

GREBENSHCHIKOV, S.I. (Polotsk).

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(Polotskaya Province--Midwives) (Midwives--Polotskaya Province)

21.2.100

69157
S/139/59/000/06/014/034
E032/E114

AUTHORS: Gagin, Ye.N., Grebenshchikov, S.Ye., Pisarev, V.E.

TITLE: Some Problems Associated with the Design of an Electron Electrostatic Van de Graaf Generator

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika,
1959, Nr 6, pp 95-101 (USSR)

ABSTRACT: This paper was presented at the Inter-Collegiate Conference on Accelerators (Tomsk, February 1958). It describes the Van de Graaf generator at the Physical Institute imeni P.N. Lebedev of the Academy of Sciences, USSR. The machine was completed in 1956. The generator is in a horizontal position and is mounted on three insulating columns 1.8 m long each. The 60 distributing rings and the high voltage electrode are made of duralumin. The high voltage electrode is in the form of cylinder connected to a hemisphere 38 cm in diameter. The electrodes in the accelerating tube are in the form of thin stainless steel discs with apertures 8 cm in diameter. The accelerating tube is 1.8 m long and is made up of 180 electrodes separated by porcelain rings. The width of the belt is 26 cm. The belt moves with a

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Electrostatic Van de Graaf Generator

linear velocity of 21 m/sec. The generator works in a nitrogen atmosphere at a pressure of 5.5-7 atm. A mixture of 80% nitrogen and 20% CO₂ gives the best results. It was also useful to use pure nitrogen since the freezing of moisture out of the mixture was found to be difficult. Measures were taken to keep the relative humidity to about 0.05%. The machine produces 1 MeV electrons, the energy spread being 0.05%. The energy spread is controlled by passing the beam through a deflecting analysing magnet and looking at the energy deviations in the focal plane of the magnet. A special beam probe is located in this plane and sends an energy error signal back into the machine. The machine delivers current pulses of 1 mamp, the pulses being of the order of 20 μ sec. The angular divergence of the beam is 10⁻³ rad. There are 5 figures and 7 references, of which 1 is French, 1 is English and 5 are Soviet.

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ASSOCIATION: Fizicheskiy institut imeni P.N. Lebedeva AN SSSR
(Institute of Physics imeni P.N. Lebedev, Academy of
Sciences, USSR)

24(3)

SOV/56-37-2-41/56

AUTHORS: Rayzer, M. D., Grebenshchikov, S. Ye.

TITLE: The Localization of a High-frequency Induction Discharge

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 37, Nr 2(8), pp 564-565 (USSR)

ABSTRACT: This is an investigation of a high-frequency induction discharge in an axially symmetric magnetic field in the pressure range of from 1 to 100 mm Hg in various gases (hydrogen, air, helium). This discharge was produced by a self-excitation-oscillator (150 kw) equipped with GU-12A tubes. The pulse duration was 1 μ sec, the frequency 15 mc and the plate voltage was 15 kv. Further details concerning the apparatus are given. The discharge was excited in a cylindrical vacuum chamber (diameter 28 cm, h = 3 cm). A figure shows typical slow-motion photographs of the discharges in different gases, which were taken with the apparatus SFS-2. The slit of the lens of the photo-recorder was arranged parallel to the radius of the vacuum chamber. The helium discharge exhibits the particular feature that the plasma ring forming at the moment of breakdown separates into two simultaneously existing coils. The frequencies

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of the plasma coils are, under otherwise approximately equal conditions, inversely proportional to the specific gravity of the gas: for air 16,000 c, for helium 6,000 c., for hydrogen 4,000 c. The current in the winding is about 200 a and the field strength of the vortex-like electric field is ~ 100 v/cm. The current in the plasma coil is determined by its inductivity. Spectroscopical measurements of the discharge in hydrogen under a pressure of 10 mm Hg (spectrometer ISP-50) showed that only mono-atomic hydrogen ions are present in the discharge channel. The electron temperature determined from the relative intensity of the lines H_{α} , H_{β} , and H_{γ} was $\sim 5,000^{\circ}$, which corresponds to a plasma conductivity of $2 \cdot 10^{13}$. In an almost homogeneous magnetic field the nature of the discharge is somewhat modified: in discharges in helium and air the current flows in a localized domain along the side walls of the chamber, but no distinctive plasma coils are formed. In a discharge in hydrogen a clearly bounded coil is observed, the small radius of which is about 5 mm. The oscillations of the large radius are attenuated much faster than in earlier cases mentioned. The

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plasma coils in a homogeneous magnetic field should decrease their large radius only by a contraction towards the center of the vacuum chamber owing to the action of electrodynamic forces. This may be caused by the smallness of the electrodynamic forces and by the existence of a strong friction owing to the high gas density. The following has been found: In a high-frequency discharge under pressures exceeding 1 mm Hg clearly bounded plasma coils are produced, which have been torn away from the walls of the vacuum chamber and which exist during the length of the pulse of the high-frequency magnetic field. The authors express their gratitude to R. A. Latypov for his participation in constructing the apparatus and in carrying out the experiment, to V. A. Kiselev for carrying out the spectroscopical measurements and L. M. Kovrizhnykh, M. S. Rabinovich and I. S. Shpigel' for helpful discussion of the results. There are 1 figure and 3 Soviet references.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev of the Academy of Sciences, USSR)

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81681

S/057/60/030/05/10/014
B012/B056

24.2120
10.2000(A)

AUTHORS: Andryukhina, E. D., Grebenshchikov, S. Ye., Rabinovich, M.S.,
Rayzer, M. D., Safronov, A. Ya., Shpigel, I. S.

TITLE: Some Characteristic Features of Inductive Gas Discharges 21

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 5,
pp. 529 - 538

TEXT: The present paper was read at the 4th International Conference on ionization processes held at Upsala in 1959. The authors carried out experiments for the purpose of explaining the influence exerted by some phenomena upon the dynamics of the plasma, which are described. The experiments were carried out in axially symmetric homogeneous and non-homogeneous magnetic fields within a wide frequency range under various ratios between the inductive resistance and the effective resistance of the plasma. The following of the phenomena mentioned were investigated: the "capture" of the magnetic field by the moving plasma, the skin effect, and the shock waves. Fig. 1 shows the oscillogram of the complete current in a discharge in hydrogen, and Fig. 2 shows a slow-motion picture of the

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discharge. Measurements of current distribution showed that during the first half-period of the field variation a re-distribution of the current according to the vacuum chamber radius takes place. In Fig. 3a the device for investigating the discharge in an axially symmetric field, the so-called "magnetic mirror" is shown schematically. Fig. 3b shows the dependence of the current generated by special windings upon radius R and distance z. From the oscillograms in Fig. 4 it may be seen that the current in the gas during the first half-period of the field change is due only to the effective resistance of the plasma. The current polarity reversal shown on the oscillograms and the instantaneous current distribution in Fig. 6a indicating the existence of a considerable return current prove the "capture" of part of the magnetic flux by the plasma. The investigations of the skin effect and of the shock waves described showed that in the here investigated configurations of magnetic systems and vacuum chambers a cylindrical shock wave is formed in the breakdown in the range of $5 \cdot 10^{-1} - 10^{-2}$ torr. During its motion it heats the gas and partly ionizes it. With propagation of the wave the conductivity range increases, and the currents generated within this range may, in the case of a skin effect, compensate the entire exterior magnetic field in the larger part

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of the chamber. At high discharge frequencies (300-700 kc/s) a sufficiently high conductivity of the plasma is necessary in order that a skin layer having a thickness that is smaller than the height of the chamber, may occur. Such a conductivity is attained after the passage of 2 to 3 shock waves through the vacuum. At frequencies of 60-100 kc/s the thickness of the skin layer is greater than the height of the vacuum chambers used in the present investigation and some other papers (Refs. 4 and 5), and no effects were observed in the distribution of the current on the walls and also no screening of the outer field. Evaluations show that in the here described experiments a qualitative relation

$\delta \sim \omega^{-1/2}$ is observed. No more accurate data could be found. δ is the thickness of the skin layer, ω - the frequency of the external field. Academician V. I. Veksler is thanked for discussing the paper with the authors. There are 13 figures and 8 references: 5 Soviet and 3 English.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR Moskva
(Institute of Physics imeni P. N. Lebedev of the AS USSR,
Moscow)

SUBMITTED: December 4, 1959
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81666

S/056/60/038/06/01/012
B006/B056

10.2000 (A)

AUTHORS: Grebenshchikov, S. Ye., Rayzer, M. D.

TITLE: Skin Effect¹ and Shock Waves¹ in an Induction Gas Discharge²

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 38, No. 6, pp. 1665-1667

TEXT: The authors investigate the gas discharge in an axially symmetric magnetic field at a frequency of $f = 300$ kc/sec; the magnetic field¹ was generated by means of condenser battery discharges, the parameters of condenser and coil are given. The principal investigations were carried out in a closed air- and hydrogen-filled chamber within the range $p = 5 \cdot 10^{-1} - 10^{-2}$ torr. The maximum current I_g in the gas amounted to 15 ka. $\omega L/R \gg 1$ held for the ratio between inductive and effective plasma resistance. Fig. 1 shows the magnetic field distribution in the central plane of the discharge chamber at a field strength in the center of $\sim 1.5 \cdot 10^3$ oe. Fig. 2 shows the radial current distribution. The

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diagram shows that after two half-periods of the current practically the entire magnetic field is concentrated in the current layer and no field exists any longer in the chamber center. As shown by high-speed photographs (Fig. 3), a luminous ring forms at the instant of the discharge on the vacuum chamber wall, which is about 3 mm wide and is as high as the chamber. The ring moves, contracting, toward the chamber center, where its brightness increases abruptly. The primary velocity of motion of the ring $v = 2 \cdot 10^6 \div 1.5 \cdot 10^7$ cm/sec depends on the amperage in the gas, the nature of the gas, and pressure, and agrees well with the formula $v \sim (I_g/p)^{1/2}$ (Fig. 4). The contraction rate of the ring decreases the more it approaches the center. This narrow luminous ring represents the front of a shock wave. The character of the current and field distributions in the presence of an ionized gas in the entire volume of the vacuum chamber proves the existence of a skin effect which occurs in the plasma like in a metal. The skin depth is ~ 3 cm, from which the conductivity of the plasma may be estimated at $7 \cdot 10^{13}$ cgs units. In spite of the propagation of shock waves, the current layer keeps away from the lateral

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wall of the chamber during the entire discharge. The existence of a strongly circuital electric field ($E \sim 400$ v/cm) in each half-period of the current causes a discharge on the chamber wall, and the marked skin effect occurring on this occasion leads to a screening of the magnetic field from the inner part of the chamber. The authors finally thank R. A. Latypov and A. G. Frank for taking part in the experiments, and L. M. Kovrizhnykh, M. S. Rabinovich, A. A. Rukhadze, and I. S. Shpigel' for discussions. There are 4 figures and 4 references: 3 Soviet.

