Acoustic Coagulation of Sulfuric Acid Fog

77494
SOV/80-33-[illegible]

Vapors of sulfuric acid were obtained by mixing water vapor with sulfuric anhydride (obtained by oxidation of SO_2 with air in the contact oven (5)) in the humidifier (9). The gas jet generator GS-2 (11)--the modified Hartmann (Gartman) whistle (constructed in Odessa Polytechnical Institute with participation of N. A. Ivanov)--was used for inducing coagulation in the glass tube (12) 45 mm diam, length 500 mm). Sound frequency was measured with an EO-7 oscillograph and ICh-6 frequency meter. The coagulated fog was analyzed by photonephelometer (13). To prevent vapor condensation, the face glasses of the sample tubes of the nephelometer were kept at 55° by circulating water from the thermostat (14). The nephelometer values were compared with the data of chemical analysis (of H_2SO_4). The analysis of acoustic coagulation of H_2SO_4 fog has shown that

Acoustic Coagulation of Sulfuric Acid Fog

[illegible]
SOV/[illegible]-1-[illegible]

there are optimum frequencies for coagulation at each sound intensity; increasing acoustic power displaces this optimum toward the lower frequencies (see Fig [illegible]).

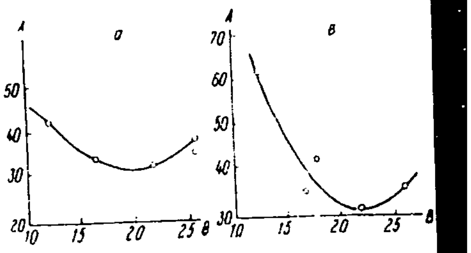

Fig. [illegible]. Final concentration of sulfuric acid fog as function of sound frequency at varying acoustic power of the generator. (A) Photonephelometer readings (in scale divisions); (B) frequency (in kcycles). Generator power (in watts): (a) 5; (b) 2.5.

Fig. [illegible] shows variation in degree of fog coagulation with change in acoustic power at constant frequency.

Card 5/8

Acoustic Coagulation of Sulfuric Acid Fog

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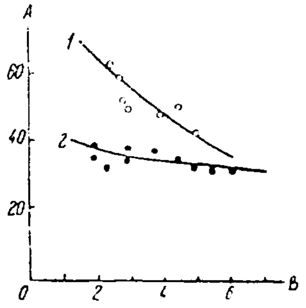

Fig. 3. Final concentration of H_2SO_4 fog as function of acoustic power. (A) Readings of photonephelometer (in scale divisions); (B) acoustic power (in watts). Frequency (in Kcycles) (1) 12.1; (2) 21.6.

It can be seen that coagulation increases with increasing sound intensity, but the higher frequencies make this effect less pronounced. Effect of initial concentration of H_2SO_4 fog upon coagulation is shown in Fig. 4 (time of sounding 4.7 sec; gas flow 5.8 l/min).

Card 6/8

Acoustic Coagulation of Sulfuric Acid Fog

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SOV/80-33-1-3/49

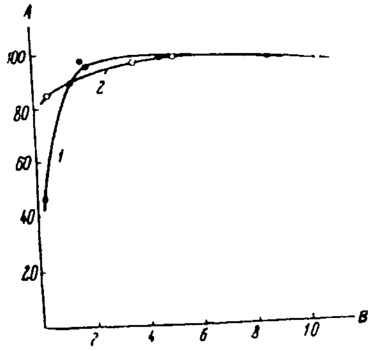

Fig. 4. Degree of coagulation of H_2SO_4 fog as function of initial vapor concentration (in g H_2SO_4/m^3 at STP). Frequency (in kcycles): (1) 14.6; (2) 25.5.

Better than 97% coagulation is achieved at 1.7-8.7 g/m^3 concentration of H_2SO_4. Increase of initial fog concentration above 5 g/m^3 leads

Card 7/8

Accustic Coagulation of Sulfuric Acid Fog

77494
SOV/80-33-1-3/49

to a gradual decrease in coagulation. Plot of coagulation degree vs. the time of sounding resulted in S-shaped curves. By changing the character of sound, it was found that conditions for formation of stationery sound waves are more favorable (time of sounding can be shortened 1.5 times for ~ 100% coagulation). There are 5 figures; 2 tables; and 27 references, 8 Soviet, 3 German, 1 French, 1 Japanese, 4 U.K., 8 U.S., 2 unidentified.* The 5 most recent U.K. and U.S. references are: R. T. Hueter, R. H. Bolt, Sonics Techniques for Use of Sound and Ultrasound in Engineering and Science, N. Y. (1955); Melvin Nord, Chem. Eng., 116 (1950); E. K. Neuman, L. Norton, Chem. Eng. Progr. Symp., 1, 47, 4 (1951); E. Brum, R. M. G. Boucher, J. Acoust. Soc. Am., 29, 5, 573 (1957); H. W. Danser, E. P. Neuman, Ind. Eng. Ch., 41, 2439 (1949).

