"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

21(5) SOV/89-7-3-20/29

AUTHORS: Barvikh, G., Kucherov, R. Ya.

TITLE: Transport Equation in Devices for the Separation of Isotopes

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 3, pp 275-276 (USSR)

ABSTRACT: Theoretically the transport equation is derived, without any assumptions being made with respect to the separating methods, the construction of the device, and the hydrodynamic flow character. The derived formulas may be applied to any separating devices of both the most elementary and most complicated configuration as is e.g. described in reference 3. There are 1 figure and 3 references, 2 of which is Soviet.

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24(5), 24(8) SOV/56-36-6-20/66

AUTHORS: Kucherov, R. Ya., Rikenglaz, L. E.

TITLE: Slipping and Temperature Jump on the Boundary of a Gas Mixture (Skol'zheniye i temperaturnyy skachok na granitse gazovoy smesi)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 6, pp 1758 - 1761 (USSR)

ABSTRACT: The corrections connected with the finiteness of the free length of path occur earlier in the boundary conditions than in the equations, and in the transition from hydrodynamic to molecular flow there exists a domain $l/a < 1$ (l - free length of path, a - the characteristic dimension of the problem) in which these equations may be used, but where the corrections in first order of l/a in the boundary conditions must not be neglected. At high pressures these corrections become considerable. For a single-component gas the corrections to the boundary conditions have already been investigated (Refs 3,4), but a better method was developed by Grad (Ref 5). The authors of the present paper generalize the latter's method for the detection of the corresponding boundary con-

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ditions for binary inhomogeneous gas mixtures on the non-absorbing solid surface. The binary gas mixture is described by the general distribution function $f_\alpha(\vec{r},\vec{\xi},t)$, which is standardized with respect to the density of the molecules of the α-component ($\vec{r}$ is the radius vector of the molecules, $\vec{\xi}$ - their velocity, and t - time). The external degrees of freedom of the molecules are neglected. The fundamental equations for the macroscopic quantities of the mixture are set up, the relative velocity

$\vec{c} = \vec{\xi} - \vec{u}$ (where $\vec{u}$ denotes the velocity of the local center of mass of the mixture) is introduced, the equations for the moments are written down, and formulas for the partial pressures are derived. The density distribution function is expanded in series with respect to Hermitian vector polynomials and is broken off after the third term. In the following, the plane flow in the y-direction of a gas on the surface x=0 is investigated and the boundary conditions are discussed in detail. Formulas are derived which describe the temperature jump on the boundary surface gas mixture - solid body

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Slipping and Temperature Jump on the Boundary of a Gas Mixture SOV/56-36-6-20/66

(formula(15)), and formula (16) describes the slipping velocity. There are 7 references, 2 of which are Soviet.

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24(8), 10(2)

AUTHORS: Kucherov, R. Ya., Rikenglaz, L. E.

SOV/56-37-1-19/64

TITLE: On the Hydrodynamic Boundary Conditions in Evaporation and Condensation (O gidrodinamicheskikh granichnykh usloviyakh pri isparenii i kondensatsii)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1(7), pp 125-126 (USSR)

ABSTRACT: On the basis of the kinetic theory, the authors determine the temperature T(0) and the pressure p(0) over the surface of a liquid or solid phase. The vapor temperature is usually not equal to the temperature T_0 of the liquid surface. In the present paper, the vapor is assumed to be an ideal gas, and the vapor molecules incident upon the liquid surface to have Maxwellian distribution with the temperature T_0 and with the pressure p_0. The latter assumption is sufficiently fulfilled for monatomic gases, and only such gases are investigated in the present paper. For the matter of simplicity, the authors restrict themselves to the case $v/c \ll 1$, and they investigate the one-dimensional steady vapor current on the plane surface x = 0 of a liquid. The x-axis is assumed to be

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directed from the liquid into the vapor. To describe the phase of the vapor, the distribution function $f(x, \xi)$ is introduced, ξ denoting the molecule velocity in the laboratory system. If the current density of the vapor molecules and the density of the energy current are denoted by $\tau(x)$ and $Q(x)$, the following expression holds at $x = 0$, directly on the liquid surface:

$$\tau(0),\ \tau_0 + \iint_{-\infty}^{\infty} d\xi_z d\xi_y \int_{-\infty}^{\infty} \xi_x f(0, \xi) d\xi_x,\ Q(0) =$$

$$= Q_0 + \frac{m}{2} \iint_{-\infty}^{\infty} d\xi_z d\xi_y \int_{-\infty}^{\infty} \xi_x \xi^2 f(0, \xi) d\xi_x.$$

τ_0 and Q_0 denote the molecule current density and the energy current density of the vapor molecules emitted by the liquid. Under the above conditions, $\tau_0 = p_0/\sqrt{2\pi mkT_0}$ and $Q_0 = 2kT_0\tau_0$.

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The distribution function in the approxiamtion of the "13 moments" is used for calculating $\tau(0)$ and $Q(0)$. In this way, the following relations are found:

$$\tau(0) = 2\left\{p_0\sqrt{2\pi mkT_0} - p(0)/\sqrt{2\pi mkT(0)}\right\}$$

$$Q(0) = 2\left\{p_0\sqrt{2kT_0/\pi m} - p(0)\sqrt{2kT(0)/\pi m}\right\}$$

. Thus, the particle currents and energy currents at $v/c \ll 1$ are equal to double the difference of the corresponding Maxwell currents directed from the surface and towards the surface. The appearance of factor 2 is caused by the fact that in the determination of the current falling upon the surface the Maxwellian distribution function for a resting gas was always used as zeroth approximation of the distribution function, whereas in this case the Maxwellian distribution function for a moving gas should be used. After some arithmetical operations, the following expressions are obtained for the temperature and pressure of the vapor on the surface: $T(0)/T_0 = 1 - Q(0)/2Q_0 + \tau(0)/2\tau_0$, $p(0)/p_0 = 1 - Q(0)/4Q_0 - \tau(0)/4\tau_0$. At $S/p\tau \gg 1$, the former of these 2 formulas passes into the known formula

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On the Hydrodynamic Boundary Conditions in Evaporation and Condensation

for the temperature jump on a nonabsorbent surface. In the second limiting case $S/p\tau \ll 1$, if the convective transfer of heat is much larger than the molecular transfer, $T(0)/T_0 = 1 - \tau(0)/8\tau_0$, $p(0)p_0 = 1 - 9\tau(0)/16\tau_0$. The last-mentioned 4 equations may serve as boundary conditions for the hydrodynamic equations in evaporation and condensation. The authors thank M. I. Kaganov for a useful discussion, and Yu. A. Shuander for his interest in the present paper. There are 4 references, 2 of which are Soviet.

SUBMITTED: January 15, 1959

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24.5000,24.5200,24.5300,24.5400

77007
SOV/56-37-6-47/55

AUTHORS: Kucherov, R. Ya., and Rikenglaz, L. E.

TITLE: Letter to the Editor. Jump in the Concentration During a Slow Evaporation of a Mixture

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 6, pp 1821-1822 (USSR)

ABSTRACT: Equations were derived describing the concentration, temperature, and pressure in the gas phase during slow evaporation of a mixture. The following assumptions were made: (1) the rate of the evaporation is small in comparison with the rate of evaporation under vacuum; (2) the molecules of all mixture components are monoatomic; (3) the coefficients of condensation and accomodation are equal to one; (4) the vapor behaves like an ideal gas. The following relations were obtained for a two-component mixture:

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Letter to the Editor. Jump in the Concentration During a Slow Evaporation of a Mixture

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$$\tau_i(0) = 2\left[\tau_{i0} - \frac{p_i(0)}{\sqrt{2\pi m_i kT(0)}}\right],$$

$$Q(0) = 2\left[Q_0 - \sqrt{\frac{2kT(0)}{\pi}} \sum_{i=1}^{s} p_i(0)/\sqrt{m_i}\right].$$

Here, $\tau_i(0)$ is density of the ith-component of the mixture; τ_{i0} is density of vapor molecules of ith-component; for the explanation of the remaining symbols the reader is referred by the authors to their previous works (cf., Zhur. eksp. i teoret. fiz., 37, 125, 1959; ibid., 36, 1758, 1959). The partial pressure and temperature of the vapor near the surface of the liquid was shown to be:

$$p_i(0) = \left\{\frac{\pi m_i [Q_0 - Q(0)/2]}{\tau_0 - \tau(0)/2}\right\}^{1/2} (\tau_{i0} - \tau_i(0)/2), \qquad (2)$$

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Letter to the Editor. Jump in the Concentration During a Slow Evaporation of a Mixture

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$$T(0) = T_0[1 + \tau(0)/2\tau_0 - Q(0)/2Q_0].$$

There are 3 Soviet references.

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, R.Ya.; KUDZIYEV, A.G.

Studying the diffusion separator column. Soob. AN Gruz. SSR 24 no. 1:23-29 Ja '60. (MIRA 14:5)

1. Akademiya nauk Gruzinskoy SSR, Fiziko-tekhnicheskiy institut. Predstavleno akademikom E.I. Andronikashvili.
(Separators)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, R.Ya.; RIKENGLAZ, L.B.

Measurement of the condensation coefficient. Dokl.AN SSSR 133 no.5:1130-1131 Ag '60. (MIRA 13:8)

1. Predstavleno akademikom A.P. Frumkinym.
(Condensation)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, R. Ya.; TSULAYA, T.S.