SUBMITTED: December 14, 1959

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B104/B205

26.2321

AUTHORS: Grebenshchikov, S. Ye., Rayzer, M. D., Rukhadze, A. A.,
and Frank, A. G.

TITLE: Reflection and refraction of shock waves in magnetohydro-
dynamics

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 5, 1961, 529-538

TEXT: The authors studied the reflection and refraction of converging ring-type shock waves by a cylindrical "magnetic wall". As the front width of the shock waves was much smaller than the radial dimensions of the magnetic wall, the experimental results could be interpreted theoretically in terms of the interaction of a plane shock wave with the magnetic wall. The experimental arrangement is schematically shown in Fig. 1. The shock wave was produced electro-dynamically in a 360-kc gas discharge. Two parallel-connected 0.2- μ f capacitors were used as a power source. Two copper coils surrounding a vacuum chamber had an inductance of 0.57 μ h. A cylindrical magnetic wall was produced by means of a quasi-static magnetic field ($\dot{H} = 2.5$ kc/sec) which had been generated by the discharge

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Reflection and...

of two parallel-connected 150- μ f capacitors through two coils (also connected in parallel) with a total inductance of 13.2 μ h. The distributions of the magnetic fields are graphically represented in Fig. 2. In a detailed theoretical discussion, the authors derive the following set of equations for the velocities of reflected and refracted shock waves:

$$\left. \begin{aligned} \alpha + \beta(a-x)(a-z) &= h + yz, \\ \frac{y^2 + \eta}{a-x} + \frac{\beta}{2} [(\gamma-1)a - (\gamma+1)z + 2x] &= 0, \\ \eta + h \frac{2y - \gamma z}{y-z} &= \frac{y}{2} [2y - (\gamma+1)z]. \end{aligned} \right\} \quad (16)$$

in the dimensionless parameters

$$\left. \begin{aligned} x &= \frac{u_1}{u_0}, \quad y = \frac{u_2}{u_0}, \quad z = \frac{v}{u_0}, \\ \eta &= \frac{1}{M_0^2}, \quad h = \frac{H_{20}^2}{8\pi\rho_0 u_0^2}, \quad \beta = \frac{p_1}{p_0} = \frac{\gamma+1}{\gamma-1+2\eta}, \quad \alpha = \frac{v_1}{u_0} = \frac{2(1-\eta)}{\gamma+1}. \end{aligned} \right\} \quad (15)$$

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Here, the usual symbols ρ , p , and v with the index 0 refer to a gaseous state that exists without the magnetic field of the shock wave. The index 1 refers to quantities behind the shock wave (Fig. 6). u_1 and u_2 are the velocities of the refracted and reflected shock waves, respectively; v is the velocity of the gas between these waves. Next, approximate solutions are derived for two limiting cases, i.e., for very weak and very strong magnetic fields. The solutions

$$\left. \begin{aligned} u_1 &\approx v_1 - c_1, \\ u_2 &\approx u_0, \\ v &\approx v_1. \end{aligned} \right\} \quad (17)$$

and

$$\left. \begin{aligned} u_1 &= -u_0 \frac{2(\gamma-1)}{(\gamma+1)}, \\ u_2^2 &= c_0^2 + \frac{H_2^2}{4\pi\rho_0}, \\ v &\approx 0 \end{aligned} \right\} \quad (18)$$

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are obtained. Summing up: On the strength of experimental results, it was possible to neglect the ionization energy as compared to the kinetic energy of the gas, since the former amounts to less than one-tenth of the kinetic energy at velocities $u > 2 \cdot 10^6$ cm/sec. It is shown that the reflection of a shock wave from the magnetic wall is determined essentially by the parameter $h = H^2 / 8\pi \rho_0 u_0^2$ which expresses the ratio of the density of magnetic energy to the density of kinetic energy in the shock wave. The experimental conditions showed that the velocity u_0 of the incoming wave and the gas pressure p_0 are interrelated by $u_0 \sim 1/\sqrt{p_0}$. This velocity decreases as the molecular weight of the gas increases. In the present case, the quantity $\rho_0 u_0^2$ again depends neither on the type of gas nor on pressure. Thus, h is determined only by the strength of the magnetic field at the point of reflection, even in discharges in different gases and at different pressures. Consequently, the reflection of shock waves must be equal with equal fields. The calculated values are determined chiefly by $\gamma = c_p/c_v$. Thus, different maximum velocities u_1 of reflected

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Reflection and...

waves are obtained for different values of γ and also different values of h at which maximum velocities are attained. For $\gamma = 5/3$, e.g., one obtains $u_{1\max} = -u_0/2$, $h_{\max} \approx 4.5$; for $\gamma = 7/5$, $u_{1\max} = -u_0/3$ and $h_{\max} \approx 6.7$. For $\gamma = 5/3$ the experimental results agree well with the theoretical ones.

With a field of about $4 \cdot 10^3$ oe, the velocity of the reflected wave is half as high as that of the incoming wave. This corresponds to $h \approx 4$, which means that the gas behind the shock wave dissociates almost entirely. Good agreement with the experimental results is obtained even with weak magnetic fields (less than $2 \cdot 10^3$ oe, i.e., $h < 1$). An increase in the velocity of the shock waves passing through the magnetic field is obtained with all magnetic field strengths, which is in accordance with theory. Thus, the velocity of a refracted wave in a field of about $4 \cdot 10^3$ oe is three times as high as that of the incoming wave and becomes equal to the magnetosonic velocity. R. A. Latypov is thanked for help in experiments, and A. T. Matachun for calculations done with the "Ural" computer. There are 8 figures and 5 Soviet-bloc references.

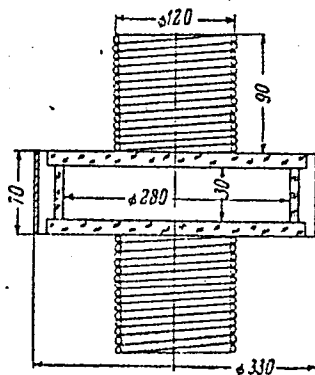
Card 5/8

Reflection and...

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B104/3205

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
Moskva (Institute of Physics imeni P. N. Lebedev, Academy
of Sciences USSR, Moscow)

SUBMITTED: July 25, 1960



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L 35592-65 EPA(w)-2/EWT(1)/EEC(t)/EPA(sp)-2/T/EWA(m)-2 Pi-4/Pc-4/Pz-6/Pab-10
 IJP(c) AT

ACCESSION NR: AP5007656

S/0020/65/160/006/1293/129560

AUTHORS: Batanov, G. M.; Berezhetskiy, M. S.; Grabanshchikov, S. Ye.; Zverev,
N. M.; Popryadukhin, A. P.; Rabinovich, M. S.; Sbitnikova, I.S.; Shpigel', I.S.

TITLE: Magnetic surfaces and plasma containment²¹ in the helical field of a stellerator with external injection

SOURCE: AN SSSR. Doklady, v. 160, no. 6, 1965, 1293-1295

TOPIC TAGS: stellerator, plasma trapping, plasma injection, magnetic field, helical magnetic field, resonance excitation, controlled fusion

ABSTRACT: Magnetic surfaces and external injection techniques in a 10 000-oersted longitudinal field stellerator (1200 mm large diameter and 100 mm small diameter) are discussed briefly. The parameter \mathcal{E} , equal to the ratio fundamental harmonic of field over longitudinal field, varies within the limits of 0.71-0.33, and the helical winding is at 45° . To verify the existence of magnetic surfaces, a pulsed electron gun is used as well as a $3 \times 3 \text{ mm}^2$ probe. The results show an unperturbed magnetic surface at $\mathcal{E} = 0.40$, a resonance excitation of the second kind at $\mathcal{E} = 0.37$ with an external undisturbed surface, and an internal undisturbed

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ACCESSION NR: AP5007656

surface with a resonance of the third kind at $\epsilon = 0.39$. The external injection was accomplished by means of four plasma spark injectors operating simultaneously for 0.4μ sec. Oscillograph studies indicate that the time for attaining a steady state distribution in density across the chamber corresponds to R/v_T , where R is the large chamber radius and v_T is the ionic thermal velocity. Comparing density distributions in the helical field to those of a toroidal field, the distinct influence of the former on the density distribution becomes obvious. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 09Jul64

ENCL: 00

SUB CODE: GP

NO REF SOV: 004

OTHER: 002

Card 2/2

Author: Berezhetskiy, M.S.; Grebenshchikov, S. Ye.; Popryadukhin, A.P.
ORG: Physics Institute im. P.N. Lebedev, Moscow (Fizicheskiy institut)

SOURCE CODE: UR/0057/85/035/012/2167/2175

58
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B

TITLE: Investigation of the structure of magnetic surfaces in a stellarator with a double helical field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 12, 1965, 2167-2175

TOPIC TAGS: helical magnetic field, plasma experiment, magnetic trap, magnetic field measurement, electron beam, magnetic field

ABSTRACT: The magnetic surfaces of the stellarator field in the L-1 toroidal magnetic trap have been explored with electron beams. The L-1 machine has been described elsewhere by G.M. Batanov et al. (DAN SSSR, 160, 1293, 1965). The stainless steel chamber was a torus with large and small radii of 60 cm and 5 cm. The longitudinal magnetic field had a strength of 3 kOe during the measurements and its corrugation on the axis was about 1.5%. The helical magnetic field was produced by four helical conductors of 7 turns each, neighboring conductors carrying currents in opposite directions. The ratio h/H of the fundamental harmonic h of the helical field to the longitudinal field H could be varied from 0.3 to 0.7. Three different techniques were employed to explore the magnetic surfaces: 1) A beam of 60-100 eV electrons was directed along a line of force at a selected point in the chamber and was collected after a single