SUBMITTED: June 13, 1959

* Abstracter's note: The unidentified references are: L. Pimonov, Anan. Telecommun., 6, 1, 27 (1951); 1, 11, 337 (1951); J. Hartmann, The Acoustic Air Jet Generator. Ingeniorvidenskabelige Schrifter, 4 (1939).

Card 8/8

49136
S/058/62/000/0[illegible]/024/05[illegible]
A059/A101

24,1200 (1147, 1327, 1482)

AUTHORS: Varlamov, M. L., Manakin, G. A., Gospodinov, A. N.

TITLE: Investigation of the enhanced-power acoustic gas-jet generators [illegible]-5 (GS-5) and [illegible]-5A (GS-5A)

PERIODICAL: Referativnyy zhurnal, Fizika, no. [illegible], 1962, [illegible], abstract [illegible]
(V sb. "Primeneniye ul'traakust. k issled. veshchestva", no. [illegible],
Moscow, 1961, 247-259)

TEXT: The sound field of a gas-jet generator of advanced design (nozzle diameter - 9.14 mm; resonator diameter - 9.61 mm) with and without a reflector was investigated, and the existence of optimum frequencies at which the intensity of sound attains a maximum was substantiated. A parabolic reflector increases about 20 times over the intensity of sound along the axis of the generator over a distance of 400 mm as compared with the intensity of sound without the reflector. It was established that under optimum adjustment the GS-5 generator without reflector can yield acoustic power up to 1.62 kw (frequency - 6.65 kc) and with reflector up to 1.19 kw (frequency - 5.9 kc), which exceeds several times over the power as calculated by means of the Hartman formula. There is proposed a

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Card 1/2

[illegible]
A[illegible]/[illegible]

Investigation of the enhanced-power ...

more precise method for calculating the energy of the compressed air being discharged by the gas-jet generator. The efficiency of the GS-4 gas-jet generator under good adjustment attains [illegible]% with or without the parabolic reflector. For the generator with parabolic reflector the principal direction of sound emission and the powerful flux of the air emerging from the nozzle coincide, which prevents its being used for the acoustic coagulation of aerosols. An improved model of the generator was built and tested (generator GS-5A), in which dilution of the sounding medium with air is prevented. The air stream is directed at a right angle to the direction of the emission and is led off through a special aperture. Testing this generator demonstrated the possibility of generating on its axis intensities up to 23.5 watt/cm² or 1[illegible] db. The acoustic power of this generator under good adjustment amounts to 1.[illegible] kw and it has an efficiency of 25%. In the sounding chamber (diameter - 1.[illegible] m; length - 10 m) the mean level of sound along the axis and at its end equals 15[illegible].8 db, while at the end of the sounding chamber it amounts to 161.8 db with closed lid and 15[illegible] db with open lid.

[Abstracter's note: Complete translation]

Card 2/2

VARLAMOV, M.L., doktor tekhn. nauk, prof.; MANAKIN, G.A.; STAROSEL'SKIY, Ya.I.; ZBROZHEK, L.S.

Analyzing the ammonia method for the removal of nitrogen oxides from the exhaust gases of a nitrose tower sulfuric acid system. Report No.1. Nauch. zap. Od. politekh. inst. 40:24-33 '62.

Analyzing the ammonia method for the removal of nitrogen oxides from the exhaust gases of a nitrose tower sulfuric acid system. Report No.2. Ibid.:34-44 (MIRA 17:6)

1. Predstavlena kafedroy "Tekhnologiya i avtomatizatsiya khimicheskikh proizvodstv" Odesskogo politekhnicheskogo instituta.

MANAKIN, G.A.

Comparing the speed coefficients of the absorption of nitrogen oxides by alkali solutions in various types of apparatus. Report No.1. Nauch. zap. Od. politekh. inst. 40:[illegible] '62.