Absorption of sound associated with reflection from the plane surface of a solid. Akust. zhur. 7 no.1:96-97 '61. (MIRA 14:4)

1. Glavnoye upravleniye po ispol'zovaniya atomnoy energii pri Sovete Ministrov SSSR.
(Absorption of sound)

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26.2532

S/057/61/031/005/012/020
B104/B205

AUTHORS: Kaganov, M. I., Kucherov, P. Ya., and Rikenglaz, L. E.

TITLE: Kinetic theory of a low-pressure plasma thermocouple

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 5, 1961, 588-596

TEXT: The kinetic theory of a plasma thermocouple has been studied on the assumption that the mean free path of electrons and ions is much larger than the instrumental dimensions, and that the potential between anode and cathode changes monotonically. If, in the space between the electrodes, there exists no negative potential relative to the cathode, the current will be saturated. This mode of operation is called the mode of operation of total compensation, and the principal problem here is to establish proper conditions for obtaining total compensation and to study the potential distribution in the space between the electrodes. A knowledge of this distribution is required for plotting the converter characteristic. The set of equations

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$$\left.\begin{aligned} u\frac{\partial f_e}{\partial x}+\frac{e}{m_e}\frac{dV}{dx}\frac{\partial f_e}{\partial u}&=0,\\ u\frac{\partial f_i}{\partial x}-\frac{e}{m_i}\frac{dV}{dx}\frac{\partial f_i}{\partial u}&=0,\\ \frac{d^2V}{dx^2}&=4\pi e(n_e-n_i),\end{aligned}\right\} \qquad (2)$$

describes the steady distribution of the potential V. It consists of the kinetic equations for the electron and ion distribution functions and of Poisson's equation. In establishing the boundary conditions for the distribution functions the authors show that the electron current from the anode is negligible. Thus, the boundary conditions have the form

$$f_e(0,\ u>0)=\frac{m_e}{2kT_1}f_e^{(1)}\exp\left(-\frac{m_eu^2}{2kT_1}\right), \qquad (4)$$

$$f_e(L,\ u<0)=0, \qquad (5)$$

$$f_i(0,\ u>0)=\frac{m_i}{2kT_1}f_i^{(1)}\exp\left(-\frac{m_iu^2}{2kT_1}\right). \qquad (6)$$

The ions incidiing upon the anode leave it as neutral atoms; thus, $f_i(L,\ u<0)=0$. For a potential V monotonically dependent on the coordinates, the solutions

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$$f_e(x, u) = \frac{m_e I_e^{(1)}}{kT_1} \exp\left[\frac{1}{kT_1}\left(-\frac{m_e u^2}{2} + eV\right)\right] \sigma\left[u - \left(\frac{2eV}{m_e}\right)^{1/2}\right], \quad (10)$$

$$f_i(x,u) = \frac{m_i I_i^{(1)}}{kT_1} \exp\left[\frac{1}{kT_1}\left(-\frac{m_i u^2}{2} - eV\right)\right] \sigma\left[u + \left(\frac{2e(V_0 - V)}{m_i}\right)^{1/2}\right], \quad (11)$$

where

$$\sigma(z) = \begin{cases} 1, & z \geqslant 0, \\ 0, & z < 0. \end{cases}$$

are obtained from (2). These solutions are used to plot the characteristic for the thermocouple without employing Poisson's solution. The characteristic of the converter is given by $U = \varphi_1 - \varphi_2 + \frac{kT_1}{e} \ln \frac{I_e^{(1)} - I}{I_i^{(2)}}$ (14). An analogous equation is found for a monotonic, negative potential. It is noted that in both cases $dU/dI < 0$, which requires an additional study of stability. For the determination of those modes of operation for which a monotonic potential exists, Poisson's equation is solved. With the aid of (10) and (11), Poisson's equation is obtained in the form

$$2\frac{d^2\eta}{d\xi^2} = \Phi^-(\eta) - \alpha e^{-\eta_0} \cdot \Phi^+(\eta_0 - \eta). \quad (15)$$

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where

$$\eta = \frac{eV}{kT_1}; \quad \eta_a = \frac{eV_a}{kT_1}; \quad \xi = \frac{x}{r};$$

$$\Phi^{\pm}(\eta) = e^{\eta}(1 \pm \operatorname{erf}\sqrt{\eta}); \quad \operatorname{erf} x = 2\pi^{-1/2}\int_0^x e^{-t^2}dt, \tag{16}$$

$$r = \left(\frac{k^3T_1^3}{32\pi^3 m_e e^2 I_0^{(1)2}}\right)^{1/2}; \quad \alpha = \frac{I_1^{(1)}}{I_0^{(1)}}\sqrt{\frac{m_i}{m_e}}. \tag{17}$$

This leads to the integral

$$\xi = \int_0^{\eta} [\eta_0'^2 + \varphi(\eta, \eta_a, \alpha)]^{-1/2} d\eta. \tag{20}$$

which describes the potential explicitly. It is seen that ξ grows substantially as η approaches η_k; therefore, the potential varies only slowly throughout the space between the electrodes. The integration constant $\eta_0'^2$ is calculated from

$$\eta_0'^2 = \frac{1}{2}\, 2x\eta_a \exp(-\Lambda\sqrt{x}), \tag{24}$$

where

$$x = \frac{1}{2}\varphi''_{\eta\eta}(\eta_a, \eta_a, \alpha),$$

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and η_k is determined from

$$y_a(\eta_{k.}) \equiv \frac{1}{a} e^{2\eta_{k.}} (1 - erf\,\eta_{k.}^{1/2}) = 1 + erf\sqrt{\eta_{a.} - \eta_{k.}} \equiv y(\eta_{a.} - \eta_{k.}), \quad (25)$$

with the aid of a graphical solution. The results obtained here can be easily generalized to the case of a negative potential. A. I. Ansel'm, B. Ya. Moyzhes, and G. Ye. Pikus are mentioned. There are 7 figures and 12 references: 5 Soviet-bloc and 6 non-Soviet-bloc. The two references to English-language publications read as follows: Lewis et al, J.Appl. Phys., 30, 1438, 1959; Houston, J.Appl.Phys., 30, 481, 1959.

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

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B104/B102

AUTHORS: Kucherov, R. Ya., Rikenglaz, L. E., and Tsulaya, T. S.

TITLE: The kinetic theory of overcondensation at small temperature differences

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 11, 1962, 1392-1398

TEXT: The transport of a substance between two parallel plates at different temperaturesis investigated on the basis of the Boltzmann equation $v_x \partial f/\partial x = (\partial f/\partial t)_{st}$ (1). The state of the vapor from the substance of which the two plates are composed is described by the distribution function $f(x,\vec{v})$. The collision integral is given in the form:

$$\left(\frac{\partial f}{\partial t}\right)_{ст} = \frac{f_{ст} - f}{t}, \qquad (2)$$

$$f_{ст} = n\left(\frac{m}{2\pi T}\right)^{3/2} \exp\left[-\frac{m(\mathbf{v}-\mathbf{u})^2}{2T}\right], \qquad (3)$$

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$$n=\int f d\mathbf{v};\quad n\mathbf{u}=\int f\mathbf{v}d\mathbf{v};\quad \frac{3nT}{m}=\int(\mathbf{v}-\mathbf{u})^2 f d\mathbf{v}, \qquad (4).$$

Here t is the relaxation time, $\vec{v}$ the velocity of the gas molecules, M their mass, n the vapor density, and T the vapor temperature in erg. It is assumed that all molecules of vapor reaching a surface adhere to it and that the molecules leaving surface have a Maxwellian distribution. This implies that the distribution function

$$\left.\begin{aligned} &f(x,\mathbf{v})=f^+(x,\mathbf{v})+f^-(x,\mathbf{v}),\\ &f^+(x,\mathbf{v})=0; \qquad v_s<0,\\ &f^-(x,\mathbf{v})=0; \qquad v_s>0, \end{aligned}\right\} \qquad (5)$$

has the boundary conditions

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$$\left.\begin{aligned} f^{+}\left(-\frac{d}{2}, \mathbf{v}\right) &= \frac{p_1}{T_1}\left(\frac{m}{2\pi T_1}\right)^{3/2}\exp\left(-\frac{mv^2}{2T_1}\right), \\ f^{-}\left(\frac{d}{2}, \mathbf{v}\right) &= \frac{p_2}{T_2}\left(\frac{m}{2\pi T_2}\right)^{3/2}\exp\left(-\frac{mv^2}{2T_2}\right), \end{aligned}\right\} \qquad (6).$$

P_1 and P_2 are the vapor pressures at the temperatures T_1 and T_2. For the case of small temperature differences $((T_1 - T_2)/T_1 \ll 1)$ the solution of (2) can be obtained in the form

$$\left.\begin{aligned} f &= n_0\left(\frac{m}{2\pi T_0}\right)^{3/2}\exp\left(-\frac{mv^2}{2T_0}\right)(1+\varphi), \\ n &= n_0(1+\nu), \\ T &= T_0(1+\theta), \end{aligned}\right\} \qquad (7),$$

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where n_0 in the mean density and T_0 the mean temperature. On introducing the dimensionless coordinate $z = x/(d/2)$, where d is the distance between the plate surfaces, the system (2)-(4) becomes linearized and gives:

$$\mu c_z \frac{d\varphi}{dz} = -\varphi + \nu + 2c_z q + \left(c^2 - \frac{3}{2}\right)\theta \qquad (9)$$

$$\left.\begin{aligned} &c = \sqrt{\frac{m}{2T_0}}\,\mathbf{v}; \quad \nu = \pi^{-3/2}\int e^{-c^2}\varphi\, dc; \\ &q = \pi^{-3/2}\int c_z e^{-c^2}\varphi\, dc; \quad \theta = \frac{2}{3}\pi^{-3/2}\int\left(c^2 - \frac{3}{2}\right)e^{-c^2}\varphi\, dc; \\ &\mu = \frac{l}{d}\sqrt{\frac{2T_0}{m}}. \end{aligned}\right\} \qquad (10).$$