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on an electrode that filled the entire cross section of the chamber. By varying the position of the gun the area was mapped out from which substantially all the injected electrons reached the collector. 2) A pulse of 20 eV electrons was injected along a line of force and the lifetime of the electrons in the chamber was determined with an electrostatic induction probe. Lifetimes of 200-300 μ sec, corresponding to 150-200 revolutions, were usual. 3) An electron pulse was injected and the corresponding magnetic surface was mapped out with a small movable electrostatic induction probe. By measuring the time between injection and detection of the pulse, the number of revolutions (up to about 20) corresponding to a given point on the magnetic surface could be determined. The presence of closed magnetic surfaces was established for values of h/H less than 0.6. The magnetic surfaces were highly distorted or destroyed when h/H was increased beyond 0.6; the reason for this is not understood. Low order resonant perturbations were detected. These were evinced by a sharp decrease in the lifetime of the injected electron pulse at the resonant values of h/H and by break-up of the magnetic surface into two or three pieces, depending on the order of the resonance. The resonances were observed at the predicted values of h/H . The effect of a transverse magnetic field on the magnetic surfaces was investigated. This was found to shift the positions of the magnetic surfaces without significantly distorting them, in accord with theoretical calculations. The authors thank N.M.Zverev and G.S.Voronov for assistance with the experiments, and M.S.Rabinovich for his interest and for valuable discussions. Orig. art. has: 1 formula and 8 figures.

SUB CODE: 20

SUBM DATE: 16Apr65

ORIG. REF: 016

OTH REF: 004

Card 2/2

PR

SOURCE CODE: UR/2504/E. 132/000/0007/0019

AUTHOR: Batanov, G. M.; Grebenshchikov, S. Ya.; Ivanovskiy, M. A.; Sbitnikova, I. S.; Fedyanin, O. I.; Shpigel', I. S.

ORG: none

TITLE: Injection of a plasma into a closed magnetic trap with a two phase helical field

SOURCE: AN SSSR. Fizicheskiy institut. Trudy, v. 32, 1966. Fizika plazmy (Plasma physics), 7-19

TOPIC TAGS: plasma injection, magnetic trap, helical magnetic field

ABSTRACT: A plasma injected into a closed magnetic trap must have the following properties: 1) it must be sufficiently homogeneous in composition (hydrogen or deuterium), it must contain a minimum number of impurities, and the percent ionization must be close to 100; 2) its temperature must be high enough to exclude losses due to normal diffusion in the magnetic field; 3) it must have a high conductivity to eliminate polarization due to the toroidal effect; 4) the plasma, filling the toroidal trap, must not contain marked longitudinal electric fields. The article presents the results of an investigation of several methods of injection. The experiments were carried out in laboratory scale models. The first method tested was injection of the

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plasma into a "programmed" magnetic field; this method is based on the irreversible change in the configuration of the magnetic field into a determined region of a closed field. The behavior of a plasma was studied under rapid compression by an external azimuthal magnetic field. The method proposed in the article involves injection of the plasma along the tube of the lines of force of a magnetic field extracted from the volume of the trap. Particular attention is paid to the problem of the movement of a sufficiently dense plasma ($n = 10^{12}-10^{13} \text{ cm}^{-3}$) in a curvilinear magnetic channel. The article concludes with a consideration of the collision of plasma flows in the transverse magnetic field of the trap. "In conclusion the authors consider it their duty to thank M. S. Rabinovich for his continuing interest in the progress of the work and for his helpful discussions of the experimental results and of the selection of the basic directions of the investigation. They also thank all their coworkers who took part in setting up the physical equipment and in carrying out the experiments: Ye. P. Aleksandrov, M. S. Bereshetskiy, N. M. Zverev, Yu. G. Krutikov, N. V. Perov, as well as all the workers of the workshop headed by V. P. Solov'yev." Orig. art. has: 13 figures.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 015/ OTH REF: 007

Card 2/2 ⁶⁷⁰

L 10406-67 EWT(1) IJP(e) AT

ACC NR: AT6033032

SOURCE CODE: UR/2504/66/032/000/0020/0028

AUTHOR: Berezhetskiy, M. S.; Grebenshchikov, S. Ye.; Zverev, N. M.; Shpigel', I. S.

ORG: none

TITLE: Toroidal magnetic trap of the stellarator type with external injection of the plasma

SOURCE: AN SSSR. Fizicheskiy institut. Trudy, v. 32, 1966. Fizika plazmy (Plasma physics), 20-28

TOPIC TAGS: magnetic trap, plasma injection

ABSTRACT: The vacuum chamber of the magnetic trap under consideration was in the form of a torus with a diameter of 120 cm and a cross section diameter of 10 cm. A magnetic field of the stellarator type (without taking the toroidal character into account) has the following form:

$$\Phi = H_0 s + \frac{1}{a} \sum_{k=0}^{\infty} H_k I_k (par) \sin p(\varphi - as), \quad (1)$$

$$p = n(2k + 1).$$

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ACC NR: AT6033032

where Φ is the scalar potential of the magnetic field; H_0 is the magnitude of the longitudinal field; H_p is the amplitude of the p-th harmonic of the helical field; r, ϕ, z are coordinates. There follows a mathematical development for the case of a helical field with $n = 2$. The article gives detailed mechanical drawings of several of the main features of the equipment used, including a cross section view of the apparatus, details of the helical winding, and a block diagram of the feeding system. A further figure shows an oscillogram of the current flowing through the winding. The experimental data confirm the validity of the approach to the problem. "In conclusion the authors express their sincere thanks to M. S. Rabinovich for his continuing interest in the work and for his helpful discussions, as well as to Ye. P. Aleksandrov, V. I. Dudin, V. I. Kryykov, and V. P. Solov'yev who took part in the construction of the equipment, and to G. I. Os'kina who took part in the construction of the winding system." Orig. art. has: 5 formulas, 7 figures, and 1 table.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 014/ OTH REF: 003

Card 2/2 ⁶⁷⁰

KOFMAN, A.P.; GREBENSHCHIKOV, V.G.

Tendency of 30Kh2N2M and 30Kh2N4M steels to brittle failure, at low temperatures. Metalloved. i term. obr. met. no.1:57-58 Ja '64.
(MIRA 17:3)

1. Volgogradskiy mekhanicheskiy institut.

GREBENICHNIKOV, V. I.

GREBENICHNIKOV, V. I. -- "INVESTIGATION OF THE TRACTION OF AN AUTOMOBILE ON SOFT GROUND."
Diss. 25 MAY 52, Moscow AUTOMOTIVE MECHANICS IN 1 (DETERMINATION FOR THE DEGREE OF
CANDIDATE IN TECHNICAL SCIENCES)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

GREBENSCHIKOV, V.I., kandidat tekhnicheskikh nauk.

Gauge for measuring and recording fuel consumption. Avt.trakt.prom.
no.11:30-31 N '54. (MLRA 8:1)

1. Moskovskiy poligraficheskiy institut.
(Automobiles--Fuel systems)

~~ORRENSHCHIKOV, V.I., kandidat tekhnicheskikh nauk.~~

Investigation of resistance of movement in automobiles travelling
on soft soils. Avt.i trakt.prom. no.12:1-4 D '55. (MLRA 9:3)

1. Moskovskiy avtomekhanicheskiy institut.
(Automobiles--Testing) (Soil mechanics)

GREBENSHCHIKOV, V.I., kandidat tekhnicheskikh nauk.

Experimental investigation of fuel economy in automobiles moving
across soft ground. Avt. i trakt.prom. no. 8:6-7 Ag '56.
(MIRA 9:10)

1. Moskovskiy Aviamotornyy institut.
(Automobiles--Fuel consumption)

original article was: MAMI ←
moscow automotive mechanics Inst

GREBENSHCHIKOV, V.I., kandidat tekhnicheskikh nauk.

Experimental investigation of the radial deformation of tires on
an automobile passing over soft ground. Avt. i trakt.prom no.10:18-
20 0 '56. (MIRA 10:1)

1. Moskovskiy avtomekhanicheskiy institut.
(Automobiles--Tires--Testing)

GREBENSHCHIKOV, V.I.

[Axonometric projections; manual on carrying out and drawing up the course assignment in mechanical drawing]
Aksonometricheskie proektsii; uchebnoe posobie po vypolneniiu i oformleniiu kursovykh zadaniu po tekhnicheskomu chercheniiu. Moskva, Mosk. poligraficheskii in-t, 1963. 26 p. (MIRA 17:5)

GREBENSHCHIKOV, V.I.

[Manual for the execution and presentation of assignments in mechanical drawing in the course "Threads and threaded joints"] Uchebnoe posobie po vypolneniiu i oformleniiu kursovykh zadaniy po tekhnicheskomu chercheniiu "Rez'by i rez'-bovye soedineniia." Moskva, Mosk. poligr. in-t, 1963. 31 p.
(MIRA 17:3)

GREBENSHCHIKOV, V.M.

All-Union Conference on the Theory of Relay Systems
(Vsesoyuznoye soveshchaniye po teorii ustroystv rel'evykh
deystviya).

BIBLIOGRAPHICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh
Nauk, 1958, No.2, pp. 167-168 (USSR).

ABSTRACT: The Institute of Automation and Telemechanics of the Ac.
Sc. USSR (Institut Avtomatiki i Telemekhaniki Akademii
Nauk SSSR) convened in October, 1957 an All Union
Conference on the theory of relay systems. The aim of
the conference was to evaluate the present state of the
problem of the theory of relay operation, particularly
evaluation of the problems of synthesis, analysis and
transformation of the structure of relay equipment,
optimum construction and assembly of such structures,
automation of the processes of synthesis and analysis
of such structures. Over 330 representatives of research
establishments, works' laboratories and project organiza-
tions from numerous centres of the USSR as well as
scientists from Roumania, Hungary and Czechoslovakia
participated in the conference.
In his opening address M. A. Gavrilov reported on the

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present state and the main trends of development of the theory of relay circuits. Thirty papers were read including "On the Development of Mathematical Logic and its Engineering Applications" by S. A. Yanovska, "Algebraic Theory of the Operation of Relay-Contact Circuits" by Gr. K. Moisil (Bucharest), "On the Inversion Complexity of a System of Functions" by A. A. Markov, "Minimum Disjunctive Shape of 'Bill' Functions" by K. Popovich (Bucharest), "On Certain Mathematical Problems of the Theory of Relay Circuits" by S. V. Yablonskiy.

