, 1959. 179 p.

This collection of papers deals with sources of titanium; production of titanium dioxide, metallic titanium, and titanium sheet; slag composition; determination of titanium content in slags; and other related matters. The sources of titanium discussed are the complex sillimanite ores of the Kyakhtinskoye Deposit (Buryatskaya ASSR) and certain aluminum ores of Eastern Siberia. One paper explains the advantages of using ilmenite titanium slags for the production of titanium dioxide by the sulfuric acid method. Production of metallic titanium by thermal reduction processes (hydrogen, magnesium, and carbon reduction) is the subject of several papers, while other papers are concerned with the electrolytic production of titanium. Other subjects dealt with are interaction of titanium with water vapor and with hydrogen and the determination of titanium in slags.

KAZAYN - A.A.

№180/60/000/02/028/028  
№07/1813

**AUTHOR:** OGURTSOV, S. V.  
**TITLE:** Scientific Conference on the Metallurgy, Chemistry and Spectrometry of Titanium

**PERIODICAL:** Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i topivo, 1960, № 2, pp 167-168 (USSR)

**ABSTRACT:** The conference took place on January 14-20 1960 in Moscow in the Institute of Metallurgy, Academy of Sciences, USSR. It was organized by the Committee for Coordination of Scientific Research on Titanium. About 400 representatives of academic and research institutions and works participated in the conference. The conference was divided into four sections: 1) raw materials and smelting of ores; 2) chemical technology and chlorination; 3) metallurgical methods of smelting titanium; and 4) electrolysis. The following papers were read:

1) Metallurgical evaluation of some new deposits (L. P. Bakker); 2) State and prospects of improving the technology of smelting of titanium concentrates (V. A. Espartero and M. A. Soguer);

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Thermodynamic investigations of titanium compounds (P. B. Khalilov and V. A. Remichenko); An investigation of the process of reduction of iron-titanium concentrates with carbon (M. E. Espartero); Some hydrodynamic and kinetic features of the process of chlorination of titanium dioxide in molten chlorides (I. M. Menzies); Oxidation of titanium tetrachloride with oxygen (V. V. Gornov, E. I. Melnikova, V. A. Remichenko); Utilization of waste concentrates for the production of titanium alloys (L. P. Bakker); The use of titanium in the production of some superalloys (Ch. G. G. G. G.); FeCl<sub>3</sub> (M. E. Espartero); An investigation of phase equilibria liquid-vapor in systems formed by titanium tetrachloride with chloroanhydrides of mono- and trichloroacetic acids (G. V. Gerasimov, S. A. Vasy, L. G. Sigornal); Determination of the summary content of carbon in titanium tetrachloride (G. V. Gerasimov, S. A. Vasy, L. G. Sigornal); Basic conditions for standardised

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results of the process of production of titanium by the magnesium thermal method (G. V. Gerasimov, V. A. Remichenko, I. A. Ostipov, V. I. Korshakov, A. I. Dezhnev); On the two stage method of production of titanium by the sodium thermal method (V. A. Remichenko, S. V. Ogurtsov); Production of a high purity titanium (L. P. Bakker); The influence of the content of chlorides in a high purity titanium concentrate on the quality of the metal produced (G. V. Gerasimov, S. A. Vasy, L. G. Sigornal); The production of titanium alloys (L. P. Bakker); The production of titanium and its alloys (L. P. Bakker); The production of titanium alloys (L. P. Bakker); On the theory of refining of titanium (V. A. Remichenko); Production of titanium by electrolysis of titanium dioxide in fluoride-chloride melts (I. P. Bardin, A. A. Farn); Electrolytic production of titanium from chloride-fluoride melts (V. M. Joffe, M. P. Hornov, E. A. Lyubimova); Electrolytic refining of titanium waste products (V. M. Lyubimova) and a number of other reports.

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KHROMOV, A.D.; KAZAYN, A.A.

Solubility and certain electrochemical properties of titanium  
tetrachlorides. Titan i ego splavy no.4:140-146 '60.  
(MIRA 13:11)

(Titanium--Electrometallurgy)

GRINEVICH, V. V.; KAZAYN, A. A.

Studying the solubility of titanium oxides in fused calcium and sodium chlorides. Titan i ego splayv no. 4:147-152 '60.

(MIRA 13:11)

(Titanium compounds) (Solubility)

S/180/60/000/004/001/027  
E111/E452

AUTHORS: Bardin, I.P. (deceased) and Kazayn, A.A. (Moscow)

TITLE: Study of the Electrochemical Properties of the System  
Potassium Fluorotitanate - Sodium Chloride - Titanium  
Dioxide ✓

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh  
nauk, Metallurgiya i toplivo, 1960, No.4, pp. 3-8

TEXT: This is a continuation of work by Kazayn et al. (Ref.6,7) ✓  
on the electrochemical properties of the system  $K_2TiF_6$  (5 - 60%) -  
NaCl (40 - 95%) -  $TiO_2$  (0.05 - 3%). Polarization curves (potential  
vs current density) were taken with a silver reference electrode in  
an apparatus with a graphite crucible and a measuring circuit as  
shown in Fig.1. A stainless steel cathode, graphite anode and the  
reference electrode were inserted into the melt through holes in  
the lid. Melt temperature was  $820 \pm 10^\circ C$ , melt weight 400 to 500 g.  
Fig.2 gives polarization curves for 25%  $K_2TiF_6$  and 75% NaCl with up  
to 0.44%  $TiO_2$ . These show that with up to 0.20%  $TiO_2$  the  
electrolysis is in two stages:  $TiF_6^{-2} \rightarrow TiF_6^{-3}$ ; cathodic  
deposition of metallic titanium from  $TiF_6^{-3}$ . At concentrations

Card 1/2

S/180/60/000/004/001/027  
E111/E452

Study of the Electrochemical Properties of the System Potassium  
Fluorotitanate - Sodium Chloride - Titanium Dioxide

of 0.25% and over, only the first stage occurs. Fig.3 gives  
polarization curves for the full range of  $K_2TiF_6$  concentration  
and 0.05%  $TiO_2$  (0.1% according to Fig. caption but 0.05% according  
to text); for the whole range deposition occurs at cathode  
potentials of 1.4 to 1.5 volts. The corresponding curves but for  
various  $TiO_2$  concentrations up to 1.5% are shown in Fig.4; as in  
Fig.2 the effect with higher  $TiO_2$  concentration is that only the  
 $Ti^{+4} \rightarrow Ti^{+3}$  process occurs. The authors discuss the cathodic  
process, concluding that its mechanism includes discharge of  
sodium ions, reduction of  $TiF_6^{-2}$  to  $TiF_6^{-3}$  by sodium ions and the  
discharge of  $TiF_6^{-3}$  to liberate Ti. They consider that the anode  
process has so far not been sufficiently studied. There are  
4 figures and 13 references: 8 Soviet, 2 English, 2 Japanese and  
1 French. ✓

SUBMITTED: April 29, 1960

Card 2/2

S/598/60/000/004/015/020  
D217/D302

AUTHORS: Khromov, A.D. and Kazayn, A.A.