The linearized boundary conditions are:

$$\left.\begin{aligned} \varphi^+(-1, c) &= \nu_1 + \left(c^2 - \frac{3}{2}\right)\theta_1, \\ \varphi^-(1, c) &= \nu_2 + \left(c^2 - \frac{3}{2}\right)\theta_2, \end{aligned}\right\} \qquad (11)$$

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$$\nu_1=\frac{p_1}{n_0T_1}-1;\ \nu_2=\frac{p_2}{n_0T_2}-1;\ \theta_1=\frac{T_1}{T_0}-1;\ \theta_2=\frac{T_2}{T_0}-1. \qquad (12).$$

From (9) the formal solution is reached:

$$\varphi^+(z,\ c)=\frac{1}{\mu c_z}\int_{-1}^{z} e^{\frac{z'-z}{\mu c_z}}\left[\nu+2c_zq+\left(c^2-\frac{3}{2}\right)\theta\right]\times \qquad (13).$$
$$\times\, dz'+e^{-\frac{1+z}{\mu c_z}}\varphi^+(-1,\ c),$$

When this is introduced in (10) the following system of integral equations is obtained for determining ν, q and θ:

$$\left.\begin{aligned}(\hat{K}_{11}-1)\nu+\hat{K}_{12}q+\hat{K}_{13}\theta&=-P_1,\\ \hat{K}_{21}\nu+(\hat{K}_{22}-1)q+\hat{K}_{23}\theta&=-P_2,\\ \hat{K}_{31}\nu+\hat{K}_{32}q+(\hat{K}_{33}-1)\theta&=-P_3,\end{aligned}\right\} \qquad (14).$$

The integral operators $\hat{K}_{ij}$ are discussed. For the case of large Knudsen numbers the solutions arrived at:

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$$\left.\begin{aligned}
\nu(z) &= \nu_{\text{к}} + \frac{1}{2\sqrt{\pi}}\left[(\nu_1-\nu_2)-\frac{1}{2}(\theta_1-\theta_2)\right]\times \\
&\quad\times\left[\frac{1+z}{\mu}\ln\frac{1+z}{\mu}-\frac{1-z}{\mu}\ln\frac{1-z}{\mu}\right], \\
q &= q_{\text{к}}\left(1+\frac{2}{\sqrt{\pi}\,\mu}\right)-\frac{\nu_1-\nu_2}{2\mu}, \\
\theta(z) &= \theta_{\text{к}} - \frac{1}{6\sqrt{\pi}}\left[(\nu_1-\nu_2)-\frac{5}{2}(\theta_1-\theta_2)\right]\times \\
&\quad\times\left[\frac{1+z}{\mu}\ln\frac{1+z}{\mu}-\frac{1-z}{\mu}\ln\frac{1-z}{\mu}\right], \\
\tau &= \frac{1}{2}(\tau_{\text{к}}+\theta_{\text{к}}), \\
\omega &= \omega_{\text{к}} - \frac{3}{2}q_{\text{к}}\left(1-\frac{8}{3\sqrt{\pi}\,\mu}\right)-\frac{3}{4\mu}\left[(\nu_1-\nu_2)+(\theta_1-\theta_2)\right].
\end{aligned}\right\} \qquad (24);$$

for small Knudsen numbers the solutions are:

$$q = 0.252(\nu_1-\nu_2+\theta_1-\theta_2), \quad \omega = 0.63(\nu_1-\nu_2+\theta_1-\theta_2), \quad \tau = 0.23(\nu_1+\theta_1)+0.27(\nu_2+\theta_2). \qquad (31).$$

SUBMITTED: January 31, 1962 (initially)
April 10, 1962 (after revision)

Card 6/6

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

S/020/63/149/001/014/023
B144/B186

AUTHORS: Amirkhanova, I. B., Borisov, A. V., Gverltsiteli, I. G., Karamyan, A. T., Kucherov, R. Ya.

TITLE: Evaporation coefficients of liquid C_2H_5OH, BCl_3, BF_3, and CH_4

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 1, 1963, 114-116

TEXT: The evaporation coefficients were determined by measuring the pressure increase effected by evaporation of the substance in a closed system. The apparatus used consisted of an evaporation vessel with a screw stirrer and a counterpressure chamber, both put into a Dewar flask, and was calibrated on the basis of the evaporation coefficient of C_2H_5OH. After evacuation to 10^{-5} mm Hg, the apparatus was purged with the gas studied; then the substance was condensed. After establishing a pressure equilibrium, the pressure was quickly reduced with a syphon and the subsequent pressure increase due to the evaporation of the liquid

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studied was recorded. With the same apparatus the condensation coefficients of liquids can be measured if the initial pressure in the evaporating vessel is adjusted so that it exceeds the equilibrium pressure. It is asserted that this was done for the first time. The evaporation and condensation coefficients were calculated from the measurements using the formula of L. Bogdandy et al. (Zs. Elektrochem. 59, 460 (1955)) and compared in the case of C_2H_5OH with previous results. For BF_3 and BCl_3 the evaporation and condensation coefficients were almost consistent. Further theoretical and experimental research should clear up why the values found are so low. There are 2 figures and 1 table.

PRESENTED: October 27, 1962, by N. M. Zhavoronkov, Academician

SUBMITTED: June 27, 1962

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

AMIRKHANOVA, I.B.; BORISOV, A.V.; GVERDTSITELI, I.G.; KUCHEROV, R.Ya.

Possible reason for divergence in the results of measurements of the ratios of isotope vapor pressures at equilibrium as shown by the differential and Rayleigh methods. Dokl. AN SSSR 149 no.2: 351-352 Mr '63. (MIRA 16:3)

1. Fiziko-tekhnicheskiy institut AN GruzSSR. Predstavleno akademikom N.M.Zhavoronkovym.
(Isotope separation) (Vapor pressure)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

L 18316-65 EWG(j)/EWT(1)/EWP(e)/EWG(k)/EWT(m)/EPF(c)/EPF(n)-2/EPR/EEC(b)-2/EWP(b) Pz-6/Pr-4/Ps-4/Pu-4 IJP(c)/AFWL/SSD WW/AT/WH

ACCESSION NR: AP4049532 S/0089/64/017/005/0329/0335

AUTHOR: Millionshchikov, M. D.; Gverdtsiteli, I. G.; Abramov, A. S.; Gorlov, L. V.; Gubanov, Yu. D.; Yefremov, A. A.; Zhukov, V. F.; Ivanov, V. Ye.; Kovy*rzin, V. K.; Koptelov, Ye. A.; Kosovskiy, V. G.; Kukharkin, N. Ye.; Kucherov, R. Ya.; Laly*kin, S. P.; Merkin, V. I.; Nechayev, Yu. A.; Pozdnyakov, B. S.; Ponomarev-Stepnoy, N. N.; Samarin, Ye. N.; Serov, V. Ya.; Usov, V. A.; Fedin, V. G.; Yakovlev, V. V.; Yakutovich, M. V.; Khodakov, V. A.; Kompaniyets, G. V.

TITLE: The "Romashka" high-temperature reactor-converter 19

SOURCE: Atomnaya energiya, v. 17, no. 5, 1964, 329-335

TOPIC TAGS: nuclear power reactor, reactor feasibility study, research reactor, thermoelectric converter/Romashka

ABSTRACT: The authors briefly describe the construction, parameters, test results, and operating experience of the "Romashka" reactor-

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ACCESSION NR: AP4049532

converter unit, which has been in operation at the Kurchatov Atomic Energy Institute since August 1964. The fuel used is uranium dicarbide enriched to 90% U^{235}. Graphite and beryllium are used as reflectors. Electricity is generated by silicon-germanium semiconductor thermocouples distributed on the outer surface of the reflector and connected in four groups which can be connected in series or in parallel. The temperatures of the active zone and outer surface are 1770 and 1000C, respectively. The power ratings are 0.50—0.80 kW electric and 40 kW thermal, the maximum current (parallel connection) is 88 A, the neutron flux is 10^{13} neut/cm^2 sec in the center of the active zone and 7×10^{12} on its boundary. The reactor has a negative temperature reactivity coefficient. The equipment has high inherent stability and requires no external regulator, and little change was observed in the thermocouple properties after 2500 hours of operation. Tests on the equipment parameters are continuing, and the results are being analyzed for use in future designs. Orig. art. has: 8 figures and 1 formula.

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

ACCESSION NR: AP4009922 S/0057/64/034/001/0066/0076

AUTHOR: Kucherov, R.Ya.; Shuandor, Yu.A.