The technique of operation in this field was dealt with in the following papers: "Technique of Determining the Minimum Number of Relays Necessary for the Construction of a Relay Circuit with Given Conditions of Operation" by V. G. Lazarev; "Matrix Method and Method of Characteristic Functions in the Theory of Contact Circuits" by A. G. Lunin; "On the Theory of Synthesis of Contact Circuits" by F. Svobodin (Prague); "Construction of Relay Circuits with Bridge Connections" by M. A. Gavrilov; "Method of Synthesis of Multi-Pole Relay-Contact Circuits" by V. N. Grebenshchikov; "Application of the Method of

Card 2/5

16(1)

AUTHOR:

Grebenshchikov, V.N.

SOV/55-58-3-15/30

TITLE:

Method for the Synthesis of Multipolar Contact Schemes
(Metod sinteza mnogopolyusnykh kontaknykh skhem)

PERIODICAL:

Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki,
astronomii, fiziki, khimii . 1958, Nr 3, pp 117-128 (USSR)

ABSTRACT:

The proposed method can be used for the synthesis of multipolar, especially bipolar contact schemes. The method con-

AUTHOR: Grebenshchikov, V. N. 20-119-2-24/60

TITLE: A Method for the Synthesis of Multipole Contact Circuits
(Metod sinteza mnogopolyusnykh kontaktnykh skhem)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 119, Nr 2,
pp. 278 - 281 (USSR)

ABSTRACT: The present paper deals with a simple method for the
synthesis of multipole contact circuits of general kind
and especially for the synthesis of multipole circuits
without repetition. The author here discusses the synthesis
of a circuit of a contact-n-pole in which between each pair
of poles α and β a complete contact conduction

$$A_{\alpha\beta} (a, b, \dots, c)$$

exists. This synthesis is only possible in the case, if the
condition

$$A_{\alpha\beta} \gg A_{\alpha\gamma} A_{\gamma\beta}, \alpha, \beta, \gamma = 1, 2, \dots, n; \alpha < \beta$$

is satisfied. The here proposed method of synthesis is based
on the successive disconnection of the outer contacts of the

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20-119-2-24/60

A Method for the Synthesis of Multipole Contact Circuits

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

PRESENTED: October 26, 1957, by A. N. Kolmogorov, Member, Academy
of Sciences

SUBMITTED: July 9, 1957

Card 3/3

GREENSHCHIKOV, V.N.

Seminar on technical application of mathematical logic (1957-1958).
Avtom. i telem. 20 no.1:97-99 Ja '59. (MIRA 12:1)
(Logic, Symbolic and mathematical)

32423

S/020/61/141/006/005/021
B104/B112

16,0600 (2403)

AUTHOR: Grebenshchikov, V. N.

TITLE: Coalitions of systems of equations of a Boolean algebra and their solution

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 6, 1961, 1317-1319

TEXT: The solution of Boolean algebraic equations with ambiguous coefficients is investigated. At first, the definition of segment A^* is given as a set of Boolean functions A with $\min A \leq A \leq \max A$. The coalition $[A_1^*, \dots, A_h^*]^*$ is defined as the total of different sets of functions, each of which contains any function of each segment. A coalition is said to be complete if it consists of a maximum possible number of different sets. Each system of Boolean algebraic equations can uniquely be represented by

an equation $\sum_{\alpha=1}^{2^n} A_{\alpha} \prod_{\beta=1}^n Y_{\beta}^{s_{\alpha\beta}} = 0$ (2). A_{α} ($\alpha = 1, \dots, 2^n$) denotes a

Boolean function of the variables a, b, \dots, f ; Y_{β} ($\beta = 1, \dots, n$) are Card 1/6

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Coalitions of systems of ...

S/020/61/141/006/005/021
B104/B112

unknown functions of the same variables; $s_{\alpha\beta}$ stands for a set of dyadic constants. By substituting into Eq. (2) the sets contained in the coalition, a totality of formulas is obtained, which are called coalition of equations. The formulas for the coalition are written as

$$\sum_{\alpha=1}^{2^n} A_{\alpha}^* \prod_{\beta=1}^n Y_{\beta}^{s_{\alpha\beta}} = 0 \quad (4).$$

The solutions of this coalition of equations are discussed. The properties of its general and particular solutions are determined by the following six theorems: theorem 1: The general solution of Eq. (4) is equivalent to a solution of the equation

$$\sum_{\alpha=1}^{2^n} \min A_{\alpha} \prod_{\beta=1}^n Y_{\beta}^{s_{\alpha\beta}} = 0 \quad (5);$$

theorem 2 (criterion of solvability): The coalition of equations (4) is solvable if and only if the relation

$$\prod_{\alpha=1}^{2^n} \min A_{\alpha} = 0$$

is fulfilled; theorem 3: The general solution of Eq. (5) is equivalent to the general solution of the system

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$$\sum_{\alpha=\kappa}^{2^{n-\gamma}} \prod_{\delta=1}^{2^{n-\gamma}} \min A_{\alpha+\delta-1} \prod_{\beta=1}^{\gamma-1} Y_{\beta}^{\alpha\beta} \leq Y_{\gamma} \leq \prod_{\alpha=\lambda}^{2^{n-\gamma}} \left(\sum_{\delta=1}^{2^{n-\gamma}} \min A_{\alpha+\delta-1} + \sum_{\beta=1}^{\gamma-1} Y_{\beta}^{\alpha\beta} \right). \quad (7);$$

$\gamma = 1, \dots, n; \quad \varepsilon = 1, \dots, 2^{\gamma-1}; \quad \kappa = 2^{n-\gamma}(2\varepsilon - 2) + 1;$
 $\lambda = 2^{n-\gamma}(2\varepsilon - 1) + 1.$

theorem 4: The general solution of the coalition of equations (4) is a coalition of equations whose boundary functions are determined by

$$\min Y_{\gamma} = \prod_{\alpha=\kappa} \min A_{\alpha}, \quad \max Y_{\gamma} = \sum_{\alpha=\lambda} \overline{\min A_{\alpha}}, \quad (8);$$

$\gamma = 1, \dots, n; \quad \varepsilon = 1, \dots, 2^{\gamma-1}; \quad \eta = 1, \dots, 2^{n-\gamma};$
 $\kappa = 2^{n-\gamma}(2\varepsilon - 2) + \eta; \quad \lambda = 2^{n-\gamma}(2\varepsilon - 1) + \eta.$

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S/O20/61/141/006/005/021

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Coalitions of systems of ...

theorem 5 (criterion of completion): The general solution of the coalition of equations (4) is complete if and only if the relations

$$\min A_p \leq \sum_{\gamma=1}^n \prod_{\alpha=\kappa}^{\gamma} \min A_{\alpha}$$

$$\rho = 1, \dots, 2^n; \quad \varepsilon = 1, \dots, 2^{\gamma-1}; \quad \eta = 1, \dots, 2^{n-\gamma}; \quad (9)$$

$$x = 2^{n-\gamma}(2\varepsilon - 1 - \delta_{\rho\gamma}) + \eta.$$

are fulfilled; theorem 6 (criterion of partial completion): The general solution of the coalition of equations (4) contains a complete coalition of sets for the boundary conditions

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B104/B112

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$$\begin{aligned} \min Y_\gamma &= \sum_{\alpha=x} \min A_\alpha, & \max Y_\gamma &= \prod_{\alpha=\lambda} \overline{\min A_\alpha}, \\ \gamma &= 1, \dots, n; \quad \varepsilon = 1, \dots, 2^{\gamma-1}; \quad \eta = 1, \dots, 2^{n-\gamma}; \\ x &= 2^{n-\gamma}(2\varepsilon - 2) + \eta; \quad \lambda = 2^{n-\gamma}(2\varepsilon - 1) + \eta, \end{aligned} \quad (10)$$

if and only if the relations

$$\begin{aligned} \sum_{\alpha=x} \min A_\alpha &\leq \prod_{\alpha=\lambda} \overline{\min A_\alpha}, \\ \gamma &= 1, \dots, n; \quad \varepsilon = 1, \dots, 2^{\gamma-1}; \quad \eta = 1, \dots, 2^{n-\gamma}; \\ x &= 2^{n-\gamma}(2\varepsilon - 2) + \eta; \quad \lambda = 2^{n-\gamma}(2\varepsilon - 1) + \eta. \end{aligned} \quad (11)$$

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Coalitions of systems of ...

S/020/61/141/006/005/021
B104/B112

are fulfilled. There are 3 Soviet references.

PRESENTED: July 19, 1961, by A. N. Kolmogorov, Academician

SUBMITTED: May 4, 1961

4

Card 6/6

L 62632-65

ACCESSION NR: AR5005493

S/0271/64/000/012/A058/A058
621.398

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika.
Sv. t., Abs. 12A317

AUTHOR: Grebenshchikov, V. N.; Krichke, V. O.