Comparing the experimental data on the absorption of nitrogen oxides by water and acids in various types of apparatus. Report No.2. Ibid.:56-61 (MIRA [illegible])

1. Predstavlena kafedroy "Tekhnologiya i avtomatizatsiya khimicheskikh proi[illegible]tekhnicheskogo instituta.

VARLAMOV, M.L., doktor tekhn. nauk, prof.; KRICHEVSKAYA, Ye.L.;
KOVNATSKAYA, B.S.; MANAKIN, G.A.; LIMONOV, V.Ye.; FNNAN, A.A.;
KOZAKOVA, L.M.; ZEROZHEK, L.S.

Study of the absorption towers of the granulation shops of a superphosphate plant. Nauch. zap. Od. politekh. inst. 40: 62-72 '62. (MIRA 17:6)

VARLAMOV, M.L.; KRICHEVSKAYA, Ye.L.; ENNAN, A.A.; KOZAKOVA, L.M.; MANAKIN, G.A.

Acoustic coagulation of a fog containing fluorine compounds. Zhur. prikl. khim. 34 no.1:78-84 Ja '61. (MIRA 14:1)

1. Kafedra tekhnologii i avtomatizatsii khimicheskikh proizvodstv Odesskogo politekhnicheskogo instituta.
(Ultrasonic coagulation) (Fluorine)

L 16887-65 AEDC(a)/ASD(f)-2/AFETR/AFTC(a)
ACCESSION NR: AR4045230 S/0124/64/000/007/B024/B024

SOURCE: Ref. zh. Mekhanika, Abs. 7B168

B

AUTHOR: Varlamov, M. L., Manakin, G. A., Gospodinov, A. N.

TITLE: Investigation of an improved high-power gas-stream sound generator

CITED SOURCE: Nauchn. zap. Odessk. politekhn. in-t, v. 37, 1962, 31-40

TOPIC TAGS: sound generator, aerodynamics, gas stream generator, audio generator

TRANSLATION: The results are given of an experimental investigation of a high-power gas-stream sound generator with a nozzle diameter of 9.14 mm and a resonator diameter of 9.61 mm. The generator is so designed that it is possible to change the nozzles and resonators as well as the distance between them, to adjust the depth of the resonator accurately, and to direct the sound energy flow by means of a reflector arrangement. The generator provides powerful audio oscillations in the audible waveband. With the air pressure fed to the nozzles at approximately 2.25 - 2.9 atmospheres, generator output is 1 - 1.6 kw. A study was made of the sound field of the generator operating with and without the reflector, and the presence of optimal fixed frequencies

Card 1/2

L 16887-65
ACCESSION NR: AR4045230

was determined when the radiation power of the generator is maximal. Generator tests showed the possibility of obtaining audio-frequency oscillations with an intensity on the generator axis of up to 23.5 watts/cm^2. The authors found that the efficiency of a gas-stream generator of the type studied in this article, both with and without the parabolic reflector arrangement, is as high as 30%; that is, 5 to 6 times higher than that of a conventional Harman audio generator. A method is proposed for calculating the basic parameters of the generator. L. M. Lyamshev.

SUB CODE: ME, EC ENCL: 00

Card 2/2

VARLAMOV, M.L.; [illegible], MANAKIN, [illegible]. Prinimali uchastiye:
POLUKHINA, [illegible]; [illegible]ZKOVSKIY, [illegible]; [illegible]
TUL'CHINSKAYA, [illegible]; TSITKO, [illegible]; SHELAMOV, V.A.

Removal of phthalic anhydride from the waste gases in the production of glyptal and pentaphthalic varnishes. Nauch. zap. Od. politekh. inst. [illegible] (MIRA 17:4)

VARLAMOV, M.L.; MANAKIN, G.A.; STAROSEL'SKIY, Ya.I.; ZBROZHEK, L.S.

Ammonia method for the removal of nitrogen oxides of low concentration from gases. Zhur.prikl.khim. 36 no.1:8-15 Ja '63. (MIRA 16:5)
(Gases—Purification) (Nitrogen oxides)
(Ammonia)

VARLAMOV, M.L.; MANAKIN, G.A.; ZBROZHEK, L.S.; STAROSEL'SKIY, Ya.I.;
Prinimala uchastiye: TSITKO, A.S.