TITLE: Solubility and some electrochemical properties of titanium chlorides

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splavy. No. 4, Moscow, 1960. Metallurgiyatitana, 140-146

TEXT: The authors carried out this work to improve the technological aspects of the electrolytic method of production of Ti and its chlorides in molten alkali and alkaline earth metal salts. The following were studied: (1) solubility of the lower titanium chlorides in molten NaCl; (2) solubility of  $TiCl_4$  in a molten mixture of NaCl and KCl; (3) reduction of  $TiCl_4$  by hydrogen in molten NaCl. Besides, the decomposition voltages of titanium chloride and the cathode potential at the moment of discharge of Ti ions were determined by a silver reference electrode. The investigations were carried out in an apparatus shown in Fig. 1. A quartz container with a ground lid was placed in a silite furnace.

Card 1/A S

S/598/60/000/004/015/020  
D217/D302

Solubility and some ...

A porcelain container (1) of 250 ml capacity, in which NaCl or a mixture of NaCl and KCl were melted, was placed inside the quartz container (7). In the experiments on producing titanium chloride, a quartz tube (2) of 4-6 mm diameter, through which  $TiCl_4$  in admixture with either hydrogen or argon was added from a feeder (10) was introduced into the porcelain container with the molten NaCl. Probes from various depths of the melt were withdrawn with a porcelain tube. The temperature of the melt was measured with a Pt/Pt-Rh thermocouple and was maintained within  $\pm 10^\circ$  by means of a regulating millivoltmeter. Simultaneously with studying the solubility of titanium chlorides in molten salts, a few electrochemical properties of these compounds were determined. These investigations were carried out in the apparatus shown in Fig. 1, into which supplementary working electrodes, as well as reference electrode, were introduced. A graphite anode (5) of 3-4 mm diameter, protected in the melt by a diaphragm, was introduced into this cell through a quartz section. The cathode (3) was made of Mo wire of 1.5-2.0 mm diameter, and was protected in the upper portion above the melt by a

Card 2/03

S/598/60/000/004/016/020  
D217/D302

AUTHORS: Grinevich, V.V. and Kazayn, A.A.

TITLE: Studying the solubility of oxide compounds of titanium  
in potassium and sodium chloride melts

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego  
splavy. No. 4, Moscow, 1960. Metallurgiya titana, 147-152

TEXT: The object of this work was to study the solubility of  $TiO_2$  in  
calcium and sodium chloride and their mixtures, as well as the dissolu-  
tion processes involved. The essence of the method used was as follows:  
A weighed quantity of finely ground titanium oxide was held for a long  
period of time in either molten NaCl or molten  $CaCl_2$  at a fixed tempera-  
ture. The rate of dissolution was increased by intense stirring of the  
entire melt. Every 2-3 hours, a sample of the melt from the upper  
portion was analyzed for its Ti content. The process of dissolution

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S/598/60/000/004/016/020  
D217/D302

Studying the solubility ...

was carried out to saturation. Determination of the solubility of  $TiO_2$  in  $CaCl_2$  was carried out (1) in an atmosphere of dry argon; (2) in a medium of dry argon and dry hydrogen chloride and (3) in the open air. It was found that  $TiO_2$  is practically insoluble in pure molten  $CaCl_2$ . In order to dissolve it, the presence of dissolved  $CaO$  in the melt is necessary. The dissolution of  $TiO_2$  is chemical in nature and associated with the transfer of  $Ti$  to the molten  $CaCl_2$  in the form of the compound  $3CaO \cdot 2TiO_2$ . A series of chemical properties of this compound was studied and it was found that it dissolves readily in acid. Addition of  $NaCl$  lowers the solubility of  $TiO_2$  in  $CaCl_2$  in a protective atmosphere. There are 3 figures and 10 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The references to the 4 most recent English-language publications read as follows: W. Borhers and W. Hupperts, British patent no. 13759 (1904); M. E. Sibert and M.A. Steinberg, J. of Metals, 8, 1162-1168, (1956); R.C. Devries, R. Roy and E.F. Osborn. J. Phys. Chem. 58, 1702, (1954);

Card 2/3

S/598/62/000/008/006/009  
D217/D307

AUTHOR: Kazayn, A.A.

TITLE: Mechanism of the electrolysis of titanium dioxide in a chloride-fluoride melt

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splayy. no. 8. Moscow, 1962. Metallurgiya titana, 207 - 213

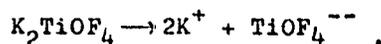
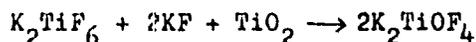
TEXT: The mechanism of the cathode and anode reactions was studied to allow a fuller understanding of the electrolytic process. To this end, the results obtained in an investigation of the physico-chemical and electrochemical properties of the system  $K_2TiF_6 - NaCl - TiO_2$  in a chloride-fluoride melt (A.A. Kazayn and A.D. Khromov. in the collection 'Titan i yego splayy' ('Titanium and its alloys') II. Izd-vo AN SSSR, 1959) were used. The relationship between current efficiency and time of electrolysis was studied, and cathode and anode polarization curves were plotted for different electrolytes

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S/598/62/000/008/006/009  
D217/D307

Mechanism of the electrolysis ...

and cathode and anode current densities. It was found that at high  $TiO_2$  concentrations, a reduction of  $TiO_2$  to  $Ti_2O_3$  takes place at the cathode at a potential of between 0.4 and 0.7 volts, depending on the  $K_2TiF_6$  content of the melt. At low  $TiO_2$  concentrations, the cathode potential depends on the equilibrium with titanium fluoride ions, as no reduction of  $TiO_2$  can occur. The mechanism of the anodic process has not been fully investigated, but, according to M.V. Smirnov et al (Izv. Vostochno-Sibirskogo filiala AN SSSR, 3, 1957),  $K_2TiF_6 - NaCl$  melts of large  $TiO_2$  concentrations contain  $TiO_2^{++}$  and  $Ti_2O_3^{++}$  ions which are discharged at the anode. In melts of low  $TiO_2$  concentrations, the  $TiO_2$  probably reacts with KF, forming  $K_2TiOF_4$ . The latter dissociates into  $K^+$  and  $TiOF_4^{--}$  ions by



Card 2/3

MIRZABEKYAN, A.O.; VANTSYAN, Ye.A.; KAZAZYAN, A.V.