TITLE: Transistorized stable oscillator for petroleum-field telesystems

CITED SOURCE: Tr. Kuybyshevsk. n.-i. in-t heft. prom-sti, vyp. 23, 1964, 111-115

TOPIC TAGS: stable hf oscillator, transistorized oscillator

Translation: Designing of stable and reliable telesystems and their elements, particularly those operating outdoors, is held very important. A sinusoidal-wave high-reliability stable-frequency oscillator (SFO) is proposed. Two circuits are suggested for SFO. The first of them has been developed with two resonant LC-circuits and a transistorized amplifier; the second circuit comprises an additional magnetic modulator. In these SFO circuits, the high frequency stability is ensured by a weak feedback coupling of the principal high-Q frequency-determining oscillatory circuit with other circuits; high gain is ensured by an auxiliary resonant low-Q circuit. The auxiliary circuit acts as a load for the amplifying

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ACCESSION NR: AR5005493

transistor. Constant amplitude of oscillations and high reliability are ensured by a rather high level of feedback and preservation of shape of the output voltage derived from the principal oscillatory circuit. The magnetic modulator ensures synchronous tuning of circuits without disruption of the SFO operation. The frequency stability (for LC-circuits, 0.5% or better with a principal oscillatory circuit Q-factor of 50-100) is ensured by the independence of operation of the principal oscillatory circuit from other circuits, supply voltage (within 0.2 U-U), and temperature (-30+900); it is also ensured by the high Q of the principal circuit and by the high reliability of LC-circuit. When the magnetic modulator is wound on a common III-shaped core with the principal oscillatory circuit and the auxiliary circuit, the frequency is ensured by the independence between the bias magnetic fluxes and the LC-circuit magnetic fluxes. SFO circuit diagrams are presented, as well as the component parameters, and oscillator tuning procedures. Four illustrations.

SUB CODE: EC

ENCL: 00

llc
Card 2/2

GREBNSHCHIKOV, V.N., inzh.; KRICHKE, V.O., inzh.

Recording unit with an analog-to-digital converter. Priborostreeni
no.9:10-12 S '65. (MIRA 18:10)

L 15289-66 EWT(d)/EWT(1)/EW(h)/EWP(1) IJP(c) BE/3G

ACC NR: AP5028959

SOURCE CODE: UR/0119/64/000/009/0010/0012

AUTHOR: Grebenshchikov, V. N. (Engineer); Krichke, V. O. (Engineer)

ORG: none

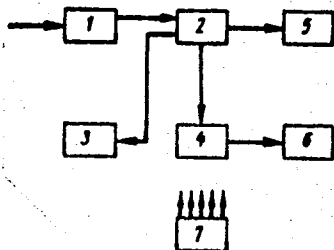
TITLE: Recorder with an analog-digital converter 16C, 44

39
B

SOURCE: Priborostroyeniye, no. 9, 1964, 10-12

TOPIC TAGS: recorder, analog digital converter

ABSTRACT: An industrial-process-data recorder²⁵ is briefly described. The



recorder includes an analog-digital dc-to-binary-code converter, transforms binary into decimal code, and delivers data typed on paper on an EUM-23 typewriter. The entire measuring and typing cycle takes 2 sec. The recorder is designed with electromechanical relays, does not need any adjustment or alignment, and measures d-c voltages with an error of 1% or less. The analog-digital converter (see fig.) includes comparison unit 1, number register 2, converter proper 3, and binary-decimal converter 4; the units have 3 stable

Block diagram of the industrial-process recorder

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UDC: 621.317.7.087.6:621.314.5

L 15289-66

ACC NR: AP5028959

states. Typing-control unit 5 and electric typewriter 6 constitute the recorder proper. A laboratory model of the above device was tested in actual operation for 3 months; it was found that most fortuitious faults in the wiring or contacts resulted in a loss of record, not in recording false data. Orig. art. has: 3 figures.

SUB CODE: 09, 13 / SUBM DATE: none / ORIG REF: 002

Card 2/2 MJS

GREBENSHCHIKOV, Vasily Orestovich. Primalni uchsatiye: GURCHENOK, I.P., SOLOV'YEVA, V.Ye.; SHTEYN, V.S. KARAKULOV, I.K., prof., doktor med. nauk, red.; NUGER, M.M., red.; SVICHKAR', N.N., tekhn.red.

[Public health and medicine in prerevolutionary Kazakhstan; bibliographic index to literature, 1731-1917] Zdravookhronenie i meditsina v dorevolutsionnom Kazakhstane; bibliograficheskii ukazatel' literatury, 1731-1917 gg. Alma-Ata, Gos.nauchn.med. biblioteka Kazakhstana, 1960. 288 p. (MIRA 13:11)

1. Direktor Gosudarstvennoy nauchnoy meditsinskoy biblioteki Kazakhstana (for Grebenshchikov). 2. Gosudarstvennaya nauchnaya meditsinskaya biblioteka Kazakhstana (for Gurchenok, Solov'yeva, Shteyn). 3. Chlen-korrespondent Akademii nauk Kazakhskoy SSR (for Karakulov).

(BIBLIOGRAPHY--KAZAKHSTAN--MEDICINE)

(KAZAKHSTAN--BIBLIOGRAPHY--MEDICINE)

GREBENSHCHIKOV, V.P.

Study foreign technology and economy more thoroughly ("Coal industry of the U.S.A." by A.P. Sudoplatov, Reviewed by V.P. Grebenshchikov).
Mekh.trud.rab.10 no.11:46-47 N '56. (MIRA 10:1)
(United States--Coal mines and mining)

GREBENSHCHIKOV, V.P.

Coal preparation in the United States. Sbor. inform. po obog. i
brik. ugl. no.4:51-55 '57. (MIRA 11:6)
(United States--Coal preparation)

~~GREBENSHCHIKOV, V.P.~~

Modern coal preparation plants in the United States. Obeg. 1 brk.
ugl. no.5:55-67 '58. (MIRA 12:9)
(United States--Coal preparation)

GHEBENSHCHIKOV, V.P.

Use made of coal in the United States. Obog. i brik. ugl. no.6:
58-61 '58. (MIRA 12:7)

(United States--Coal)

~~GREBENSHCHIKOV, V.P.~~

Third International Congress on Coal Preparation. Obog. 1 brik.
ugl. no.9:94-95 '59. (MIRA 12:9)
(Coal preparation--Congresses)

DUNAYEV, M.N.; TURCHENKO, V.K.; GREBENSHCHIKOV, V.P.; MELIK-
STEPANOVA, A.G.; OL'FERT, A.I., otv. red; PRONINA,
N.D., tekhn. red.

[Preparation, dewatering, and drying of fine coal; survey of
foreign material] Obogashchenie, obezvozhivanie i sushka mel-
kogo uгля; obzor zarubezhnykh materialov. Moskva, TSentr.
in-t tekhn. informatsii, 1962. 77 p. (MIRA 164)
(Coal preparation)

SKLOVSKAYA, A.A., *otv. red.*; DREMAYLO, P.G., *inzh., zam. otv. red.*; KAMINSKIY, V.S., *kand. tekhn. nauk, zam. otv. red.*; AVETISYAN, A.N., *red.*; BRILLIANTOV, V.V., *kand. tekhn. nauk, red.*; GALIGUZOV, N.S., *kand. tekhn. nauk, red.*; GORLOV, I.P., *red.*; GREBENSHCHIKOV, V.P., *red.*; DAVYDKOV, M.I., *red.*; ZVENIGORODSKIY, G.Z., *red.*; KARPOVA, N.N., *red.*; KOZKO, A.I., *red.*; MARUSEV, P.A., *red.*; PONOMAREV, I.V., *red.*; POPUTNIKOV, F.A., *red.*; SOKOLOVA, M.S., *kand. tekhn. nauk, red.*; TURCHENKO, V.K., *red.*; FILIPPOV, V.A., *red.*; YUSIPOV, A.A., *red.*; YAGODKINA, T.K., *red.*; MIRONOVA, T.A., *red. izd-va*; LOMILINA, L.N., *tekhn. red.*; MAKSIMOVA, V.V., *tekhn. red.*

[Technological trends in coal preparation] Tekhnicheskie napravleniia obogashcheniia uglei. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1963. 120 p. (MIRA 16:10)

1. Gosudarstvennyy ^{nauchno-issledovatel'skiy} projektno-konstruktorskiy i nauchno-issledovatel'skiy institut po obogashcheniyu i briketirovaniyu ugley. 2. Gosudarstvennyy ^{nauchno-issledovatel'skiy} projektno-konstruktorskiy i nauchno-issledovatel'skiy institut po obogashcheniyu i briketirovaniyu ugley (for Yagodkina, Brilliantov).
(Coal preparation)

DUNAYEV, Maksim Nikitovich, inzh.; TURCHENKO, Vasilii Kuz'mich, inzh.;
MELIK-STEPANOVA, Alla Georgiyevna, inzh.; GREBENSHCHIKOV,
Vladimir Petrovich, inzh.; DREMAYLO, P.G., otv.red.; OL'FERT,
A. I., red.izd-va; BOLDYREVA, Z.A., tekhn. red.

[Preparation of unclassified coals] Obogashchenie neklassifi-
tsirovannykh uglei. [By] Dunaev, M.N. i dr. Moskva, Gosgortekh-
izdat, 1963. 181 p. (MIRA 16:3)
(Coal preparation)

POZNYAK, L.A., kand. tekhn. nauk; SHKATOV, A.P., inzh; STEYN, F.S.;
ORLOVA, L.M.; VLASOVA, A.I.; Primali uchastiye: DANIL'CHENKO,
A.M., tekhnik; GREBENSHCHIKOV, V.P., tekhnik

Steels used for the manufacture of cold extrusion tools and their
heat treatment. [Nauch. trudy] ENIKMASha 7:111-134 '63.
(MIRA 16:7)

(~~Ex~~trusion (Metals)—Equipment and supplies)
(Tool steel—Heat treatment)

L 20368-66 EWT(m)/T WE

ACC NR: AP6006449 (A)

SOURCE CODE: UR/0065/66/000/002/0044/0047

AUTHORS: Zabryanskiy, Ye. I.; Folimonov, Ye. I.; Grebenshchikov, V. P. 62
B

ORG: VNII NP

TITLE: Investigation of the effect of pressurization on the inflammability of diesel fuels "

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 2, 1966, 44-47 "

TOPIC TAGS: diesel engine, diesel fuel, fuel ignition, pressure effect

ABSTRACT: The object of this investigation was to determine whether the common procedure of evaluating diesel fuels in terms of their cetane numbers is applicable to pressurized diesel fuels. The cetane number of pressurized and unpressurized diesel fuel was determined. The experimental procedure followed here was that specified by GOST-3132-52. The diesel installation used was of type IT9-3. A relationship between the compression ratio and angle of turn of the crankshaft was derived. The experimental results are presented in graphs and tables (see Fig. 1). It is concluded that pressurization of diesel fuels does not require a change in

Card 1/2

UDC: 621.43.057:665.521.4 2

L 20368-66
ACC NR: AP6006449

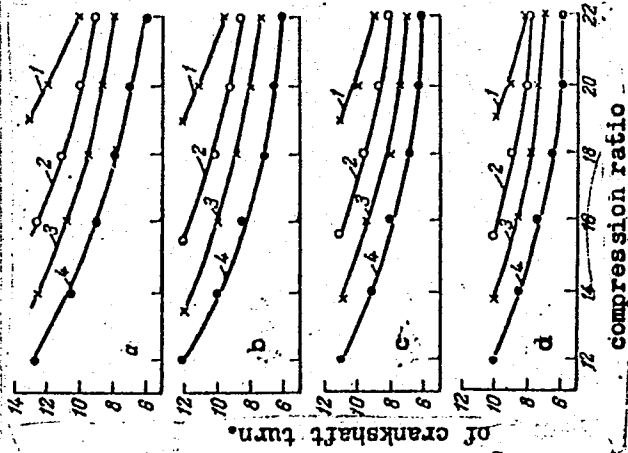


Fig. 1. Relation between the compression ratio and angle of ignition retardation during operation on fuels with different cetane numbers; magnitude of pressurization Pabs· kg/cm²: a - without pressurization; b - 1.17; c - 1.34; d - 1.5; cetane number of fuels: 1 - 20; 2 - 30; 3 - 40; 4 - 60.

the evaluation of their performance. Orig. art. has: 1 table and 4 graphs.