Ammonia method for the removal of nitrogen oxides from the waste gases of the tower nitroso-sulfuric system. Zhur. prikl. khim. 36 no.11:2335-2343 N '63. (MIRA 17:1)

L 1726-66 EWT(1)/FCC GW

ACCESSION NR: AP5021180 UR/0139/65/000/004/0129/0133

23
20
B

AUTHOR: Varlamov, M. L.; Manakin, G. A.; Ennan, A. A.

44,55 44,55

TITLE: Investigation of acoustic coagulation of aqueous fog subjected to continuous and pulsed sound

12,44,55

SCURCE: IVUZ. Fizika, no. 4, 1965, 129-133

8

TOPIC TAGS: aerosol, natural aerosol, fog, acoustic doagulation, aerosol chamber

ABSTRACT: In view of the lack of theoretical means of predicting the effects of acoustic coagulation on various aerosols, the authors used specially designed apparatus to determine experimentally the major coagulation parameters (number of particles per unit volume and size distribution of the particles). Most of the apparatus, the formulas for the particle-size distribution, and the procedure for the experimental-data reduction have been described in earlier papers by the authors and their co-workers (Sb. Primeneniye ultraakustiki k issledovaniyu veschestva [Use of ultrasonics in materials research], no. 17, MOPI, M., 1963, and earlier references). Formulas are presented for determining the aerosol concentrations at the outlet of an aerosol chamber in terms of the time spent by the aerosol in the chamber and in terms of the pulse repetition frequency (pulsed sound only). The results have established that pulsed sound at a frequency of 16.5 kcs, a pulse

Card 1/2

L 1726-66

ACCESSION NR: AP5021180 3

repetition frequency of 2 pulses/sec, a reduced pulse duty factor of 2, and a total exposure of 3—5 seconds consumes approximately half of the acoustic energy required in the case of continuous sound. Orig. art. has: 4 figures and 5 formulas. [02]

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute) 44,55

SUBMITTED: 03Oct63 ENCL: 00 SUB CODE: ES

NO REF SOV: 005 OTHER: 000 ATD PRESS: 4095

Card 2/2

L 9860-66 EWT(1)/EEC(k)-2/EWA(h)/ETC(m) WW SOURCE CODE: UR/0286/65/000/022/0071/0071

ACC NR: AP6001003

44,55 44,55 44,55

INVENTOR: Varlamov, M. L.; Manakin, G. A.; Tonkonogiy, Sh. B.

32
B

ORG: none

25

TITLE: Acoustic wattmeter. Class 42, No. 176451.

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 71

21,44,55

TOPIC TAGS: wattmeter, acoustic wattmeter

ABSTRACT: This Author Certificate proposes an acoustic wattmeter containing an acoustic pickup and a millivoltmeter for measuring the power of acoustic generators. To increase both the measurement accuracy and speed, the pickup is mounted on a mobile base which can be shifted by two drives at a constant linear velocity in a plane perpendicular to the sound propagation. An amplifier, a functional transducer, an integrator, and relay block contacts are connected in series to the output of the millivoltmeter. The relay block contacts assure simultaneous coupling of the acoustic pickup drives, the electric timer, the integrator, and the recording instruments. [JR]
Orig. art. has: 1 figure.

SUB CODE: 09, 14/ SUBM DATE: 23Sep63/ ATD PRESS: 4165

UDC: 534.613:621.317.784

Card 1/1

AUTHOR: Manckin, L. A. SOV/56-34-5-4[illegible]

TITLE: On the Theory of the "Strange" Particles (K teorii "strannykh" chastits)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 5, pp. [illegible] (USSR)

ABSTRACT: In the mathematical interpretation of the scheme by Gell-Mann (Refs 1 - 3) which was suggested by B. d'Espagnat and I. Prentki (Refs 4, 5) a new integral of motion appears. It is the isofermionic charge u of the system of elementary particles, which is preserved in all strong and electromagnetic interactions. The isofermionic charge of a particle characterizes the transformation properties of the particle with regard to the transformations and inversions in a three-dimensional isotropic space. Complying with these general postulates, which were assumed by d'Espagnat and Prentki, only 4 types of particles are possible: isoscalar particles (u = 0), isopseudovectorial particles (u = 0), isospinorial particles of the first kind (u = +1), and isospinorial particles of the second kind (u = -1). Therefore only the 3 values u = ± 1, 0 are permissible for a particle. In the theory by d'Espagnat