Regeneration of filterable forms of typhoid fever bacilli from the body of the patient. Zhur. mikrobiol., epid. i immun. 41 no.3:135-136 Mr '64. (MIRA 17:11)

1. Yerevanskiy institut epidemiologii i gigiyeny i Yerevanskiy meditsinskiy institut.

L 37155-66 EWT(m)

ACC NR: AP6017281

(IV)

SOURCE CODE: UR/0201/65/000/004/0005/0010

AUTHOR: Krasin, A. K.; Naumov, V. A.; Kazazyan, N. A.; Kazazyan, V. T.

ORG: none

TITLE: Radiation apparatus in the lower thermal column of the shut-down IRT-2000 reactor

SOURCE: AN BSSR. Vestsi. Seryya fizika-tekhnichnykh navuk, no. 4, 1965, 5-10

TOPIC TAGS: research reactor, thermal reactor, radiation biologic effect, reactor neutron flux, Gamma flux, nuclear reactor shield

ABSTRACT: The purpose of the investigation was to check on the possible access to a niche free of graphite after the reactor has been operating for a certain time at a definite power, since knowledge of the dose intensity in the niche of the stopped reactor makes it possible to estimate the time that a man can stay in it. The principal data used were the results of a two-dimensional two-group calculation of the neutron fluxes in a cylindrical model of the reactor. The results contain data on the fluxes of fast, intermediate, and thermal neutrons in the active zone, reflector, and other elements of the reactor. The various sources of activation radiation that may be present in the stopped reactor are discussed and plots of the relative neutron distribution are given. Also calculated are the  $\gamma$  ray fluxes and dose intensities. The results show that the radiation level in the niche depends on the number of preceding operating daily cycles, but that after approximately 180 days saturation sets in, and

Card 1/2

L 37155-66

"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721330010-4"

ACC NR: AP6017281

the dose intensity is practically independent of the reactor operating time. At an operating power of 1000 kw, the dose intensity in the most dangerous place remains at a rather higher level (85 mr/hr as against the allowed 2.8) even one month after reactor shutdown. This means that no person should come within less than 50 cm from the thermal shield and that a brief stay (~30 min) is permissible in the biological shield region. Orig. art. has: 2 figures, 5 formulas, and 3 tables.

SUB CODE: 06, 18 SUBM DATE: 00/ ORIG REF: 004 OTH REF: 001

Card 2/2 af

L 37155-66 EWT(m)

ACC NR: AF6017281

(N)

SOURCE CODE: UR/0201/65/000/004/0005/0010

AUTHOR: Krasin, A. K.; Naumov, V. A.; Kazazyan, N. A.; Kazazyan, V. T.

39  
E

ORG: none

TITLE: Radiation apparatus in the lower thermal column of the shut-down IRT-2000 reactor

SOURCE: AN BSSR. Vestsi. Seryya fizika-tekhnichnykh navuk, no. 4, 1965, 5-10

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ABSTRACT: The purpose of the investigation was to check on the possible access to a niche free of graphite after the reactor has been operating for a certain time at a definite power, since knowledge of the dose intensity in the niche of the stopped reactor makes it possible to estimate the time that a man can stay in it. The principal data used were the results of a two-dimensional two-group calculation of the neutron fluxes in a cylindrical model of the reactor. The results contain data on the fluxes of fast, intermediate, and thermal neutrons in the active zone, reflector, and other elements of the reactor. The various sources of activation radiation that may be present in the stopped reactor are discussed and plots of the relative neutron distribution are given. Also calculated are the  $\gamma$  ray fluxes and dose intensities. The results show that the radiation level in the niche depends on the number of preceding operating daily cycles, but that after approximately 180 days saturation sets in, and

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KAZAZAYEV, V.N., kand. tekhn. nauk

Design of frames for stability losses of the 2d order. Ser. nauch.  
trud. RIIZHT no.40:93-99 '63.

Specified calculation of the sides of diesel locomotive trucks  
under static load. Ibid.:100-109

(MIRA 18:3)

KAZAZAYEV, V.N., inzh.

Calculating changes in the modulus of elasticity in determining flexibility and critical stresses in compressed frames. Trudy RIIZHT no.24:116-125 '58. (MIRA 11:9)  
(Structural frames) (Elasticity)

KAZAZAYEV, V. N.; Cand Tech Sci -- (diss) "Limit states of chassis."  
Leningrad, 1960. 13 pp; (Ministry of Railroads USSR, Leningrad Order  
of Lenin Inst of Railroad Transport Engineers im Academician V. N.  
Obraztsov); 150 copies; price not given; (KL, 17-60, 154)

KAZAZAYEV, V.N. (Rostov-na-Donu)

Limited use of the strain analysis of single-span asymmetrical  
frames with fixed supports. Stroi. mekh. i rasch. soor. 2  
no. 2:27-32 '60. (MIRA 14:5)  
(Structural frames)



KAZAZYAN, A.V.

Dystrophy of the liver in Botkin's disease. Zhur. eksp. i  
klin. med. 3 no.4:41-47 '63 (MIRA 16:12)

SOV/124-57-7-7819

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 7, p 50 (USSR)

AUTHOR: Kazban, A. M.