TITLE: A weakly ionized rarefied plasma in a plane diode

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.1, 1964, 66-76

TOPIC TAGS: plasma, rarefied plasma, Knudsen plasma, weakly ionized plasma, weakly ionized Knudsen plasma, plane diode, plane plasma diode

ABSTRACT: The present paper is a continuation of previous theoretical work on the behavior of a plane diode containing a plasma in which the mean free path is much greater than the distance between the electrodes (M.I.Kaganov,R.Ya.Kucherov and L.E.Rikenglaz,ZhTF,31,588,1961; R.Ya.Kucherov,and L.E.Rikenglaz,Ibid.32,1075,1962). The potential in the space between the electrodes has been previously calculated for those conditions under which it is monotonic. When the potential is not monotonic, electrons are captured in the regions near the maxima, and collisions become important. The case of a single potential maximum has been previously treated for a highly ionized plasma, where only Coulomb collisions are important. In the present paper the case of a single potential maximum is treated for a weakly ionized plasma,

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ACC.NR: AP4009922

where only Coulomb collisions can be neglected. The distribution of the captured electrons is obtained by solving the kinetic equation with a collision integral that describes elastic collisions of the electrons with neutral atoms at rest. Certain approximations introduced in the previous papers are employed without further discussion. The distribution of the electrons that are not captured at the potential maximum is taken from the earlier work. With these two distributions, which depend on the potential, Poisson's equation is solved for the potential, and self-consistent solutions are achieved. It is here assumed that the distance between the electrodes is much greater than the Debye radius of the plasma. Only such self-consistent solutions are sought as involve only a single maximum in the potential, and the operating conditions for which such solutions exist are found. "The authors express their gratitude to L.E.Rigenglaz for valuable discussions and to M.I.Kaganov for discussing the results of the work." Orig.art.has: 58 formulas and 7 figures.

ASSOCIATION: none

SUBMITTED: 25Oct62

DATE ACQ: 10Feb64

ENCL: 00

SUB CODE: PH

NR REF SOV: 003

OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

ACCESSION NR: AP4013422 S/0057/64/034/002/0326/0332

AUTHOR: Karakhanov, V.Ya.; Kucherov, R.Ya.; Tatishvili, D.G.

TITLE: Investigation of the voltage-current characteristics of the oscillations of a low pressure plasma thermoelement

SOURCE: Zhurnal tekhn.fiz.,v.34, no.2, 1964, 326-332

TOPIC TAGS: plasma, diode, plasma diode, cesium plasma diode, low pressure plasma diode, plasma diode current, plasma diode oscillation, thermoelement

ABSTRACT: The current in a cesium plasma diode was investigated as a function of anode potential and cesium pressure for anode potentials from -12 to +600 V and pressures from 10^{-6} to 10^{-2} mm Hg. Both the direct and the alternating components of the current were measured. The 12 mm diameter 2 mm thick tantalum cathode was located 1 mm from a massive water-cooled kovar anode. The cathode was operated at a temperature of 2080°C. This temperature was monitored with an optical pyrometer and maintained by electron bombardment. The cesium vapor in the diode was in contact with metallic cesium in a side arm, and the pressure was adjusted by controlling the temperature. At anode potentials below -5 V the anode current was small and in-

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dependent of the potential. This current is ascribed to surface ionization. When the anode potential was increased somewhat above -5 V the current rose sharply to a large value. At an anode potential between -2.3 and -2.6 V (depending on the pressure), oscillations set in and the current fell, the sum of the direct anode current and the amplitude of the oscillations remaining constant. The amplitude of the oscillations and the direct anode current reached steady values at an anode potential of about -1 V. These steady values were maintained until an anode potential of the order of 10 V was reached. At higher anode potentials the oscillation amplitude diminished and the direct anode current rose until saturation was reached or breakdown occurred. At sufficiently high pressures, the sum of the direct anode current and the oscillation amplitude in the plateau region was equal to the saturation current of the diode. At lower pressures this sum was somewhat less than the saturation current, in accordance with a previously published theory (R.Ya.Kucherov, L.E.Rikenglaz, ZhTF, 32, 1275, 1962). The amplitude of the oscillations in the plateau region, where it was independent of the anode potential, reached a maximum of about 100 ma/ /cm^2 at a pressure near 10^{-5} mm Hg. The amplitude was less at higher pressures, and oscillation did not occur at pressures above 10^{-2} mm Hg. For small range of pressure around 10^{-5} mm Hg the device was unstable; it could be maintained in a non-oscillat-

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ACCESSION NR: AP4013422

ing condition for some time, after which oscillation would spontaneously set in. The frequency of the oscillations was nearly independent of the anode potential throughout the plateau region. As a function of pressure, the frequency dropped from about 540 kc/sec at 10^{-5} mm Hg to a minimum of about 330 kc/sec at 5×10^{-5} mm Hg. At pressures above 10^{-4} mm Hg, the frequency behaved in accordance with the findings of F.Johnson (RCA REV.22,22,1961). The appearance of oscillations at negative anode potentials seems to contradict the conclusion of R.Zollweg and M.Gottlieb (J.Appl.Phys.32,890,1961) that oscillations can occur only when the field at the cathode is positive. By considering the work functions of the electrodes, however, and making a plausible assumption concerning the effect on them of adsorbed cesium ions, one can conclude that the present data are compatible with the hypothesis that oscillations occur only when the potential immediately outside the anode is greater than that immediately outside the cathode. "The authors thank I.G.Gverdtsitel' and V.K.Tskhakaya for attention and interest in the work, and A.P.Prikhodov and L.S.Kukina for assistance in setting up and conducting the experiments." Orig. art.has: 6 figures.

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

SUBMITTED: 28Jan63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH NR REF SOV: 002 OTHER: 004

Card 3/3

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, R.Ya.; SHUADER, Yu.A.

Weakly ionized rarefied plasma in a plane diode. Zhur. tekh. fiz. 39 no.1:66-76 Ja '64. (MIRA 17:1)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

ACCESSION NR: AP4012564 S/0056/64/046/001/0368/0373

AUTHOR: Kucherov, R. Ya.

TITLE: Damping of a longitudinal nonlinear monochromatic wave in a weakly ionized plasma

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 368-373

TOPIC TAGS: plasma, plasma oscillations, plasma waves, plasma wave damping, linear theory, nonlinear theory, plasma particle distribution function, plasma damping decrement, nonlinear wave, monochromatic wave, longitudinal wave

ABSTRACT: The method of V. Ye. Zakharov and V. I. Karpman (ZhETF, v. 43, 490, 1962) is used to analyze the damping of a nonlinear longitudinal monochromatic wave in a weakly ionized plasma; however, the incorrect assumptions made by Zakharov and Karpman and by other investigators are avoided, and the collision integral is

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expressed more simply, since collisions with ions can be neglected. The distribution function of the resonant particles is determined, and it is found that the damping decrement of the nonlinear wave is much smaller than that of waves described by the Landau linear theory. The damping is due not only to the interaction between the resonant particles and the wave, but also to the loss of the ordered part of the momentum by the colliding electrons. "The author is grateful to L. E. Rikenglaz for useful discussions." Orig. art. has: 28 formulas.

ASSOCIATION: None

SUBMITTED: 29Jun63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH NO REF SOV: 006 OTHER: 002

Card 2/2

L 5392-66 EPF(n)-2/EWA(h)-2/EWT(1)/ETC/EWG(m) IJP(c) AT

APPROVED FOR RELEASE: 06/19/2000 CIA-R

ACCESSION NR: AP5027266

AUTHORS: Kucherov, R. Ya. (Sukhumi); Rikenglaz, L. E. (Sukhumi)

ORG: none

SOURCE CODE: UR/0207/65/000/005/0023/0027

TITLE: On the periodic structure of steady state rarefied plasma

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1965, 23-27

TOPIC TAGS: rarefied gas, rarefied plasma, gas kinetic equation, periodic motion, ion density, electron density

ABSTRACT: The criteria for obtaining a spatially periodic solution to a self-consistent rarefied plasma problem up to zeroth approximation in L/λ is studied. The plasma is assumed to be contained in a diode (no magnetic fields) with a periodic structure as shown in Fig. 1. The electron and ion distribution functions are represented by the integrals

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ACC NR: AP5027266

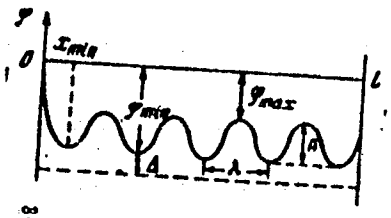

Fig. 1

$$\rho_e(x) = \frac{1}{\sqrt{2m_e}}\left[\int_{-e\varphi_{min}}^{\infty} [f_{ev}^{+}(\varepsilon) + f_{ev}^{-}(\varepsilon)]\frac{d\varepsilon}{\sqrt{\varepsilon + e\varphi}} + \int_{-e\varphi}^{-e\varphi_{min}} [f_{ev}^{+}(\varepsilon) + f_{ev}^{-}(\varepsilon)]\frac{d\varepsilon}{\sqrt{\varepsilon + e\varphi}}\right]$$

$$\rho_i(x) = \frac{1}{\sqrt{2m_i}}\left[\int_{e\varphi_{max}}^{\infty} [f_{iv}^{+}(\varepsilon) + f_{iv}^{-}(\varepsilon)]\frac{d\varepsilon}{\sqrt{\varepsilon - e\varphi}} + \int_{e\varphi}^{e\varphi_{max}} [f_{iv}^{+}(\varepsilon) + f_{iv}^{-}(\varepsilon)]\frac{d\varepsilon}{\sqrt{\varepsilon - e\varphi}}\right]$$

for $x \geqslant x_{min}$ where $\mathcal{E}_{i,e}$ are the ion and electron energies. The following

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ACC NR: AP5027266

the necessary conditions for a periodic solution are given by

$$\varphi'|_{\varphi=\varphi_{min}} > 0, \ \varphi'|_{\varphi=\varphi_{max}} < 0 .$$

It is shown that the boundaries for a periodic solution of the above problem are set by the inequalities $c > 2b$ and $c > 1/2b$. Orig. art. has: 20 equations and 4 figures.