Card 1/3

and Frenkel the connection between the electric charge Q and the third component of the isotope spin I_3 is expressed by the relation $Q = I_3 + u/2$, which is equal for all mesons and baryons. In the strong and in the electromagnetic interactions u remains constant. In the weak interaction the transitions with $\Delta u = \pm 1$ are permitted, which corresponds with the Gell Mann (Gell-Mann) transitions $\Delta S = \pm 1$. By comparison with the scheme by Gell-Mann the following conclusions result: The Gell-Mann strangeness S denotes the difference between the isofermionic charge u of the particle and its nucleonic (baryonic) charge n, $S = u - n$. The isofermionic charge u can assume only 3 values: +1 for isofermions with the isotope spin $I = 1/2$; -1 for antiisofermions; 0 for isobosons with $I = 0$ or $I = 1$. According to the opinion of the author the antiisofermionic charge of a particle together with n and I has to be regarded to be a primary characteristic of the particle, and the strangeness only to be one of its possible combinations. There are 1 table and 9 references, 6 of which are Soviet.

Card 2/2

On the Theory of the "Strange" Particles SOV/56-34-5-43/61

ASSOCIATION: Kamenets-Podol'skiy pedagogicheskiy institut
(Kamenets-Podol'sk Pedagogical Institute)

SUBMITTED: August 22, 1957 (initially), and December 24, 1957 (after revision)

1. Particles--Theory

Card 3/3

MANAKIN, M., gvardii polkovnik, Geroy Sovetskogo Soyuza

Improve planning of housekeeping operations. Tyl i snab. Sov. Voor. Sil 21 no.11:54-57 N '61. (MIRA 15:1)
(Russia--Army--Military life)

BUKSHTEYN, Mikhail Abramovich; BELEN'KIY, Yakov Grigor'yevich;
MANAKIN, N.V., red.; LEVIT, Ye.I., red. izd-va;
ISLANT'YEVA, P.G., tekhn. red.

[Manual for a worker in the manufacture of wire rope and hardware products] Kanatchik-metiznik; spravochnik dlia rabochikh. Moskva, Metallurgizdat, 1963. 230 p. (MIRA 16:7)

(Wire rope industry—Handbooks, manuals, etc.)

MANAKO, V.I.

Coelomic cyst of the pericardium. Uch. zap. Stavr. gos. med. inst. 12:240 '63. (MIRA 17:9)

1. Kafedra fakul'tetskoy khirurgii (zav.- prof. I.I. Khozhanov) Stavropol'skogo gosudarstvennogo meditsinskogo instituta.

MANAKOV, A. A.

Rostov-na-Donu Rostov on the Don Rostov-na-Donu, Rostovskoye Knizhnoye Izd-vo, 1957.

38 p. illus.

S/020/61/136/003/021/027
B004/B056

AUTHORS: Manakov, A. I., Yesin, O. A., and Lepinskikh, B. M.

TITLE: The Structure of the Surface Layer of Molten Niobates

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 3, pp. 644-646

TEXT: The authors deal with the problem of the formation of electric double layers on the interface between melt and air. According to published data, mainly oxygen anions will be found on the surface of the melt. According to Ref. 8, however, a displacement of the oxygen anions by large monovalent alkali cations ought to be possible. It was the purpose of the present work to check this assumption experimentally. The method is based upon measuring the surface tension σ and the surface potential ε_s on the interface between melt and air in the systems Cs_2O - Nb_2O_5; K_2O - Nb_2O_5; and CaO - Nb_2O_5 at 1500°C, the concentration of Cs_2O, K_2O and CaO having been varied between 0 - 50 mole%. Experiments were made in a

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Card 1/5

furnace with carbon resistor. The cells with the substances were protected by means of a quartz tube against reducing atmosphere. σ was, according to Ref. 9, determined by measuring the maximum pressure in oxygen gas bubbles. ε_s was measured in the following electrolytic chain:

$$\mathrm{Pt}\underset{1}{|}\mathrm{Nb_2O_5}\underset{2}{|}\mathrm{O_2}\underset{3}{|}\mathrm{Pt}\underset{4}{|}\mathrm{O_2}\underset{5}{|}\mathrm{Nb_2O_5+MeO}\underset{6}{|}\mathrm{Pt}.$$