SUB CODE: 11/ SUBM DATE: none/

Card 2/2 vmb

I 21558-66 ACC NR: AP6009552	FWT(m)/T DJ/WE	SOURCE CODE: UR/0413/66/000/005/0099/0099
INVENTOR: <u>Aronov, D. M.; Robert, Yu. A.; Zabryanskiy, Ye. I.; Malyavinskiy, L. V.; Grebenshchikov, V. P.</u>		
ORG: none		
TITLE: Test method for fuels and oils. Class 46, No. 179555 [announced by the All-Union Scientific Research Institute for Oil and Gas Refining and the Production of Synthetic Liquid Fuel (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefi i gaza i polucheniyu iskusstvennogo zhidkogo topliva)]		
SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 5, 1966, 99		
TOPIC TAGS: test method, ignition, surface ignition, knock, glowing deposit, fuel, lubricating oil		
ABSTRACT: An Author Certificate has been issued for a <u>test method for fuels and oils</u> . The method involves allowing the build up of carbon deposits in the engine combustion chamber, and weighing them. In addition, the <u>surface-ignition</u> tendency of the fuels and oils due to glowing deposits is determined by operating the engine or benzene to burn off the deposit. The number of cycles with glowing deposit-induced surface ignition is recorded. The so-called "glow number" is calculated as the ratio of the number of such surface-ignition cycles for the sample and for a standard carbon depositing fuel. [SM]		
SUB CODE: 11, 21/ SUBM DATE: 04Feb65/ ATD PRESS: 4219		
Card 1/1 ULR UDC: 621.43-63		

GREBENSHCHIKOV, V.S.

GREBENSHCHIKOV, V.S.; GOL'DSHTEYN, V.S.; KOZLOVSKIY, Yu.I.

Gold cutting of small-module gear wheels. Stroi. i dor. mashinostr.
3 no.1:35-38 Ja '58. (MIRA 11:1)
(Gear-cutting machines)

GREBENSHCHIKOV, V.T., inzh.

Improvement of SH-19A hammer crushers. Energetik 8 no.9:
4-5 S '60. (MIRA 14:9)
(Electric power plants--Equipment and supplies)

SIDOROVA, N.G.; GREBENSHCHIKOV, Yu.B.

Synthesis of 1-methyl-2-phenylcyclohexanol. Uzb. khim. zhur.
7 no.4:79 '63. (MIRA 16:10)

1. Tashkentskiy gosudarstvennyy universitet imeni Lenina.

KHIDEKEL', M.L.; GREBENSHCHIKOV, Yu.B.

Molecular nitrogen fixation from nitrogen - hydrogen mixtures
by the carrier stabilized complexes. Izv. AN SSSR. Ser. khim.
no.4:761-762 '65. (MIRA 18:5)

1. Institut khimicheskoy fiziki AN SSSR.

GREBENSHCHIKOVA, A.

Works of the All-Union Peat Institute, (Min. of Agri., RSFSR),
Number 3, 1933, 189 pages. Section on the Study of Peat Beds:
"Ecological Factors and the Growth of Sphagnum Mosses."
by Grebenshchikova, A.

SO: Botanicheskiy Zhurnal, Vol XXXV, No 1, pp 100-110,
Jan-Feb 1950, Russian bimonthly, Moscow/Leningrad (U-5511,
12 Feb 1954)

GREBENSHCHIKOVA, A. A.

Works of the All-Union Peat Institute, (Min of Agri, RSFSR),

Number 4, 1933, 111 pages, A Compendium of Instruction on the Study of Peat and Peat Beds:

Part 1. The Geobotanical Analysis of Peat

"Instructions on the Use of Conventional Symbols in Maps and Profiles in Surveying Peat Bogs." by Grebenshchikova, A. A.

SO: Botanicheskiy Zhurnal, Vol XXXV, No 1, 100-110,
Jan-Feb 1954, Russian bimonthly, Moscow/Leningrad (U-5511,
12 Feb 1954)

GREBENSHCHIKOVA, A.A.

Works of the Central Peat Experimental Station. (Min of Agri, RSFSR)

Volume 6, 1939, 319 pages. "Methods for Study of Peat Bogs (Part 2)

"The Analysis of Sphagnum Mosses In Peat." by Grebenschikova, A. A.

SC: Botanicheskiy Zhurnal, Vol XXXV, No 1, pp 100-110,
Jan-Feb 1950, Russian bimo per, Moscow/Leningrad (U-5511,
12 Feb 1954)

GREBENSCHIKOVA, A. A.

Evaluation of the principal types of peat for use in agricultural chemistry. M. N. Nikonov, A. A. Grebenschikova, Ts. I. Minkina, and G. V. Golofitskaya. *Tsvetkovskaya Prom.* 31, No. 4, 11-14(1954).—The authors have studied the N, CaO, P₂O₅, and Fe₂O₃ content and the pH of a large number of types of Russian peat, and have expressed their "agricultural chemical indexes" as fractions, by dividing the percentage of the various ingredients present by their av. content in the particular type of peat. W. M. S.

GREBENSHCHIKOVA, A.A.

Water capacity of various types of peat. Pochvovedenie no.9:102 S'56.
(Peat) (MLRA 10:1)

14-57-7-14885
Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 7,
pp 110-111 (USSR)

AUTHOR: Grebenshchikova, A. A.

TITLE: Moisture Absorption by Peat in Low Stage
of Decomposition (Vlagoemkost' torfa slaboy stepeni
razlozheniya)

PERIODICAL: Tr. In-ta lesa AN SSSR, 1956, Vol 31, pp 177-183

ABSTRACT: The author studied the moisture absorption (M) of
different peat varieties at the Central Peat Ex-
perimental Station in 1949. After reviewing the
studies of previous investigators of this subject,
he states that their data on the M of various kinds
of peat are limited, inconclusive and inadequate.
It has been reported that the highest M is found in
sphagnum mosses, some varieties of which absorb 20
to 40 times more water than their own absolute dry

Card 1/3

14-57-7-14885

Moisture Absorption by Decomposed Peat (Cont.)

in their recent annual growth, as compared with M of peat in the 5 percent stage of decomposition. The author produced a table which shows M changes in relation to decomposition stages and peat types. In this table the different peat types are separated into five groups on the basis of their decomposition stages and their M. The article contains a description of each group. A bibliography of 13 titles is included.

G. M.

Card 3/3

GREBENSHCHIKOVA, A. Ye., inzh.

Preparation of anthracite and coal in water-sand suspensions.
Obog. i brik. ugl. no.10:66-73 '59. (MIRA 13:9)
(Coal preparation)

GALIGUZOV, N.S., kand.tekhn.nauk; BLAGOVA, Z.S., inzh.; GREBENSHCHIKOVA, A.Ye.,
inzh.

Coal preparation in heavy suspensions and prospects of its application
Obog.i brik. ugl. no.21:26-33 '61. (MIRA 16:5)
(Coal preparation)

AUTHORS: Grebenshchikova, A.Z. and Stasevich, P.K. SOV/133-59, 5-18/31

TITLE: A Sludgeless Method of Phosphatising Tubes
(Besshlamnyy metod fosfatirovaniya trub)

PERIODICAL: Stal', 1959, Nr 5, pp 443 - 444 (USSR)

ABSTRACT: Advantages of a sludgeless method of phosphatising tubes developed by the authors are discussed. The method consists of allowing divalent iron to remain in the solution so that ferrous phosphate together with zinc phosphate forms on the surface of the tube a mixed phosphate film (i.e. ferrous iron is not oxidised with nitric acid and precipitated in the form of sludge). The process is carried out during 7-10 minutes at a temperature of 50-60 °C in a solution of the following composition, g/litres: Zn 5-3, H₃PO₄ 8-1, HNO₃ 12-20, Fe 0-25. In order to correct the composition of the solution when the content of phosphoric acid decreases to 1 g/litre, after phosphatising every 15-20 packets of tubes 10 to 15 litres of a correcting solution is added (its composition: 100 g/litre of ZnO, 120 g/l. of

Card1/2

A Sludgeless Method of Phosphatising Tubes ^{SOV/153-59-5-18/31}

H_3PO_4 and 150 g/l of HNO_3). The method was tested on an industrial scale and the results obtained (quoted in the text) indicated that the drawing properties of tubes phosphatised by the sludgeless method were not inferior to those phosphatised by the usual method. The introduction of the method permitted: a) obtaining a phosphate film of a quality sufficient for drawing tubes in two passes without preliminary coating with copper and pickling; b) decreasing the specific consumption of zinc oxide, phosphoric and nitric acids; c) discontinuing periodic (twice a week) cleaning of the bath; and d) carrying out the process in a continuous manner, without emptying the bath.

ASSOCIATION: Pervoural'skiy Novotrubnyy zavod (Pervoural'sk Novotrubnyy Works)

Card2/2

SOV/133-59-9-19/31

AUTHORS: Grebenshchikova, A.Z. and Shavkunova, F.P.