SUB CODE: ME, NP SUBM DATE: 05Jan65/ ORIG REF: 001/ OTH REF: 004

Card 4/4 RS.

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

L 5392-66

ACC NR: AP5027266

variable is introduced $\ell^2 = \varepsilon_{e,i} \pm e\varphi_k$ and it is assumed that $\varphi_{max} - \varphi_{min}$ is small. The density distribution functions are then expanded in powers of $(\varphi_{max} - \varphi_{min})^{1/2}$ to yield

$$\rho_e = \frac{1}{\sqrt{m_e}} \left\{ \int_0^\infty f_{ec}(\ell^2 - e\varphi_k)\, d\ell + e(\varphi_k = -\varphi_{min}) \int_0^\infty \left[\frac{\partial f_{e,c}(\varepsilon)}{\partial \varepsilon} \right]_{\varepsilon_1} d\ell + \right.$$

$$\left. + \sqrt{e(\varphi - \varphi_{min})}\, F_e(-e\varphi_k) \right\} \qquad (\varepsilon_1 = \ell^2 - e\varphi_k)$$

$$\rho_i = \frac{1}{\sqrt{m_i}} \left\{ \int_0^\infty f_{ic}(\ell^2 + e\varphi_k)\, d\ell + e(\varphi_{min} - \varphi_k) \int_0^\infty \left[\frac{\partial f_{i,c}(\varepsilon)}{\partial \varepsilon} \right]_{\varepsilon_2} d\ell + \right.$$

$$\left. + \sqrt{e(\varphi_{max} - \varphi)}\, F_i(e\varphi_k) \right\} \qquad (\varepsilon_2 = \ell^2 + e\varphi_k)$$

where F_e and F_i are the difference in distribution functions of trapped and untrapped particles near the edge of the potential well. These values are substituted in the Poisson's equation, and the results are integrated to give

$$A^{1/2} = A_0^{1/2} \Delta, \quad A_0^{1/2} = -\frac{3}{2} \frac{a}{b+c} \quad (b + c \neq 0, \ \operatorname{sign} a = -\operatorname{sign}(b + c))$$

where $A = \varphi_{max} - \varphi_{min}$. A similar expression is obtained for the wavelength, and

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, R.Ya.; MIHENKO, V.P.

Theory of cascades for the separation of multicomponent isotope mixtures. Atom. energ. 19 no.4:360-367 O '65. (MIRA 18:11)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

L 28031-66 EWT(m)/ETC(f)/EPF(n)-2/EWG(m)

ACC NR: AP5026442 SOURCE CODE: UR/0089/65/019/004/0360/0367

36
34
B

AUTHOR: Kucherov, R. Ya.; Minenko, V. P.

ORG: None

19

TITLE: Theory of multicomponent isotope separation in cascades

SOURCE: Atomnaya energiya, v. 19, no. 4, 1965, 360-367

TOPIC TAGS: radioisotope, isotope separation

ABSTRACT: A theoretical study was made of cascades for multicomponent isotopic mixtures consisting of XY molecules. It was assumed that the elements X and Y were different. The cascades of an arbitrary distribution flow rate profile L(s) were considered and a transfer equation system was derived. The isotopic exchange rate v was formulated for two (zero and infinite) limiting cases. This rate was expressed, as follows:

$$v = \left| \frac{N_{mn}(0) - N_{mn}(l_s)}{N_{mn}(l_s) - x_m y_n} \right| \quad (1)$$

Where N_{mn} is the molar concentration of the $X^m Y^n$ components and x_m and y_n denote respectively the molar fractions of isotopes. Then, the equations for the zero and infinite cases were derived and presented in the following forms:

Card 1/3 UDC: 621.039.31

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L 23031-66

ACC NR: AP5026442

Zero case:

$$\frac{dN_m(s)}{ds} = N_m(s)\sum_{n=1}^{h} \varepsilon_{mn} N_n(s) - \frac{2}{L^b(s)}\sum_{r=b}^{B} \times \times \{P^r[N_m(\sigma^r) - N_m(s)] - F^r[\tilde{N}_m(\sigma^r) - N_m(s)]\}. \quad (2)$$

Infinite case:

$$\frac{dN_{mn}}{ds_j} = N_{mn}\sum_{ij}(\varepsilon_{ij}^{mj} + \varepsilon_{ij}^{in}) N_{ij} - \frac{2}{L^b}\sum_{r} \times \times (P^r[x_m y_n \sigma^r) + y_n x_m(\sigma^r) - 2N_{mn}] - - F^r[x_m \tilde{y}_n(\sigma^r) + y_n x_m(\sigma^r) - 2N_{mn}]). \quad (3)$$

Here the total number of cascade stages was denoted by B, while b represented the ordinal number of each individual stage. Each stage consisted of (σ^b) separative steps connected in series and individually numbered by s. The letters P^r and F^r denoted the cascade product and cascade feed. The symbol (ε_{mn}) was a substitute for the equation $\varepsilon_{mn} = \frac{\delta N_m}{N_m} - \frac{\delta N_n}{N_n}$.

Then, the zero-case equation was used for further transformations and for obtaining the equation of transfer. In its general form, this equation represented an integral equation of Volterra type and was expressed as follows:

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ACC NR: AP5026442

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$$\varphi_n(s) + \frac{1}{L(s)} \int_0^s \varphi_n(t) \sum_{m=1}^{h} g_m \exp e_{mn}(s-t) \cdot dt = -\frac{1}{L(s)} \sum_{m=1}^{h} z_{mn} \exp e_{mn} s. \quad (4)$$

After deriving general formulas and equations, the authors applied their analysis to the cascade of a rectangular stage configuration. The Laplacian transformation was used and the calculation procedure was presented. The final formula for the concentration component N_m was expressed as:

$$N_m(s) = -c_m^b \sum_j \frac{z_j^b(s)}{q_{mj}^b} \left(\sum_j z_j^b(s) \right)^{-1}. \quad (5)$$

In conclusion, it was mentioned that this method was applied to the calculation of cascades for the separation of oxygen isotopes by means of a low-temperature distillation of nitrogen oxide. A computing machine "Ural-1" was used for calculations. The authors express their gratitude to I. G. Gverdtsiteli and Yu. V. Nikolayev for discussing the results of the work. Orig. art. has: 72 formulas.

SUB CODE: 18 / SUBM DATE: 10Mar65 / ORIG REF: 000 / OTH REF: 006

Card 3/3

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

L 32190-66 EWT(1) IJP(c) AT

ACC NR: AP6013932 SOURCE CODE: UR/0207/66/000/002/0119/0121

AUTHOR: Zhvaniya, I. A. (Sukhumi); Kucherov, R. Ya. (Sukhumi); Rikenglaz, L. E. (Sukhumi)

ORG: none

55
B

TITLE: Stability of a nonhomogeneous electron beam

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1966, 119-121

TOPIC TAGS: electron beam, plasma instability, perturbation

ABSTRACT: The authors consider development of perturbation in a nonhomogeneous periodic electron beam to determine whether plasma instability in a limited space is an absolute or a convective process. Theoretical expressions are derived for the perturbations in the electron beam in terms of the density, velocity, charge and mass of the electrons, ion density and potential. The criterion for determining whether the perturbation will increase or decrease is discussed. It is shown that the increment in perturbation is proportional to the square of the amplitude for weak disturbances. Orig. art. has: 15 formulas.

SUB CODE: 20/ SUBM DATE: 25Feb65/ ORIG REF: 003/ OTH REF: 005

Card 1/1

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, S.A.

ANTONENKO, N.K.; KUCHEROV, S.A.

Amount of methane emission in Karaganda Basin commercial sector mines. Trudy Inst. gor. dela AN Kazakh. SSR 1:83-92 '56. (MIRA 11:1)
(Karaganda Basin--Mine gases)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

SOV/130-58-6-9/20

AUTHORS: Sapko, A.I., Dobrov, V.P. and Kucherov, V.D.

TITLE: Mechanization of the Preparation of Powdered Materials in the Melting of Electric Steel (Mekhanizatsiya prigotovleniya poroshkovykh materialov pri vyplavke elektrostali)

PERIODICAL: Metallurg, 1958, Nr 6, pp 20 - 22 (USSR)

ABSTRACT: The authors point out that although large quantities of finely ground materials (such as ferrosilicon, coke, hot-top compound) are required for producing quality and high-quality steels, there is generally insufficient mechanisation of the preparation of these powders. They list the defects of most preparation methods and describe several improvements developed and introduced at the "Dneprospetsstal'" Works. One is a special drum for crushing ferrosilicon (Figure 1) which can deal with 0.5 t/h. The drum consists of two end plates mounted on a driven shaft and connected peripherally to each other with square, manganese-steel bars, the whole being hermetically enclosed in a casing. The drum discharges through a screen (Figure 3) into a box (Figure 2); oversize is returned in another box. The authors state that similar equipment with balls can be used for coke and charcoal. For preparing hot-top compound, a special mixer has been provided (Figure 4) into

Card 1/2

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SOV/130-58-6-9/20

Mechanization of the Preparation of Powdered Materials in the Melting of Electric Steel

which screened and weighed components are charged; mixing takes 15 - 20 min. after which the powder is discharged into a box which is transported by narrow-gauge track to a special bunker in the casting bay. On the basis of experience at "Dnepro-spetsstal'", the authors conclude that crusher-roll mills are particularly undesirable. They suggest that for automation to be introduced, all equipment for preparing the powders should be concentrated and that automatic weighing of hot-top mixture components and special feeders for supplying material from the bunkers to the crushing equipment should be developed. There are 4 figures.