The external platinum electrodes were in contact with Nb_2O_5 or Nb_2O_5 +MeO, respectively, which were in ZrO_2 crucibles. The middle electrode was in an oxygen current. The summational potential at the boundaries 6 (ε) and 5 (ε_s) was measured by means of the ППТВ-1 (PPTV-1) potentiometer, and referred to the potential ε_g of the gas electrode. $\Delta\varepsilon = \varepsilon + \varepsilon_s - \varepsilon_g > 0$. $\Delta\varepsilon_0 = \varepsilon_0 + \varepsilon_s^0 - \varepsilon_g$ remained constant. The potential difference $\Delta\varepsilon_1 = \varepsilon_0 - \varepsilon$ at the boundaries 1 and 6 was determined, the crucibles being connected with each other by means of a thin layer of liquid Nb_2O_5. The following values were calculated: $\Delta\varepsilon_s = \varepsilon_s^0 - \varepsilon_s = \Delta\varepsilon_0 - \Delta\varepsilon - \Delta\varepsilon_1$. The results are shown in Fig. 1. From

The Structure of the Surface Layer of Molten Niobates

S/020/61/136/003/021/027
B004/B056

them the conclusion is drawn that the outer plate of the double layer is formed by oxygen anions. With increasing concentration of Cs^+ or K^+ ions, a partial substitution of the O^{2-} anions occurs. The number of cations adsorbed on the interface, their surface concentration N_s, was calculated according to two methods. 1) According to the Gibbs equation for ideal solutions: $\Gamma = -\left[N(1 - N)/RT\right] \partial\sigma/\partial N$; 2) on the basis of the change Δq of the surface charge on the assumption that the double layer may be put equal to a plane capacitor, and $C = 15$ mf/cm²: $\Delta q = \Delta\varepsilon_s C$; $N'_s = \Delta q/2nN_0e$. N_0 is the Avogadro's number, e the electron charge; the number 2 takes account of the number of ions in the molecule Me_2O. The results of these calculations are given in Table 1:

Oxide	N	$.10^{10}$ mole/cm² (calculated from σ)	N_s (calculated from σ)	N'_s (calculated from ε_s)	N'_s/N_s
Cs_2O	0.1	2.45	0.436	0.0228	0.052
K_2O	0.1	3.18	0.415	0.0112	0.027
CaO	0.1	-0.52	0.072	0.0003	0.004

Card 3/5

The Structure of the Surface Layer of
Molten Niobates

S/020/61/136/003/021/027
B004/B056

From the differences between N_s and N_s' the following conclusions are drawn: The Me^+ ions replace, above all, niobium cations in the double layer, which are deeper and more distant from the surface than the O^{2-} anions. Only a small part of the Me^+ ions displaces O^{2-} ions from the surface. The adsorbed Me_2O are thus mainly orientated toward the surface with their oxygen anion. The more difficult displacement of the oxygen anions from the surface of the melt is explained by their easy polarizability. There are 1 figure, 1 table, and 13 references: 7 Soviet, 2 US, 1 French, 2 German, and 1 Roumanian.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences USSR)

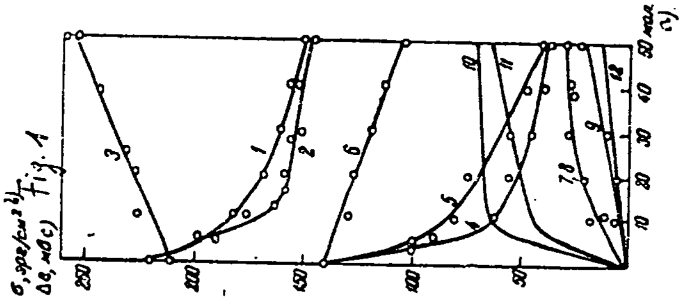
PRESENTED: July 20, 1960, by A. N. Frumkin, Academician

SUBMITTED: July 9, 1960

Card 4/5

S/020/61/136/003/021/027
B004/B056

Legend to Fig. 1. Isothermal lines of the surface tension and the change in the surface potential. 1,2,3: $\sigma = f(N)$ for systems of Nb_2O_5 with Cs_2O, K_2O and CaO, respectively; 4,5,6: $\Delta\varepsilon = f(N)$; 7,8,9: $\Delta\varepsilon_1 = -f(N)$; 10,11,12: $\Delta\varepsilon_s = f(N)$ for the same systems. a) mole%, b) erg/cm², c) mv.