TITLE: Determination of the Shape of Three Profiles From a Given Velocity Distribution Past Them (Opreleniye formy trekh profiley po izvestnomu na nikh raspredeleniyu skorosti)

PERIODICAL: Uch. zap. Kazansk. un-ta, 1956, Vol 116, Nr 5, pp 32-37

ABSTRACT: The author seeks to establish the (triplane) configuration of three profiles immersed in a plane potential flow of an incompressible liquid for a given velocity distribution along the profiles,  $v$ , and given values of the complex potential on the forward stagnation points of the surfaces,  $w$ . The contours of the three profiles obtained by the intersection of the  $z$  plane with the streamlines starting from the aft stagnation points is fulfilled by the outline of a hexagon in the  $w$  plane formed by the three semi-infinite horizontal intersections and defined by the given conditions of the problem. The contour of this hexagon is represented in a definite way on the upper semiplane  $\text{Im } \zeta > 0$ , and the problem of constructing the profiles is reduced to the determination of the missing boundary values of the analytical function

Card 1/2

*Chair of Hydromechanics*

SOV/124-57-7-7819

Determination of the Shape of Three Profiles From a Given Velocity (cont.)

$$\chi(\zeta) = \log_e \frac{dw}{d\zeta} = \log_e v - i \beta$$

According to the conditions of the problem, on the segments on the real axis  $\xi$  in the  $\zeta$  plane that correspond to the contour of the profiles, the  $\log_e v$  values are known, and the values of  $\chi$  on the remaining portions of the  $\xi$  axis satisfy the three nonlinear functional conditions expressing the equality of the magnitudes of  $v$  and  $\beta$  in the coinciding points of the confluence surface along the streamlines beyond the profiles. The article indicates the general sequence of calculations leading in principle to the singular solution of the stated problem. The method described is general and is applicable to any system of profiles. No examples of actual construction are given. The method for satisfying the conditions of closed contours for the profiles is not given.

G. V. Stepanov

Card 2/2

KAZBAN, A.M.

Solution of the Dirichlet problem for multiply connected regions.  
Trudy KAI no.71:56-72 '62. (MIRA 18:5)

KAZBAN, A.M., Cond Phys-Math Sci--(diss) "Reverse boundary <sup>-value</sup> problems  
of aero-hydromechanics for ~~multi-layer~~ <sup>multiply-connected</sup> regions." Kazan', 1958. 8 pp  
(Min of Higher Education USSR. Kazan' Order of Labor Red Banner State  
U in V.I.Ul'yanov-Lenin), 150 copies (19,45-58, 141)

- 6 -

L 2894-66 EWT(d)/EWT(1)/EWT(m) IJP(c) JD

ACCESSION NR: AT5023187

UR/2529/62/000/071/0056/0072

AUTHOR: Kazban, A. M.

251  
20  
5+1

TITLE: On the solution of a Dirichlet problem for a multiply connected region

SOURCE: Kazan. Aviatsonnyy Institut. Trudy, no. 71, 1962. Matematika i mekhanika, 56-72

TOPIC TAGS: Dirichlet problem, contour integration, conformal mapping, analytic function, complex variable

ABSTRACT: There is given an n-multiply connected region  $D_z$  represented by the closed, piecewise continuous contours  $L_1, L_2, \dots, L_n$  (see Fig. 1 on the Enclosure). It is required to determine the function which is harmonic in the domain  $D_z$  with known initial conditions

$$\left. \begin{aligned} u &= u_n(x, y); \quad x, y \in L_n; \\ u &= u_n(\xi_n); \quad (n=1, 2, \dots, n); \end{aligned} \right\}$$

The problem is solved by assuming that the required function is the real part of the function  $f(z) = u(x, y) + iv(x, y)$  which is regular and single valued in the

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L 2894-66

ACCESSION NR: AT5023187

region  $D_z$ . The novelty of the method used here to achieve the above goals is to carry out a conformal mapping on a canonical region consisting of the upper half plane (see Fig. 2 on the Enclosure). The mapping is carried out by using the Schwartz-Christoffel transformations in the form

$$w(\zeta) = \kappa_0 + \kappa_1 \zeta + \kappa_2 \zeta^2 - \sum_{\kappa=1}^{n-1} \frac{Q_\kappa}{\pi_\kappa} \ln(\zeta - c_\kappa),$$

It is shown that the relationship between  $\xi_k^I$  and  $\xi_k^II$  is obtained from the conditions

$$\varphi(\xi_k^I) = \varphi(\xi_k^II); \quad \xi_k^I \in \lambda_k^I, \quad \xi_k^II \in \lambda_k^II, \quad (\kappa = 1, 2, \dots, n),$$

where

$$\varphi(\xi) = \kappa_1 \xi + \kappa_2 \xi^2 - \sum_{\kappa=1}^{n-1} \frac{Q_\kappa}{\pi_\kappa} \ln|\xi - c_\kappa| + \text{const}.$$

The variables  $\xi^I$  are calculated approximately for the function  $\varphi$  given above. This problem is shown to be applicable to the modified Dirichlet problem used in the theory of elasticity and aerodynamics with the boundary conditions

$$u = u_\kappa(x, y) + B_\kappa, \quad (\kappa = 1, 2, \dots, n).$$

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ACCESSION NR: AT5023187

In particular, the following simple case is considered

$$w = \varphi_1(z)$$

which corresponds to a situation where the branch cut in the  $D_w$  domain lies along a single straight line. The above problem can also be generalized to the case of a periodically multiply connected region. Orig. art. has: 3l, equations and 4 figures.

ASSOCIATION: Kazan. Aviatzionnyy institut (Kazan Aviation Institute)

SUBMITTED: 08Jun61

ENCL: 02

SUB CODE: MA

NO REF SOV: 008

OTHER: 000

Card 3/5

L 2894-66

ACCESSION NR: AT5023187

ENCLOSURE: 01

0

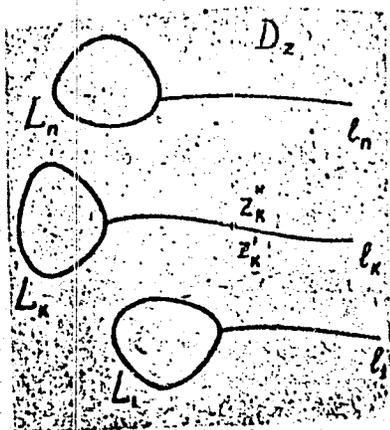


Fig. 1

Card 4/5

L 2894-66

ACCESSION NR: AT5023187

ENCLOSURE: 02

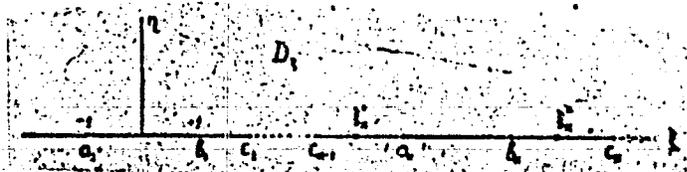


Fig. 1

KC  
Card 5/5

DESOV, A.Ye., doktor tekhn.nauk, prof.; GORDON, S.S., kand.tekhn.nauk;  
POPOV, L.N., kand.tekhn.nauk; KOCHUNOV, K.M., inzh.; KAZBEK, Z.A.,  
inzh.; TSYURUPA, A.L., inzh.