TITLE: The Use of Velosite as a Foaming Agent in Hydrochloric Acid and Chromium Solutions

PERIODICAL: Stal', 1959, Nr 9, pp 828-829 (USSR)

ABSTRACT: During the pickling of steel in hydrochloric acid solutions (stainless tubes are pickled in 25-15% HCl at 70°C for control for surface defects) a considerable amount of hydrogen chloride is evolved with water vapour, polluting the atmosphere in the working space and thus lowering labour productivity. Similar difficulties were encountered during electrolytic chromising of dies and holders. To prevent air pollution and at the same time to prevent overpickling and saturation of metal with hydrogen, various additives were tried (table 1). The best results were obtained with velosite (light petroleum oil; viscosity 1.3 to 1.4; sp gr 0.88; flash temperature 120°C) which forms a layer of foam trapping the gases evolved during pickling and simultaneously prevents overpickling. It is used at present in the industrial pickling in an amount of 1.5 to 2.0 kg per m² of the bath surface. With this

Card 1/2

SOV/133-59-9-19/31

The Use of Velosite as a Foaming Agent in Hydrochloric Acid and Chromium Solutions

additive, the consumption of hydrochloric acid decreased by 30% and the proportion of defects due to overpickling by 10%. The same reagent was found to be effective in preventing the evolution of chromic anhydride during chromising. The thickness of the deposited chromium layer and the durability of the dies are not affected by the presence of velosite (Table 2). There are 2 tables.

ASSOCIATION: Pervoural'skiy novotrubnyy zavod (Pervoural'sk Novotrubnyy Works)

Card 2/2

18.5200

7596A
SOV/133-59-10-25/39

AUTHORS: Grebenshchikova, A. Z., Kukarskikh, A.

TITLE: Aging of Soap Baths for the Oiling of Parkerized Tubes

PERIODICAL: Stal', 1959, Nr 10, p 932 (USSR)

ABSTRACT: As a result of investigations the following soaping technique for parkerized tubes was adopted: (1) content of soap in the bath, 4 to 5%; (2) length of soaping, 5 to 10 min; (3) solution temperature, 40 to 50° C; (4) hydrogen ion concentration index: $P_H = 8$. The soap bath was constantly neutralized by caustic soda solution. Advantages: (1) saving of soap; (2) effectiveness of the solution was prolonged from 10 to 14 days to 4 to 5 months.

ASSOCIATION: Pervoural'sk New Pipe Plant (Pervoural'skiy novotrubnyy zavod)

Card 1/1

MURINOV, D.M. [deceased]; GREBENSHCHIKOVA, A.Z.; LYADOVA, A.A.

Search for new lubricants for the cold rolling of stainless
steel pipe. Stal' 23 [i.e. 24] no.4:342-343 Ap '64.
(MIRA 17:8)

1. Pervoural'skiy novotrubnyy zavod.

A

1-53983-65 EWG(j)/EWT(d)/EWP(e)/EWT(n)/EWP(c)/EWP(l)/EWA(d)/EWP(v)/EPR/T/
ENP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l)/EWA(c) Pt-4/Pt-4/Ps-4 BW/JD/WW/HW/DJ/

WH

ACCESSION NR: AP5014865

UR/0133/65/000/006/0549/0550
621.774.35: 621.893

54
52
B

AUTHOR: Grebenshchikova, A. Z.; Lyadova, A. A.; Kaufman, M. M.; Gleyberg, A. Z. ;
Nodev, E. O. ; Kukarskikh, V. N. ; Stoletniy, M. F. ; Stern, V. A.

TITLE: Lubricant for tube rolling in a continuous mill

SOURCE: Stal', no. 6, 1965, 549-550

TOPIC TAGS: graphite lubricant, continuous tube mill, smokeless lubricant,
antifricition, nine high mill, inorganic compound, seamless tubing, hot deformation

ABSTRACT: Lubricants consisting of graphite and different petroleum products
are widely used in the production of seamless tubing by hot-deformation methods,
particularly in the continuous rolling mills with long mandrels as well as in
power presses. Although these lubricants are relatively uninvestigated, it is
known that graphite at high temperatures (900-1200°C) loses its antifricition
properties. Besides, the combustion of the petroleum products in the lubricants
contaminates the atmosphere and equipment in the shop. There also exists the
vitreous type of lubricants, used only for the pressing of tubes from high-alloy
steels, and equally difficult and expensive to fabricate. The techniques of
applying the lubricant are of major importance, and their mechanization is

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L-53983-65

ACCESSION NR: AP5014865

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advisable, particularly in the modern automatic continuous tube rolling. Futher, the author describes tests of nine selected lubricants, including those recently developed on the basis of inorganic compounds -- salts of chloride and phosphate.

(Phosphorus - and chlorine - containing lubricants form phosphides and chlorides on the contact surfaces and the resulting boundary film prevents the interlocking of metals, reducing the friction coefficient.) The effectiveness of the selected lubricants was tested while rolling tubes in the 18 m long mandrel of a continuous nine-high mill with nine individual power drives, the lubricants being evaluated and compared according to the load on the motors of the principal stands of the mill (6th to 8th) and the sliding rate of tube from the mandrel. Compared with the graphite-fuel oil lubricant⁹ and the other seven lubricants tested, lubricant⁷ proved to be the most effective. The exact composition of this lubricant is not described, but the author states that it was developed on the basis of "inorganic compounds" and has a density of 1.65 g/cu cm, bulk weight of 0.98 ton/cu m, melting point of 850-900°C, and solubility of 64% in water. This smokeless lubricant displays the best antifriction properties and ensures a normal rolling process. Its components do not consist of scarce materials and therefore

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L-53983-65

ACCESSION NR: AP5014865

it is considerably (about six times) less expensive than graphite-fuel oil lubricants. Orig. art. has: 1 figure, 1 table.

ASSOCIATION: none

SUBMITTED: 000

ENCL: 00

SUB CODE: FP,
MM

NO REF SOV: 001

OTHER: 001

Card 3/3

GREBENSHCHIKOVA, G.V.

~~Investigating kinetics of conversion reaction of carbon monoxide
by steam in presence of Lisichansk coal ash. Podzem.gaz.uhl.
no.2:54-57 '57. (MLRA 10:7)~~

1. Institut goryuchikh iskopayemykh Akademii nauk SSSR.
(Coal gasification, Underground) (Chemical reactions)

GREBENSCHCHIKOVA, G.V.

^I
GREBENSCHCHIKOVA, G.V., Cand Tech Sci -- (diss) "Study of the
kinetics of ^{CO₂} carbon-monoxide conversion reaction in coke and ashes
of Lisichan coal." Mos, 1958. 11 pp. (Acad Sci USSR, ^{Dept of} ~~Dep~~ Tech
Sci. Inst ^{of Combustible} ~~for~~ Fuels), 120 copies. (KL, 9-58, 117)

LAVROV, N.V., akademik; GREBENSHCHIKOVA, G.V.

Investigating the reconversion of CO₂ for the purpose of
enriching gases with carbon monoxide. Izv.AN Uz.SSR. Ser.tekh.nauk
no.2:70-78 '61. (MIRA 14:3)

1. Institut energetiki i avtomatiki AN UzSSR. 2. AN UzSSR (for
Lavrov).
(Carbon dioxide) (Carbon monoxide)

L 15205-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T-2/T Pc-l/Pr-l/Ps-l/Pt-10 RPL/
SD/ASD(p)-3 WW/HLK/RM
ACCESSION NR: AT4048188 S/0000/64/000/000/0025/0038

AUTHOR: Grebenshchikova, G. V.; Farberov, I. L. (Doctor of technical sciences, Professor) B+1

TITLE: Determination of the character of the heat effects during pyrolysis of polymers 7

SOURCE: AN SSSR. Institut goryuchikh iskopayemykh. Gazifikatsiya i piroliz topliv (Gasification and pyrolysis of fuel); sbornik statey. Moscow, Izd-vo Nauka, 1964, 25-30

TOPIC TAGS: polymer pyrolysis, polymethyl methacrylate, polystyrene, phenol-formaldehyde resin, thermogram, heat effect

ABSTRACT: The nature of the thermal effects during pyrolysis of polymethyl methacrylate, polystyrene and phenol-formaldehyde resin was investigated by thermographic methods. The thermal conversion of the polymers was studied in a range of 20-800C on the Kurnakov pyrometer, in a nitrogen current (50 cc/min.) and in air. The diagram and description of the apparatus are given. Resistance in the circuit of the simple thermocouple was 37,900 ohms, that of the differential thermocouple 600 ohms, initial current strength 4.2 amps, sample weight 0.4 g. The thermograms are given for a nitrogen current. A correlation was found between the character
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L 15205-65

ACCESSION NR: AT4048188

of the thermograms and the nature of the substance. The pyrolysis of polymethyl methacrylate (PMA) and polystyrene (in powdered form) is accompanied by deep endothermic effects, at 420C for PMA and 460-470C for polystyrene, and by shallower effects at 620-650C. For polystyrene, the endothermic effect of pyrolysis is slightly shifted toward higher temperatures. This difference is due to the presence of the aromatic ring in the polystyrene chain. The thermogram of synthetic rubber differs from that of PMA and polystyrene. It was found that the nature of the substance affects the character of the differential thermograms considerably and determines the zones of exo- and endothermic effects. The greatest decomposition of polymethyl methacrylate is observed between 260 and 420C; for polystyrene, decomposition at 400-470C is characterized by the endothermic effect shown on the thermograms. Between 20 and 700C, PMA and polystyrene decompose completely. For phenol-formaldehyde resins, no clear exothermic effect corresponding to decomposition was found. Phenol-formaldehyde decomposes partially (43-45%) with the formation of a stable coke residue. The more heat stable a material, the simpler the thermogram. "The photorecording pyrometer of N. S. Kurnakov (FPK-55) was manufactured at the IGI AN SSSR." Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 04Apr64

ENCL: 00

SUB CODE: ME,TD

Card 2/2 NO REF SOV: 009

OTHER: 005

L 15663-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10 ASD-3/
AFFTC/ESD-3/SSD/RPL/Pa-4/ASD(m)-3 RWH/WW/RM S/0000/64/000/000/0031/0036
ACCESSION NR: AT4048189