ASSOCIATION: Zavod "Dneprospetsstal'" ("Dneprospetsstal'" Works) and Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

Card 2/2

1. Metallurgy - USSR 2. Powder alloys - Preparation
3. Steel - Manufacture

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1962—

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2

KUCHEROV, V. F.; SMIT, V. A.; SEMENOVSKIY, A. V.

"Acid catalysed stereospecific cyclisation of isomeric geranylacetones and dihydroionones."

report submitted for the IUPAC 2nd International Symposium on the Chemistry of Natural Products, Prague Czech., 27 Aug - 2 Sep 62

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V. F.; ANDREYEV, V. M.; LYSANCHUK, L. K.

"Synthesis of geometrical isomers of 7-methoxyhydrophenanthrenecarboxylic acids and the stereochemistry of their reactions."

report submitted for the IUPAC 2nd International Symposium on the Chemistry of Natural Products, Prague Czech., 27 Aug. - 2 Sep 62

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

ANDREYEV, V.M.; LYSANCHUK, L.K.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Report No.47: Some laws governing the oxidation of cis-syn-7-methoxy-1,2,3,9,10,10a-hexahydrophenanthrene-1,2-dicarboxylic acid and its dimethyl ester with peracetic acid. Izv. AN SSSR Otd.khim.nauk no.1:90-96 Ja '62. (MIRA 15:1)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclic compounds) (Acids, Organic) (Stereochemistry)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; LYSANCHUK, L.K.; ANDREYEV, V.M.

Stereochemistry of cyclic compounds. Report No.48: Oxidation of anhydride of cis-syn-7-methoxy-1,2,3,9,10,10a-hexahydrophenanthrene-1,2-dicarboxylic acid with peracetic acid, and chemical transformations of products obtained. Izv. AN SSSR Otd.khim.nauk no.1:96-106 Ja '62. (MIRA 15:1)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclic compounds) (Stereochemistry) (Acids, Organic)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; SEREBRYAKOV, E.F.; USOVA, A.V.

Stereochemistry of cyclic compounds. Report No.49: Oxidation of cis-syn-Δ^7-hydrindene-4,5-dicarboxylic acid and the synthesis of isomeric trans-hydrindane-4,5-dicarboxylic acids. Izv. AN SSSR Otd.khim.nauk no.1:106-112 Ja '62. (MIRA 15:1)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclic compounds) (Acids, Organic) (Stereochemistry)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

RUDENKO, B.A.; KUCHEROV, V.F.; SMIT, V.A.; SEMENOVSKIY, A.V.

Gas-liquid chromatography of isoprenoid compounds. Izv. AN SSSR Otd.khim.nauk no.2:236-243 F '62. (MIRA 15:2)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Isoprenoids)
(Gas chromatography)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

SMIT, V.A.; SEMENOVSKIY, A.V.; VLAD, P.F.; KUCHEROV, V.F.

Cyclization of isoprenoid compounds. Report No.4: Low temperature cyclization of geranic acid and its ester. Izv. AN SSSR Otd.khim.nauk no.2:312-317 F '62.

(MIRA 15:2)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Geranic acid)
(Cyclization)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V. F.; GURVICH, I. A.

Trans-1-vinyl-6-oxo-9-methyl-Δ^1-octalin in the reactions of diene synthesis and some conversions of d,l-18-nor-14-iso-oxy-$\Delta^{9(n)}$-androstane-15,17-dione acetate. Izv. AN SSSR Otd.khim.nauk no.2:363-365 F '62. (MIRA 15:2)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.
(Naphthalene) (Androstenedione)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

SMIT, V.A.; SEMENOVSKIY, A.V.; KUCHEROV, V.F.

Cyclization of isoprenoid compounds. Report No.5: Low temperature cyclization geraniol acetate. Izv.AN SSSR.Otd.khim.-nauk no.3:470-476 Mr '62. (MIRA 15:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Geraniol) (Cyclization)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

SMIT, V.A.; SEMENOVSKIY, A.V.; KUCHEROV, V.F.

Cyclization if isoprenoid compounds. Report No.6: Conversions of α- and β-cyclogeranic acids under the effect of sulfuric acid. Izv.AN SSSR.Otd.khim.nauk no.3:477-484 Mr '62. (MIRA 15:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclohexenecarboxylic acid) (Lactones)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; KUZNETSOVA, A.I.; MAVROV, M.V.; ALEKSEYEV, Ye.F.

Chemistry of polyenic and polyacetylenic compounds. Report No.3: γ-oxyacetylene- and vinylacetylenecarboxylic acids and some of their transformations. Izv.AN SSSR.Otd.khim.nauk no.3:484-490 Mr '62. (MIRA 15:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acetylene compounds)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

YUFIT, S.S.; KUCHEROV, V.F.

Rotatory dispersion of the plane of polarization and its application in organic chemistry. Usp. khim. 31 no.4:474-489 '62. (MIRA 16:8)

1. Institut organicheskoy khimii AN SSSR imeni Zelinskogo.

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; SEREBRYAKOV, E.P.

Stereochemistry of cyclic compounds. Report No.50: Oxidation of cis-syn-Δ^1-hydrindene-4,5-dicarboxylic acid anhydride. Izv.AN SSSR Otd.khim.nauk no.4:661-666 Ap '62. (MIRA 15:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Indancarboxylic acid) (Oxidation)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

YANOVSKAYA, L.A.; KUCHEROV, V.F.

Chemistry of acetals. Report No.10: Hydrolysis of tetraethylacetals of malonic and methylmalonic dialdehydes. Izv.AN SSSR Otd.khim.-nauk no.4:667-674 Ap '62. (MIRA 15:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Malonaldehyde) (Acetals) (Hydrolysis)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

YANOVSKAYA, L.A.; KUCHEROV, V.F.; KOVALEV, B.G.

Chemistry of acetals. Report No.11: Certain reactions of β-ethoxyacrolein and ββ-ethoxypropionaldehyde. Izv.AN SSSR Otd.khim.nauk no.4:674-681 Ap '62. (MIRA 15:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acrolein) (Propionaldehyde)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

MISTRYUKOV, E.A.; ARONOVA, N.I.; KUCHEROV, V.F.

Reversible cyclization of β-alkylaminoethyl-Δ^1-alkenyl ketones to γ-piperidines as affected by the nature of substitution. Izv. AN SSSR. Otd.khim.nauk no.5:870-876 My '62. (MIRA 15:6)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Ketone) (Piperidone) (Substitution (Chemistry))

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

S/062/62/000/006/008/008
B117/B101

AUTHORS: Gusev, B. P., and Kucherov, V. F.

TITLE: Chemistry of polyene and polyacetylene compounds. Communication 6. A new method of synthesizing diacetylene derivatives

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 6, 1962, 1067 - 1074

TEXT: Methods of synthesizing hardly accessible diacetylene compounds have been developed on the basis of 2-methyl hexadiin-3,5-ol-2 (I) and its derivatives as described in the previous communication (Izv. AN SSSR. Otd. khim. n. 1962, 1062). The OH group of I was protected from alkali influence by acetalation with vinyl ethyl ether. The Grignard complexes of this acetal (II) react readily with paraform or ethylene oxide to give compounds which are saponified by dilute hydrochloric acid and yield 6-methyl heptadiine-2,4-diol-1,6 (V) (90.5%) or 7-methyl octadiine-3,5-diol-1,7 (VI) (88.5%), respectively. Like diacetylene glycols, these compounds separate acetone at 150°C in the presence of K_2CO_3. Hexadiin-3,5-ol-1 (61.8%) b. p. 38-40°C/0.4 mm Hg n_D^{20} 1.5174 was thus obtained from VI. Tertiary diacety-

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06/19/2000 CIA-RDP86-00513R000827110003-9

S/062/62/000/006/008/008
B117/B101

Chemistry of polyene and polyacetylene ...

lene alcohols were synthesized from organometallic compounds of II: 2-methyl heptadiin-3,5-ol-2 (70.5%); 2-methyl octadiin-3,5-ol-2 (73.5%) m. p. 8-9°C, n_D^{20} 1.5054; 2-methyl decadiin-3,5-ol-2 (62.2%) b. p. 92-93°C per 0.7 mm Hg, n_D^{20} 1.5016. Thermal decomposition of 2-methyl decadiin-3,5-ol-2 in the presence of KOH formed octadiine-1,3 (69%), b. p. 46°C/22 mmHg, n_D^{20} 1.4758. The reaction of octadiine-1,3 with carbonic acid and subsequent esterification yielded the methyl ester of octadiine-1,3-carboxylic acid (60%). II with carbonic acid gives the known 5-methyl-5-oxyhexadiine-1,3-carboxylic acid, and with orthoformiate an acetal which was saponified to the diethyl acetal of 6-methyl-6-oxyheptadiin-2,4-al-1 (77.5%) b. p. 95-96°C/0.3 mm Hg, n_D^{20} 1.4932, an initial product for synthesizing diacetylene polyene compounds. II with 2-methyl heptadiin-3,5-ol-2-acetate yielded diacetylene amino alcohols by Mannich's reaction: 1-(diethylamino)-6-methyl heptadiin-2,4-ol--6-acetate (71.3%) b. p. 93-95°C/0.03 mm Hg, n_D^{20} 1.4936; 1-(morpholino)-6-methyl heptadiin-2,4-ol-6-acetate (77%) b. p. 123-125°C/0.04 mm Hg; 1-(morpholino)-6-methyl heptadiin-2,4-ol-6 (54%) b. p.