Results of the examination of rolling mills operating with the  
N.IA.Kozlov equipment and suggestions for improving the tech-  
nology. Trudy NIIZHB no.33:205-225 '64.

(MIRA 18:2)

1. Nauchno-issledovatel'skiy institut betona i zhelezobetona  
Gosstroya SSSR (for Desov). 2. Nauchno-issledovatel'skiy  
institut zhelezobetonnykh izdeliy, stroitel'nykh i nerudnykh  
materialov (for Gordon). 3. Nauchno-issledovatel'skiy institut  
Glavnogo upravleniya po zhilishchnomu i grazhdanskomu stroitel'-  
stvu v gorode Moskva (for Popov). 4. Moskovskiy institut t'novogo  
i eksperimental'nogo proyektirovaniya (for Kochunov). 5. NIISroy-  
fiziki (for Kazbek). 6. Nauchno-issledovatel'skiy institut organi-  
zatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stu (for  
TSyurupa).

VLASOV, O.Y., doktor tekhn. nauk, prof.; VEYDENBAUM, G.I., inzh.;  
YEREMEYEV, G.G., inzh.; KAZBEK-KAZIYEV, Z.A.; GUSMAN, A.Z.;  
BOLOTINA, A.V., red.izd-va; TARKHOVA, K.Ye., tekhn. red.

[Durability of enclosing and structural elements; physical  
bases] Dolgovechnost' ograzhdaiushchikh i stroitel'nykh kon-  
struktsii; fizicheskie osnovy. Moskva, Gosstroizdat, 1963.  
113 p. (MIRA 16:3)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut  
stroitel'noy fiziki. 2. Laboratoriya dolgovechnosti og-  
razhdayushchikh konstruktsiy Instituta stroitel'noy fiziki  
Akademii stroitel'stva i arkhitektury SSSR (for Vlasov,  
Veydenbaum, Yereyev, Kazbek-Kaziyev, Gusman). 2. Chlen-  
korrespondent Akademii stroitel'stva i arkhitektury (for  
Vlasov). (Building materials--Testing)

L 22083-66 EWT(m)/T/EWP(v)/EWT(d)/EWP(k)/EWP(h)/EWP(l) DJ  
ACC NR: AP6012995 SOURCE CODE: UR/0119/65/000/002/0029/0029

AUTHOR: Kazbekov, A. R. (Engineer) 71 B

ORG: none

TITLE: Second Leningrad science-technical conference on hydraulic mechanisms and hydroautomatics 11. 74

SOURCE: Priborostryeniye, no. 2, 1965, 29

TOPIC TAGS: mechanical engineering conference, servosystem, positive feedback, hydraulic device, automatic control system, automation

ABSTRACT: The Second Scientific-Technical Conference on Hydraulic Devices and Hydroautomatics was held in Leningrad from 13 to 16 Oct. 1964 and attracted about 300 participants. Thirty-six reports were heard and discussed. Hydraulic devices and hydroautomata are now in wide use in metal-working machinery, construction and road machinery, mining equipment, transport machinery, chemical and other industries. Reports at the conference reflected developments and experience in such areas as: high power hydraulic devices; high power servosystems with positive feedback; automatic hydraulic control systems; a two-stage proportional hydraulic amplifier; correction of high-speed electro-hydraulic servosystems; working fluids for use in hydraulic systems; bibliographies of materials concerning construction and design of hydraulic devices. The conference.

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L 22083-56

ACC NR: AP6012995

emphasized the need for further development of work in the area, the importance of creating a powerful construction basis for manufacture of equipment for automation of industry and the preparation of more qualified workers in the area. The Third Conference on Hydraulic Systems and Hydroautomatics will be held in October, 1968. /JPRS/

SUB CODE: 13, 09 / SUBM DATE: none

Cord 2/2 BLG

*Kazbekov, E. N.*

**AUTHORS:** Bresler, S. Ye., Saminskiy, Ye. M., Kazbekov, E. N. 57-11-16/33

**TITLE:** Paramagnetic Resonance Radiospectrometer for the Study of Chemical Reactions (Paramagnitno-rezonansnyy radiospektrometr dlya izucheniya khimicheskikh reaktsiy)

**PERIODICAL:** Zhurnal Tekhn. Nauch., 1957, Vol 27, Nr 11, pp. 2535-2553 (USSR)

**ABSTRACT:** The molecules taking part in chemical reaction as a rule pass a state of chemically active and free radicals. In these there are present electrons with non-paired spins, i.e. magnetic moments. In order to be able and observe the appearance as well as the disappearance of these active free radicals in chemical processes the sensitivity of the paramagnetic spectrometer must be greatly increased. It has been only during the last time that we find the possibility to build an apparatus with such a great sensitivity mentioned in literature. The calculation of the absolute sensitivity of radiospectrometers of different design, which are planned for the investigation of free radicals in chemical reactions, is given here. The authors show that radiospectrometers with high-frequency modulation of the magnetic field and with semiconductors as ray-receivers, as well as the radiospectrometer with full-range resonator and bolometric transformer of the energy at low frequency modulation are best. One of the latter kind, built by the authors is described here. Its optimum sensitivity of  $2.10^{-13}$  mol

Card 1/2

Paramagnetic Resonance Radiospectrometer for the Study of Chemical Reactions. 57-11-16/33

diphenylpicrine hydrazil is close to the optimum sensitivity calculated. Ways for the further increase of sensitivity are investigated. In the end some results obtained by the investigation of the reactions of polymeres are given. There are 10 figures and 7 Slavic references.