AUTHOR: Grebenshchikova, G. V.; Farberov, I. L. (Doctor of technical sciences, ^{B+1}
Professor)

TITLE: Thermographic investigation of some polymers and polycondensates

SOURCE: AN SSSR. Institut goryuchikh iskopayemykh. Gazifikatsiya i piroliz
topliv (Gasification and pyrolysis of fuel); sbornik statey. Moscow, Izd-vo
Nauka, 1964, 31-36

TOPIC TAGS: thermography, polymer, polycondensate, polyethylene, cellulose ace-
tate, epoxide resin, pyrolysis

ABSTRACT: ⁶Polyethylene, ⁷rubber, ¹⁵cellulose acetate and epoxide resin were investi-
gated thermographically, and a search was made for a control sample which was
similar to the given materials in nature (heat capacity, heat conductivity). A
waxy polyethylene was used, the rubber was an unsaturated acyclic hydrocarbon con-
taining the ⁴isoprene group, cellulose acetate was prepared by the esterification
of cellulose with acetic acid anhydride in the presence of acetic acid and a small
amount of sulfuric acid, and epoxide resin was prepared by condensation of epi-
chlorohydrin with phenols, alcohols or amines. The experiments were carried out
on the Kurnakov pyrometer, described in a previous paper, with a sample weight of
Card 1/3

L 15663-65

ACCESSION NR: AT4048189

4

0.4000 g, initial current density 4.0 amps., resistance 37,900 ohms in the simple thermocouple and 6000 ohms in the differential thermocouple, time 60 min., rate of heating 16-18 degrees/min.; Al_2O_3 and cokes of phenol-formaldehyde resin⁵ and electrode carbon were used as the controls. The thermograms obtained during pyrolysis show three very characteristic thermal effects: 1) an endothermic effect connected with the removal of moisture and melting of the material; 2) an exothermic effect (260, 320-325, 350-355, and 360-375C, respectively, for each of the given materials), determined by the increase in heat conductivity during transition to the molten state; 3) an endothermic effect due to the maximum decomposition of the substance in the range of 350-550C. The nature of the differential thermal curves shows that the peculiar form of the thermograms depends on the nature of the material. The pyrolysis of polyethylene and cellulose acetate was accompanied by slight endo- and exothermic effects in the corresponding range of temperature. For rubber and epoxide resins, simplified thermograms with pronounced effects were obtained. On the basis of an analysis of the thermograms with different control samples, it is concluded that the clearest picture of pyrolysis is obtained using electrode carbon coke as control. The experimental data on the thermal effects of pyrolysis are tabulated. Orig. art. has: 4 figures, 1 table and 1 chemical equation.

Card 2/3

L 15663-65

ACCESSION NR: AT4048189

0

ASSOCIATION: none

SUBMITTED: 04Apr64

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 004

OTHER: 003

Card 3/3

4 c

L 27790-65 EWT(m)/EPA(s)-2/EPF(c)/T/EWP(j)/EPR Pc-4/Pr-4/Ps-4/Pt-10 WW/DJ/RM
ACCESSION NR: AP5004312 S/0191/65/000/002/0026/0028

AUTHOR: Bogdanov, I. F.; Grebenshchikova, G. V.; Losev, V. B.; Mishchenko, M. L.;
Molchanov, B. V.; Farberov, I. L.

46
B

TITLE: Study of the thermal degradation of polychloroorganosiloxane polymers

SOURCE: Plasticheskiye massy, no. 2, 1965, 26-28

TOPIC TAGS: silicorganic polymer, organosiloxane, polychlorosiloxane, polymer thermal degradation, phenylsiloxane polymer, chlorinated polymer

ABSTRACT: The effect of chlorination of the phenyl radical on the thermal stability of polydimethylphenylsiloxanes was studied experimentally. The thermal properties of polydimethyl-, polydimethylchloro-, polydimethyldichloro- and polydimethyltrichlorophenylsiloxane were determined by recording the thermal effects of pyrolysis to 800C on Kurnakov's pyrometer, by measuring the pyrolytic weight loss to 1000C, and by analyzing the gaseous decomposition products generated up to 1000C. The non-halogenated polymer showed a small exothermic effect at 530C, while the chlorine-substituted specimen exhibited stronger exothermic effects at 550-565C, the height of the peaks increasing with the number of chlorine atoms. Chlorine

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L 27790-65

ACCESSION NR: AP5004312

0

containing specimens started to decompose at lower temperatures, and the rate of gas generation and the percentage of bonded chlorine split off as hydrogen chloride both increased with the degree of chlorination. The amount of hydrogen liberated as H₂ or methane as compared with the initial hydrogen content of the methyl groups decreased in the chlorinated polymers, indicating a shielding effect of chlorine with respect to the stability of the methyl. Generally, the thermal stability decreased with increasing chlorine content. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: OC, OC

NO REF SOV: 002

OTHER: 002

Card 2/2

BAEBC-4.540411.2486
LAVROV, N.V.; GRMBENSHCHIKOVA, G.V.

Effect of the conversion of carbon monoxide on the gasification of
coal with steam. Gaz. prom. no.1:20-25 Ja '58. (MIRA 11:2)
(Coal gasification) (Carbon monoxide)

L 39717-66 EWP(j)/EWT(m)/I IJP(c) RM/GD-2

ACC NR: AF6007968

(A)

SOURCE CODE: UR/0191/66/000/003/0033/0036

AUTHOR: Andrianov, K. A.; Varlamova, N. V.; Borisov, M. F. (Deceased); Kolchina, A. G. ; Grebenshchikova, G. V.

ORG: none

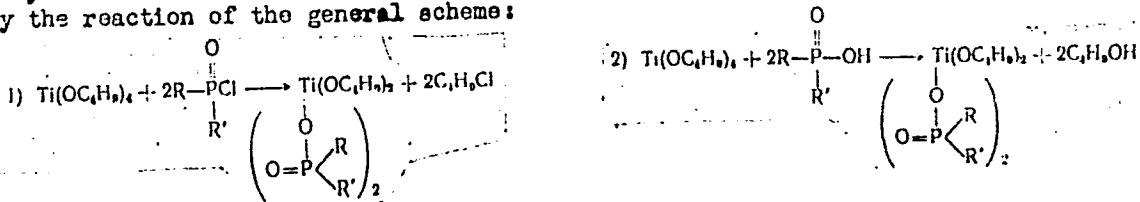
17
L

TITLE: Polybis-(organophosphinoxy)-titanomethylphenylsiloxanes

SOURCE: Plasticheskiy massy, no. 3, 1966, 33-36

TOPIC TAGS: organosilicon compound, condensation reaction, thermal analysis, organotitanium compound

ABSTRACT: The author prepared linear polyorganotitaniumsilo-xane with a regular distribution of Ti and Si atoms in their chains by a condensation of α, ω -1-hydroxymethylphenylsiloxane with bis(methylalkoxyphosphoxy)dibutoxytitanium and studied the influence of the bis(methylalkoxyphosphoxy)titanoxane groups on the properties of the polymers obtained. The bis(organophosphinoxy)dibutoxytitanium compounds were prepared by the reaction of the general scheme:

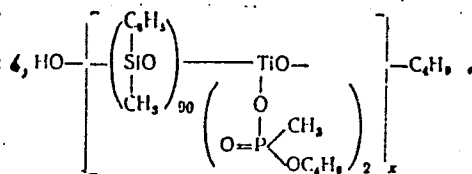
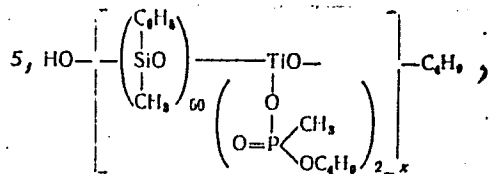
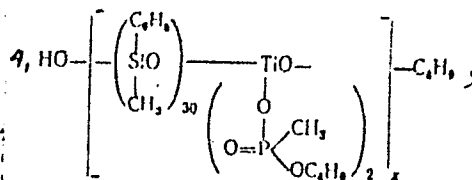
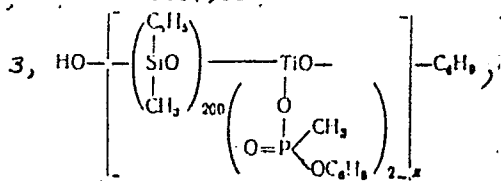


Card 1/4

UDC: 678.84

L 39717-66

ACC NR: AF6007968



The properties of the polymers obtained were compared with those of polymethylphenylsiloxane. Their glass temperatures are in the more positive ranges (Fig. 1), and the endo- and exothermal peaks during thermodifferential analysis were at higher temperatures (Fig.2). By heating at 400C for 4 hr in air, their weight losses were lower (Fig.3). Orig. art. has: 4 fig. and 3 tables.

Card 3/4

L 37216-66 EWP(j)/ENT(m)/T IJP(c) RM/WW/JWD

ACC NR: AP6018125 (A) SOURCE CODE: UR/0191/66/000/006/0026/0027

AUTHOR: Molchanov, B. V.; Borisov, M. F. (deceased); Grebenshchikova, G. V.

42
41
B

ORG: none

TITLE: Synthesis and properties of polyphenyldimethylmethyl-(gamma-trifluoroprophyl)-siloxanes ↑

SOURCE: Plasticheskiye massy, no. 6, 1966, 26-27

TOPIC TAGS: siloxane, polymerization, heat resistance

ABSTRACT: The effect on polymer properties of introducing methyl-(gamma-trifluoroprophyl)siloxy groups (A) into polyphenyldimethyl-siloxanes was studied. Low molecular weight polyphenyldimethylmethyl-(gamma-trifluoroprophyl)-siloxanes (B) were obtained by reacting dimethylsilicon dichloride, phenylsilicon trichloride and methyl-(gamma-trifluoropropyl)silicon dichloride. B was polymerized at 30°C with 0.3% KOH. Increasing the amount of A in the polymer reduced the alkaline polymerization rate, increased gel time, produced insignificant improvements in mechanical properties of the polymer, increased the rate

Card 1/2

UDC: 678.84.01:53