Card 2/3

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

S/062/62/000/006/007/008
B117/B101

AUTHORS: Gusev, B. P., and Kucherov, V. F.

TITLE: Chemistry of polyene and polyacetylene compounds. Communication 5. A general method of synthesizing diacetylene alcohols

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 6, 1962, 1062 - 1067

TEXT: The thermal cleavage of diacetylene glycols was studied in order to develop an easy method of pyrolysing them to diacetylene alcohols. Optimum conditions of this reaction were found for 2,7-dimethyl octadiine-3,5-diol-2,7, pure 2-methyl hexadiin-3,5-ol-2 being obtained with 55-65% yield by heating the glycol melt in a bath at 180-190°C in the presence of K_2CO_3 (~5 % by weight) followed by accelerated distillation of pyrolysis products in vacuo. The pyrolysis of 3,8-dimethyl decadiine-4,6-diol-3,8 to 3-methyl heptadiin-4,6-ol-3, of 3,8-diethyl decadiine-4,6-diol-3,8, to 3-ethyl heptadiin-4,6-ol-3, and of di-(1-oxycyclopentyl)diacetylene and 1-oxycyclopentyl diacetylene, readily proceeds at 160-180°C yielding up to

Card 1/3

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60%. By reason of their ability to form Grignard complexes, diacetylene alcohols were used for the synthesis of hardly accessible, asymmetric diacetylene glycols. On the basis of 2-methyl hexadiin-3,5-ol-2 and that of corresponding ketones and aldehydes, the following asymmetric glycols were obtained with yields of up to 87%: $(C_2H_5)_2(OH)$ C-DA-C$(OH)(CH_3)_2$, m. p. 73-74°C; $(CH_3)_2$C-CH-$(CH_2)_2$-C(CH_3)(OH)-DA-C$(OH)(CH_3)_2$, m. p. 60-61°C; (C_6H_5OH)C-DA-C$(OH)(CH_3)_2$, m. p. 120-121°C; (C_5H_4OH)C-DA-C$(OH)(CH_3)_2$, m. p. 118-119°C; (CH_3CHOH)C-DA-C$(OH)(CH_3)_2$, m. p. 76-77°C; (C_2H_5OH)C-DA-C(OH) $(CH_3)_2$, m. p. 43-44°C; (C_3H_7CHOH)C-DA-C$(OH)(CH_3)_2$, b. p. 118-120°C (0,5 mm Hg); (C_6H_5CHOH)-DA-C$(OH)(CH_3)_2$, m. p. 86-87°C. DA = diacetylene group -C≡C-C≡C-. Thermal decomposition of secondary-tertiary diacetylene glycols (by separation of acetone) take place in the presence of K_2CO_3 at 130-150°C. Thus hexadiin-3,5-ol-2 (52.1%) and octadiin-1,3-ol-5 (63.2%) containing 5-10% 2-methyl hexadiin-3,5-ol-2 were got from 2-methyl octadiine-3,5-diol-2,7 and 2-methyl decadiine-3,5-diol-2,7. There is 1 table.

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

Chemistry of polyene ...

S/062/62/000/006/007/008
B117/B101

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: January 16, 1962

Card 3/3

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

MAVROV, M.V.; KUCHEROV, V.F.

Chemistry of polyene and polyacetylene compounds. Report No.7: Hydration of unsaturated acetylenic alcohols. Izv.AN SSSR.Otd. khim.nauk no.7:1267-1275 Jl '62. (MIRA 15:7)

1. Institut organicheskoy khimii im. N.D.Zel'inskogo AN SSSR.
(Unsaturated compounds) (Hydration)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

SEGAL', G.M.; RYBKINA, L.P.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Report No.51: Steric orientation of diene condensation with 1-(α-chlorovinyl)-Δ^1-cyclohexene. Izv.AN SSSR.Otd.khim.nauk no.8:1424-1431 Ag '62. (MIRA 15:8)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclohexene) (Stereochemistry)
(Condensation products (Chemistry)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KOVALEV, B.G.; YANOVSKAYA, L.A.; KUCHEROV, V.F.

Synthesis of isoprenoid acids from isoprenoid ketones by the action of diethyl ester of carbethoxymethylphosphinic acid. Izv. AN SSSR. Otd.khim.nauk no.10:1876-1877 O '62. (MIRA 15:10)

1. Institut orgnicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Isoprenoids) (Phosphinic acid)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

YANOVSKAYA, L. A.; RUDENKO, B. A.; KUCHEROV, V. F.; STEPANOVA, R. N.; KOGAN, G. A.

Chemistry of acetals. Report No. 13: Hydrolysis of some diacetals studied by means of gas-liquid chromatography. Izv. AN SSSR Otd. khim. nauk no.12:2189-2196 D '62. (MIRA 16:1)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.

(Acetals) (Hydrolysis) (Gas chromatography)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

GRIGOR'YEVA, N.Ya.; KUCHEROV, V.F.

Stereochemistry and mechanism of dehydration of cyclohexane derivatives. Usp.khim. 31 no.1:39-72 Ja '62. (MIRA 15:3)

1. Institut organicheskoy khimii AN SSSR imeni Zelinskogo.
(Cyclohexane) (Dehydration)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KRASNAYA, Zh.A.; KUCHEROV, V.F.

New method of synthesizing vitamin-A from β-ionolideneacetic aldehyde. Zhur. ob khim. 32 no.1:64-70 Ja '62. (MIRA 15:2)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.
(Vitamins—A) (Acetaldehyde)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

LEBEDKINA, Ye.D.; FEDOROV, V.M.; FAYNBERG, V.Ya., kand.fiz.-matem.nauk; BARCHUKOV, A.I., kand.tekhn.nauk; FESENKOV, V.G., akademik; ~~FUCHEROV, V.K.,~~ doktor khim.nauk; DZERDZEYEVSKIY, B.L., prof.; SHAPIRO, G.S., doktor tekhn.nauk; KULAGINA, O.S.; UDAL'TSOVA, Z.V., doktor istor.nauk; LIKHACHEV, D.S.

Brief notes. Vest. AN SSSR 32 no.1:119-130 Ja '62. (MIRA 15:1)
(Scientific societies) (Research)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; SEREBRYAKOV, E.P.

Stereochemistry of cyclic compounds. Part 44: Synthesis and stereochemistry of cis-hydrindan-4,5-dicarboxylic acids. Zhur. ob.khim. 32 no.2:426-432 F '62. (MIRA 15:2)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo AN SSSR.
(Indandicarboxylic acid)
(Stereochemistry)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; SEREBRYAKOV, E.P.; KOGAN, G.A.

Stereochemistry of cyclic compounds. Part 45: Infrared spectra of anhydrides of stereoisomeric cyclic ortho-dicarboxylic acids. Zhur.ob.khim. 32 no.3:760-765 Mr '62. (MIRA 15:3)
(Anhydrides) (Spectra)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; MIL'SHTEYN, I.M.; GURVICH, I.A.

Stereochemistry of cyclic compounds. Part 46: Configuration of adducts of trans-1-vinyl-6-keto-9-methyl-Δ^{1}-octalin with maleic anhydride. Zhur.ob.khim. 32 no.3:765-773 Mr '62. (MIRA 15:3)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.
(Naphthalene) (Maleic anhydride) (Stereochemistry)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KRASNAYA, Zh.A.; KUCHEROV, V.F.

Chemistry of polyene and polyacetylene compounds. Report No.4: Use of ethoxyacetylene for the synthesis of isoprenoid acid esters. Izv.AN SSSR.Otd.khim.nauk no.6:1057-1062 '62. (MIRA 15:8)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acetylene) (Isoprenoids)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

GUSEV, B.P.; KUCHEROV, V.F.

Chemistry of polyene and polyacetylene compounds. Report No.5: General method for the synthesis of diacetylenic alcohols. Izv.-AN SSSR.Otd.khim.nauk no.6:1062-1067 '62. (MIRA 15:8)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Alcohols) (Unsaturated compounds)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

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MISTRYUKOV, E.A.; ARONOVA, N.I.; KUCHEROV, V.F.

Stereochemistry of heterocyclic compounds. Report No.11: Effect of substitution at the nitrogen atom on the configuration of 4-decahydroquinolones and the stereochemistry of some nycleophilic reactions at a keto group. Izv.AN SSSR.Otd.khim.nauk no.9:1599-1604 S '62. (MIRA 15:10)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Quinolone) (Substitution (Chemistry)) (Stereochemistry)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

YANOVSKAYA, L. A.; KUCHEROV, V. F.; RUDENKO, B. A.

Chemistry of acetals. Report No. 12: Application of the method of gas-liquid chromatography for the analysis of the products of the reaction of orthoesters with vinyl ethers. Izv. AN SSSR Otd. khim. nauk no. 12:2182-2189 D '62.

(MIRA 16:1)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.

(Acetals) (Ethers) (Gas chromatography)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

GRIGOR'YEVA, N. Ya.; KUCHEROV, V. F.

Conjugation factors in cyclic systems. Report No. 4: Regularities in alkaline isomerization of double bonds in $\Delta^{1,4}$-cyclohexadiene-1,2- and 3α,6-dihydroindan-4,5-dicarboxylic acids. Izv. AN SSSR Otd. khim. nauk no.12:2196-2204 D '62. (MIRA 16:1)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.