ASSOCIATION: Institute for High-Moleculer Compounds AN USSR, Leningrad (Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad)

SUBMITTED: June 24, 1957

AVAILABLE: Library of Congress.

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721330010-4"

BRESLER, S.Ye.; KAZBEROV, E.N.; SAMINISKII, Ye.M.

Study of macroradicals in polymerization and degradation processes.  
Part 1. Vysokom. noed. 1 no.1:132-137 Ja '59. (MIRA 12:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.  
(Radicals (Chemistry)) (Polymerization)

BRESLER, S.Ye.; KAZBEKOV, E.N.; SAMINSKIY, Ye.M.

Macroradicals in polymerization and destruction processes. Vysokom.  
soed. 1 no.9:1374-1382 S '59. (MIRA 13:3)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
(Radicals (Chemistry)) (Methacrylic acid) (Acrylic acid)

KAZBAKOV, Ye. N., SAMINSKIY, Ye. M., BRESLER, S. Ye.

"Investigation of the Macroradical reactivity by Electron-spin-resonance."

report presented at the International Polymer Symposium, (IUPAC), Moscow, USSR,  
14-18 June 1960.

KAZBEKOV, E. N.

PHASE I BOOK EXPLOITATION

SOV/4983

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simpozium po makromolekulyarnoy khimii, SSSR, Moskva, 14-18 iyunya 1960 g; doklady i avtoreferaty. Sektsiya II. (International Symposium on Macromolecular Chemistry Held in Moscow, June 14-18; Papers and Summaries) Section II. [Moscow, Izd-vo AN SSSR, 1960] 559 p. 5,500 copies printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry, Commission on Macromolecular Chemistry

Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemists interested in polymerization reactions and the synthesis of high-molecular compounds.

COVERAGE: This is Section II of a multivolume work containing papers on macromolecular chemistry; The papers in this volume treat mainly the kinetics of various polymerization reactions initiated by different catalysts or induced by radiation. Among the research techniques discussed are electron paramagnetic  
Card 1/12

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721330010-4"

International Symposium on Macromolecular Chemistry (Cont.) SOV/4983

resonance spectroscopy and light-scattering interpolation. There are summaries in English, French and Russian. No personalities are mentioned. References follow each article.

## TABLE OF CONTENTS:

Bresler, S.Ye., E.N. Kazbekov, and Ye.M. Saminskiy (USSR). Study of the Reactivity of Macroradicals by the Method of Electron Paramagnetic Resonance	5
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Tüdös, F., I. Kende, and M. Azori (Hungary). Kinetics of the Inhibition of Polymerization of Styrene by Nitro Compounds	31
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Card 2/12

34995

3/190/62/004/003/015/023  
B124/B101

15. 8000

AUTHORS: Bresler, S. Ye., Kazbekov, E. N., Saminskiy, Ye. M., Sukhodolova, A. T.

TITLE: Measurement of the degree of polymerization by the dielectric losses method

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 3, 1962, 419 - 422

TEXT: A simple, rapid method, accurate to about  $\pm 2 - 3\%$ , is suggested which can be applied to determine the degree of polymerization at high conversion degrees of the monomer examined. The technique used is based on the fact that, for a fixed super-high frequency range, where the dielectric losses of the unchanged monomer are high as compared with those of the polymer which need not be considered, the decrease of the monomer content is represented by that of the dielectric losses. Electromagnetic oscillations having a wave length of 2 to 3 cm are supplied from a standard-type 43-4 (43-I) generator to a cavity resonator carrying a tube with the polymerized mixture which is excited through a connecting dia-  
Card 1/3

S/190/62/004/003/015/023

B124/B101

Measurement of the ...

phragm. The resonator is connected to a crystal detector which records changes in the oscillatory power on polymerization by means of a second diaphragm. Power values are controlled with a calibrated attenuator and oscillation frequency is automatically adapted to that of the resonator which varies in the course of polymerization due to the change of the dielectric permeability of the medium. The automatic adapter has been described earlier. (Tekhnika izmereniya na santimetrovykh volnakh (Measuring technique with centimeter waves), Sovetskoye radio, 1949). Power supplied to the resonator was controlled with a directional coupler with a crystal detector. In order to calibrate the device, the amount of the polymer formed was checked by extraction with a volatile solvent (benzene, dichloroethane etc.) for several days and successive cryoscopic sublimation.

The equation  $C = \frac{1 - T_0/T_1}{1 - T_0/T_1}$ , (7) was derived provided that the input and output coupling parameters of the resonator are identical, where  $C$  is the concentration of the monomer,  $T_0$  the resonance transmission coefficient (ratio of the power passing the resonator at the moment of resonance to

Card 2/3

5,4/30

14356  
S/181/63/005/002/046/051  
B102/B186AUTHORS: Bresler, S. Ye., Kazbekov, E. N., Fomichev, V. N., Sech, F.,  
and Smeytek, P.

TITLE: Macroradicals in solid polymers

PERIODICAL: Fizika tverdogo tela, v. 5, no. 2, 1963, 675 - 682

TEXT: The destruction of macropolymers is studied in a special vacuum manipulator at liquid-nitrogen temperature. The investigations were made using an e.p.r. spectrometer with rf magnetic-field modulation. The diphenyl picrylhydrazyl spectrum served as reference standard. The polymers investigated (polymethyl methacrylate (I), polystyrene (II), polyvinyl acetate (III)) were produced by thermal polymerization. The kinetics of the disintegration of the macroradicals in solid polymers, formed by mechanical destruction, is studied in great detail. The macroradicals obtained in vacuum vanish very slowly; this process whose rate constants are given by  $K_I = 10^{16} \exp\left(\frac{-29000 \pm 2000}{RT}\right) \text{ cm}^3/\text{mole}\cdot\text{sec}$ ;

Card 1/3

S/181/63/005/002/046/051  
B102/B186

Macroradicals in solid polymers

$K_{II} = 10^{18} \exp\left(\frac{-24000 \pm 2000}{RT}\right) \text{ cm}^3/\text{mole}\cdot\text{sec}$ ;  $K_{III} = 10^7 \exp\left(\frac{-23000 \pm 2000}{RT}\right) \text{ cm}^3/\text{mole}\cdot\text{sec}$ ;

takes several hours. The macroradical separation is due to disruption of hydrogen molecules from the polymer chains; a migration mechanism is assumed for the radical state being effective from chain to chain. The macroradical disruption is strongly stimulated by oxygen due to radical oxidation. The destruction process by  $O_2$  is accelerated to about 100 times the rate under normal conditions. The kinetic constants of the macroradical disruption in the presence of oxygen were measured and their temperature dependence was determined. If the oxygen is eliminated from the ampoules after complete radical oxidation (only ROO-present) the rate of macroradical destruction is decreased by a factor of 5 to 10. Also this effect speaks in favor of the hydrogen migration suggested. The regeneration of the initial carbon radicals of polymethyl methacrylate from the hydroxides on oxygen evacuation occurs more rapidly at  $0^\circ\text{C}$  and leads to a 50% restoration. It proved impossible to explain radical destruction by diffusion processes; the only mechanism possible seems to be the radical state migration through subsequent disruption of hydrogen atoms by the polymer chain radicals. There are 4 figures.

Card 2/3

Macroradicals in solid polymers

S/181/63/005/002/046/051  
B102/B186

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad  
(Institute of High-molecular Compounds AS USSR. Leningrad)

SUBMITTED: October 1, 1962

f

Card 3/3

BRESLER, S.Ye.; KAZBEKOV, E.N.; FOMICHEV, V.N.

Reactivity of macroradicals. *Kin.i kat.* 6 no.5:820-827 9-0 '65.  
(MIRA 18:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

KAZBEKOV, E.S.

Organizing the prevention of industrial traumatism among  
workers in nonferrous metallurgy. Zdrav.Kazakh. 22 no.6:6-10  
'62. (MIRA 15:11)

1. Iz Instituta organizatsii zdravookhraneniya i istorii  
meditsiny imeni N.A.Semashko (nauchnyy rukovoditel' - doktor med.  
nauk P.P.Radkin).  
(NONFERROUS METAL INDUSTRIES--SAFETY MEASURES)

KAZBEKOV, E.S.

Industrial trauma in the Balkhash mining and metallurgical  
complex. Zdrav. Kazakh. 22 no.10:5-9 '62. (MIRA 17:5)

1. Iz Instituta organizatsii zdravookhraneniya i istorii  
meditsiny imeni N.A. Semashko: nauchnyy rukovoditel' - doktor  
meditsinskikh nauk P.P. Radkin;

*KAZBEKOV, P.P.*  
 ANTONOV, I.A., kand.tekhn.nauk; ANTOSHIN, Ye.V., inzh.; ASINOVSKAYA, G.A.,  
 inzh.; VASIL'YEV, K.V., kand.tekhn.nauk; GUZOV, S.G., inzh.; DEYKIN,  
 V.K., inzh.; ZAYTSEVA, V.P., inzh.; *KAZBEKOV, P.P.*, inzh.; KARAN,  
 Yu.B., inzh.; KOLTUNOV, P.S., kand.tekhn.nauk; KOROVIN, A.I., inzh.;  
 KRZHECHKOVSKIY, A.K., inzh.; KUZNETSOVA, Ye.I., inzh.; MATVEYEV, N.N.,  
 teknik; MOROZOV, M.Ye., inzh.; NEKRASOV, Yu.I., inzh.; NECHAYEV,  
 V.D., kand.tekhn.nauk; NINEBURG, A.K., kand.tekhn.nauk; SPEKTOR, O.Sh.,  
 inzh.; STRIZHEVSKIY, I.I., kand.khim.nauk; TESMENITSKIY, D.I., inzh.;  
 KHROMOVA, TS.S., inzh.; TSEKUNEL', A.K., inzh.; SHASHKOV, A.N., kand.  
 tekhn.nauk, dots.; SHELECHNIK, M.M., inzh.; SHUKHMAN, D.Ya., inzh.;  
 EDEL'SON, A.M., inzh.; VOLODIN, V.A., red.; UVAROVA, A.P., tekhn.red.

[Machines and apparatuses designed by the All-Union Institute of  
 Autogenous Working of Metals] Mashiny i apparaty konstruksii  
 VNIIAvtogen. Moskva, Gos.nauchno-tekhn.isd-vo mashinostroitel'noi  
 lit-ry, 1957. 173 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii  
 institut avtogennoi obrabotki metallov, no.9)

(Gas welding and cutting--Equipment and supplies)

KAZBEKOV, S.

Batum airport is a haven of communist labor. Grazhd.av. 18  
no.10:33 0 '61. (MIRA 15:5)  
(Batum--Aeronautics, Commercial)

KAZBEKOVA, D. A.

Dissertations. Department of Technical Sciences, July-Dec. 1957.  
Vest. Ak. Nauk BSSR, 1958, No. 4, pp. 123.

At the Inst. of Power Engineering in G. M. Krzhizhanovskiy the following dissertations for degree of Cand. Tech. Sci. were defended:

V. N. ADRIANOV - Transmission of Radiation Heat of Dusted Combustion Gases in the Channel With Cooled Walls.

L. N. ZHEKENTI - Problems of the Determination of the Optimum Parts of the GES in the System With Control Carried out for Years.

A. A. ISMAILOVA - Investigation of the Thermal Processes in the Sun-Drying Devices of Different Fruit Structure.

D. A. KAZBEKOVA - Problems of the Energy Supply of the Pastures of the Drive-Cattle Breeding.

I. B. MOTSEKUS - Investigation of the Gasdynamic and Electric Processes Accompanying the Elimination of the Arc by Air Jets.

I. K. STASYULYAVICHUS - Covering of the Heat Maximum in the TET's of High and Superhigh Parameters.

L. N. ZHEKENTI - Problems of the Determination of the Optimum Parts of the GES in the System With Control Carried out for Years.

A. A. ISMAILOVA - Investigation of the Thermal Processes in the Sun-Drying Devices of Different Fruit Structure.

D. A. KAZBEKOVA - Problems of the Energy Supply of the Pastures of the Drive-Cattle Breeding.

TARASOV, N.F.; KAZBEKOVA, D.A.