(Cyclohexadienedicarboxylic acid)
(Indandicarboxylic acid)
(Isomerization)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

RUDENKO, B.A.; KUCHEROV, V.F.

Use of sodium chloride as a solid carrier in gas-liquid chromatography. Dokl.AN SSSR 145 no.3:577-579 Jl '62. (MIRA 15:7)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR. Predstavleno akademikom B.A.Kazanskim.
(Sodium chloride) (Gas chromatography)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

ONISHCHENKO, Andrey Sergeyevich; KUCHEROV, V.F., doktor khim.nauk,otv. red.; POVAROV, L.S., red.; GOLUB', S.P., tekhn. red.

[Diene synthesis] Dienovyi sintez. Moskva, Izd-vo AN SSSR, 1963. 649 p. (MIRA 16:10)

(Chemistry, Organic--Synthesis)
(Unsaturated compounds)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V. F.; GRIGOR'YEVA, N. Ya.; FADEYEVA, T. M.; KOGAN, G. A.

Conjugation factors in cyclic systems. Report No. 5: Mutual transformations and the kinetics of isomerization of hexalin-1, 2-dicarboxylic acids under the influence of alkalies. Izv. AN SSSR. Otd. khim. nauk no.1:137-145 '63. (MIRA 16:1)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.

(Cyclohexanedicarboxylic acid)
(Isomerization)
(Conjugation(Chemistry))

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KOVALEV, B. G.; YANOVSKAYA, L. A.; KUCHEROV, V. F.; KOGAN, G. A.

Chemistry of polyene and polyacetylene compounds. Report No. 8: Paths in the synthesis of polyene dicarboxylic acids with an even number of double bonds and polyene dicarboxylic acids. Izv. AN SSSR. Otd. khim. nauk no.1:145-152 '63. (MIRA 16:1)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.

(Acids, Organic) (Unsaturated compounds) (Chemical bonds)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

S/062/63/000/002/003/020
B144/B186

AUTHORS: Rudenko, B. A., and Kucherov, V. F.

TITLE: Application of gas-liquid chromatography to the analysis of ester mixtures of some aliphatic dibasic and cyclopentane-carboxylic acids

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 2, 1963, 220 - 227

TEXT: Gas-liquid chromatography was applied to separate mixtures of acids of unsubstituted and mono- or disubstituted dibasic aliphatic (C_2-C_6) and monobasic cyclopentane carboxylic acids. A coiled column 3.20m long and 5 - 6 mm in diameter proved most effective. It contained 0.15 - 0.5 mm diatomite and "Gomotsiai 410" (Siss, France), a silicon elastomer. Mixtures of dicarboxylic esters were separated at 160°C. log V_R was a linear function of the number of C atoms in the main chain, and of the number and position of substituents. The retention volume increased by a factor of 1.56 on lengthening the carbon chain by one CH_2

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Application of gas-liquid...

group, and by a factor of 1.18 on substituting a methyl group in α-position. For compounds with equal number of C atoms, the retention volume diminished in the order: unsubstituted, α-methyl, α,α-dimethyl, α,α'-dimethyl dicarboxylic acid. This is attributed to the steric hindrance of the COOH group which increases in the same order. The method was also used for analyzing mixtures of esters obtained from cyclopentane and cyclohexane carboxylic, mono- and disubstituted cyclopentane carboxylic, camphoric, and homocamphoric acids. An improved method for the analysis of cyclic acids is studied at present. The chromatographic method has already been used successfully for analyzing the oxidation products of β-carboxylic acids by L. I. Vinogradova et al. (Izv. AN SSSR. Otd. khim. n. 1962, 1436). Complex alkyl-substituted dicarboxylic esters were analyzed at 200 - 220°C. The apparatus used is described in detail. The experimental error was less than 2 %. The content of the mixture in individual components was calculated from the formula of R. K. Beerthuis et al., (Gas Chromatography, Ed. by V. J. Contes a.e., N. Y., Acad. Press. Inc. Publs., 1958, 347). There are 7 figures and 4 tables.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinsky of the Academy of Sciences USSR)

Card 2/3

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Application of gas-liquid...

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B144/B186

SUBMITTED: May 16, 1962

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

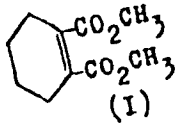
S/062/63/000/002/004/020
B144/B186

AUTHORS: Mayranovskiy, S. G., Grigor'yeva, N. Ya., Barashkova, N. V., and Kucherov, V. F.

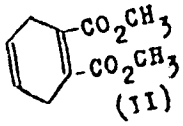
TITLE: Conjugation factors in cyclic systems. Communication 6. Polarographic and potentiometric study of electron interaction effects in cyclohexadiene-1,2 dicarboxylic acids and their methyl esters

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 2, 1963, 240 - 245

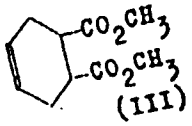
TEXT: Cyclohexene and cyclohexadiene-1,2 dicarboxylic acids and their dimethyl esters were studied polarographically and potentiometrically to clear up the problem of possible interactions between the double bonds of the ring. The polarograms of



(I)



(II)



(III)

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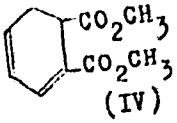
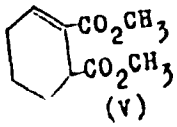
B144/B186

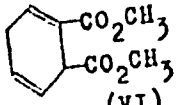
Conjugation factors in...



(IV)



(V)



(VI)

were taken at 25°C using 0.05 M tetramethyl ammonium iodide solution containing 9.5% by volume ethanol. The effect of pH and ionic strength was investigated in borate buffer solutions (pH 7 - 10.5), 0.1 N NaOH, and potassium chloride solutions. The anode was an Hg electrode, the reference electrode was a calomel half-cell. The ionization constants were determined at ~20°C and initial concentrations of ~0.001 M. For all compounds except III the reduction wave was pH-independent. For I, II, V, VI the ion transference number is 2, the diffusivity $6.5 \cdot 10^{-6}$ cm²/sec. The polarographic curves showed two steps; the difference between their $E_{1/2}$ could be altered neither by increasing the depolarizer concentration nor by raising the temperature and ionic strength of the solution nor by varying the height of the Hg column. This indicates that the two reduction steps are irreversible and occur due to hydrogenation of the double bond involving formation of a relatively stable free radical intermediate. In IV, the two double bonds

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GUSEV, B.P.; KUCHEROV, V.F.

Chemistry of polyene and polyacetylene compounds. Report No.9: Synthesis of capillene, capillin, and related compounds. Izv. AN SSSR.Otd.khim.nauk no.3:517-521 Mr '63. (MIRA 16:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(C-pillene) (Hexadiynophenone)

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SEMENOVSKIY, A.V.; SMIT, V.A.; KUCHEROV, V.F.

Configuration of -lactones formed during cyclization of geranylacetic acid. Izv.AN SSSR.Otd.khim.nauk no.3:558-560 Mr '63. (MIRA 16:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Lactones) (Cyclohexenecarboxylic acid)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

LYSANCHUK, L.K.; ANDREYEV, V.M.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Report No.52: Regularities in the addition of hypobromous acid to dimethyl-cis-syn-7-methoxy-1,2,3,9,10,10a-hexahydrophenanthrene-1,2-dicarboxylate. Izv. AN SSSR. Otd.khim. nauk no.4:706-715 Ap '63. (MIRA 16:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Hypobromous acid) (Cyclic compounds) (Stereochemistry)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; SHABANOV, A.L.; ONISHCHENKO, A.S.

Stereochemistry of cyclic compounds. Report No.53: Stereochemistry of lactonization of 4,5-dibromocyclohexane-cis-1,2-dicarboxylic acid and its monoester. Izv.AN SSSR Otd.khim.nauk no.5:844-852 My '63. (MIRA 16:8)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclohexanedicarboxylic acid) (Stereochemistry)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9"

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

ONISHCHENKO, A.S.; SHABANOV, A.L.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Report No.54: Stereochemistry of hypobromous acid addition to sodium salts of cis-Δ^4-cyclohexene-1,2-dicarboxylic acid and its monoester. Izv.AN SSSR Otd.khim.nauk no.5:852-856 My '63. (MIRA 16:8)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclohexenedicarboxylic acid) (Hypobromous acid) (Stereochemistry)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

YANOVSKAYA, L.A.; STEPANOVA, R.N.; KOGAN, G.A.; KUCHEROV, V.F.

Chemistry of acetals. Report No.14: Preparation of esters of polyenic aldehyde acids, their acetals and symmetric and asymmetric dicarboxylic acids. Izv.AN SSSR Otd.khim.nauk no.5:857-865 My '63. (MIRA 16:8)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Acetals) (Acids, Organic) (Unsaturated compounds)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

SEGAL', G.M.; RYBKINA, L.P.; KUCHEROV, V.F.

Stereochemistry of cyclic compounds. Report No.55: Steric orientation of the diene condensation of 1-vinyl-Δ^1-cyclohexene with trans-β-nitropropylene. Izv. AN SSSR. Ser.khim. no.7:1253-1258 Jl '63. (MIRA 16:9)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Cyclohexene) (Propene)
(Stereochemistry)

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"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827110003-9

KUCHEROV, V.F.; SEVERINA, T.A.; IVANOVA, L.N.; KOGAN, G.A.; RUDENKO, B.A.

Synthesis and the character of enolization of some β-diketones of the porhydroindan series. Izv.AN SSSR.Ser.khim. no.8:1428-1438 Ag '63. (MIRA 16:9)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Ketones) (Indan) (Enols)

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