Some problems of the introduction of radioactive colloidal solutions  
into lymphatic vessels, Med. rad. 9 1. 3:12-17 Mr '64. (MIRA 17:12)

SOV/109- -43-18/38

AUTHORS: S.A. Kornilov and O.N. Kazbekova

TITLE: Detection in the Cathode Circuit of an Under-Excited Reflex Klystron (Detektirovaniye v katodnoy tsepi nedovozbuzhden'nogo otrazhatel'nogo klistrona)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 3, pp 475-481 (USSR)

ABSTRACT: It was suggested by the author, Kornilov, in 1955 (Ref 6) that the envelope of a high-frequency signal which is amplified by a klystron can be detected directly in the cathode circuit of the klystron tube. The circuit for this purpose is very simple, as can be seen from Fig 1. The detected signal is taken from a resistance R which is connected into the cathode circuit of the tube; the klystron performs the function of a regenerative amplifier as well as the detector. The problem of employing this type of detection was investigated experimentally at frequencies of 3000 Mc/s and 10000 Mc/s. The circuits employed for the measurements are shown diagrammatically in Figs 2 and 3. From the experiments it was found that at low input signals a square detection characteristic was obtained. At large input signals a

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SOV/109- -4-3-18/38

Detection in the Cathode Circuit of an Under-Excited Reflex Klystron saturation effect was observed. The amplification coefficient of the system as a function of the cathode resistance  $R$  was measured and the results are plotted in Fig 4 for two values of the reflector voltage. The sensitivity of the detectors is illustrated in Fig 5; the axis of the abscissae represents the potential of the reflector, while the axis of the ordinates shows the sensitivity in the maxima of the "amplification regions". It was found that the threshold sensitivity of the klystron operating at the wavelength of 3 cm was  $10^{-11}$  W. On the other hand the threshold sensitivity for the 10 cm klystron was  $10^{-10}$  W. The mechanism of the detection in the cathode circuit can be analysed theoretically. If it is assumed that the emission current is constant and that the thermal velocities of the electrons emitted by the cathode are governed by the Maxwell distribution law, the detector characteristic can be expressed by:

Card 2/3

$$\Delta i = \frac{i}{2} \left( \frac{q}{kT} \right)^2 \beta^2 U^2$$

SOV/109- -4-3-18/38

Detection in the Cathode Circuit of an Under-excited Reflex Klystron

This formula is in good agreement with the experimental results. On the basis of the above investigation it is concluded that the use of the cathode-type detection in a klystron is quite feasible, especially in view of the fact that the threshold sensitivity is of the same order as that of a crystal detector. The input impedance of a video amplifier which is connected to the cathode circuit can be comparatively low (of the order of several thousand ohms).

Card 3/3 There are 6 figures, 1 table and 6 references, 5 of which are Soviet and 1 English.

SUBMITTED: September 7, 1957

PROCESSES AND PROPERTIES INDEX

**KAZBERYUK, N. A.** 112

**CA**

Influence of kumiss on *B. paratyphi abortus equi*. N. A. Kazberyuk. *Z. Mikrobiol., Epidemiol. Immunopatol.* 4 (U. S. S. R.) 1940, No. 5, 104-10 (in French, 110).— To 400 cc. of mare milk was added a 24-hr. culture of *B. paratyphi abortus equi*. After an hr. at 30° the kumiss culture of *B. bulgaricus* was added up to 25% of the total milk used. After 3 hrs. a culture was made and after 6-24 hrs. mice were inoculated with it. Both expts. were negative. The *B. bulgaricus* may develop enough lactic acid to destroy the organisms. To a neutral bouillon was added 9 cc. of 10%  $CH_3COOH$  per each 100 cc. of bouillon. This was inoculated with a 24-hr. culture of *B. paratyphi abortus equi* (500 billions per 1 cc.). No growth was observed. Mice inoculated with this infected bouillon all remained alive. It is concluded that the bactericidal effect of kumiss is due to its lactic acid content, as a result of the activity of *B. bulgaricus*. 32 references.

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

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(TULAREMIA, immunol.

vaccine, dry living, use in determ of allergic skin reaction)

(VACCINES AND VACCINATION

tularemia dry living vaccine use in determ of allergic skin reaction)

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17(1)

SOV/177-58-11-20/50

AUTHOR: Kazbintsev, L.I., Docent

TITLE: Diagnostic Significance of the Peculiar Pain in the Lumbar Region in Hemorrhagic Nephrose-Nephritis

PERIODICAL: Voenno-meditsinskiy zhurnal, 1958, Nr 11, pp 60 - 61 (USSR)

ABSTRACT: The author bases his article on data of B.G. Chudakov and L.S. Leybin and on own observation of 90 patients suffering from nephrose-nephritis within the past few years. He states that besides other early objective symptoms typical for hemorrhagic nephrose-nephritis, the acute painfulness in palpating the lumbus has great diagnostic importance. The pain is especially intensive in a certain strictly localized point at an angle produced from above by the 12th rib and vertically by the outer margin of the long back muscles. The symptom can be noticed from the 3rd to 5th day of the disease, i.e. in its

Card 1/2

SOV/177-58-11-20/50  
Diagnostic Significance of the Peculiar Pain in the Lumbar Region in Hemorrhagic Nephrose-Nephritis

second period and frequently remains up to the end of the second month from the beginning of the disease. The symptom's great frequency, the expressiveness, and its early appearance warrant its great importance in the clinical picture of hemorrhagic nephrose-nephritis.

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International symposium on macromolecular chemistry, Moscow, 1960.  
 Metakompleksnyy slovar' po makromolekulyarnoy khimii, SSSR, Moskva, 14-15 Iyunya 1960 g. doklady i svyaznyye. Sektorye II. (International Symposium on Macromolecular Chemistry held in Moscow, June 14-15, Papers and Summaries) Section II. [Moscow, Izd-vo AN SSSR, 1960] 559 p. 5,500 copies printed.  
 Sponsoring Agency: The International Union of Pure and Applied Chemistry, Commission on Macromolecular Chemistry  
 Tech. Ed.: V.A. Pruzhkov.

**PURPOSE:** This book is intended for chemists interested in polymerization reactions and the synthesis of high-molecular compounds.

**CONTENTS:** This is Section II of a multi-volume work containing papers on macromolecular chemistry. The papers in this volume treat mainly the kinetics of various polymerization reactions initiated by different catalysts or induced by radiation. Among the research techniques discussed are electron paramagnetic resonance spectroscopy and light-scattering measurements. There are summaries in English, French and Russian. No preambles are mentioned. References follow each article.

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