Card 5/5

S/180/61/000/005/002/018
E071/E435

AUTHORS: Lepinskikh, B.M., Yesin, O.A., Manakov, A.I. (Sverdlovsk)

TITLE: Electrolytic precipitation of chromium and vanadium from molten slags

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.5, 1961, 19-21

TEXT: An electrolytic separation of vanadium under reducing and oxidizing conditions as well as simultaneous precipitation of chromium and vanadium from a works' slag were investigated. In the initial experiments the starting slag contained 40% CaO, 15% Al_2O_3, 5% MgO and 40% SiO_2. To this slag an addition of 10 to 20% V_2O_5 or 5% Cr_2O_3 and 5% V_2O_5 was made. The electrolysis was carried out in corundum crucibles placed in a carbon resistance furnace heated to 1600°C. Tungsten wire was used for electrodes. It was found that under reducing conditions, the current efficiency for vanadium (about 80%) is practically independent of the current density. Under oxidizing conditions the current efficiency does not exceed 25%, probably due to the

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Card 1/3

S/180/61/000/005/002/018
Electrolytic precipitation ... E071/E435

oxidation of the reduced product by the gaseous phase. On simultaneous separation of chromium and vanadium with increasing current density, the current yield of vanadium sharply decreases and that of chromium remains practically constant. At a current density above 1.1 A/cm^2 silicon begins to be reduced. This indicates that vanadium is mainly separated on the cathode at a current density below 1.1 A/cm^2 and mainly chromium is separated at a higher current density. The works waste slag on which the electrolytic separation of vanadium was tested had the following mean composition: 23% SiO_2 11% Cr_2O_3, 1.2% V_2O_5, 18% TiO_2, 1.5% MgO, 2.5% Al_2O_3, 1.6% CaO and 35% of total iron. Since electrolytic separation of iron is at present uneconomic, a preliminary reduction of iron with carbon is necessary. It was experimentally established that the slag had a melting temperature of 1520 °C and that it was very viscous. To improve the reducing conditions the slag was mixed with 10% of a blast-furnace slag (40% CaO, 39% SiO_2 and 12% Al_2O_3). The slag mixture, with an addition of some charcoal (amount not specified) was melted in a 10 kg furnace and retained for 1.5 hours at 1500 °C. The reduced
Card 2/3

Electrolytic precipitation ...

S/180/61/000/005/002/018
E071/E435

metal contained 2.5 to 4% Cr and 0.5 to 0.7% V and the residual slag contained 0.2 to 0.3% V_2O_5 and 4 to 5% Cr_2O_3. In the subsequent experiments, after retaining the charge for 1.5 hours at 1500°C, a graphite anode was immersed into the slag and a direct current was applied (current density 0.8 to 0.9 A/cm^2). On the application of the current, the content of vanadium in the slag decreased to 0.09 to 0.10% and increased to up to 1% in the metal. It is concluded that the electrolytic method can improve the extraction of vanadium from slags. There are 3 figures and 3 Soviet references.

ASSOCIATION: Institut metallurgii UFAN SSSR
(The Institute of Metallurgy UFAN USSR)

SUBMITTED: May 13, 1961

Card 3/3

40201
S/078/62/007/009/006/007
B144/B101

24.7700

AUTHORS: Manakov, A. I., Yesin, O. A., Lepinskikh, B. M.

TITLE: Electrical conductivity of binary oxide systems containing niobium pentoxide

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 9, 1962, 2220-2225

TEXT: The electrical conductivity, $\varkappa$, in binary systems of Nb_2O_5 with up to 50 mole-% K_2O, Li_2O, CaO, Al_2O_3, Fe_2O_3, or V_2O_5 was studied at 700 - 1600°C and found to be consistent with that of similar V_2O_5 systems. Pure V_2O_5 and Nb_2O_5 are electronic semiconductors in solid and liquid phase. The systems can be subdivided into: 1) $Fe_2O_3 - Nb_2O_5$, $V_2O_5 - Nb_2O_5$, where $\varkappa$ gradually increases with rising temperature; 2) all remaining systems with a break in the $\varkappa$ curve, which is characteristic of the melting of ionic conductors. For the $K_2O - Nb_2O_5$ system, the melting and solidification temperatures derived from the polytherms of $\varkappa$ are fairly

Card 1/2

S/078/62/007/009/006/007
B144/B101

Electrical conductivity of binary ...

consistent with those of its constitution diagram. Thus, preliminary constitution diagrams were established for all Me_aO_b systems. From data for the activation energies of the conductivity and of the equivalent conductivity of electrolytic melts, and for the viscosity, it is proved that in 1) the alloys are electronic conductors independent of their quantitative composition, whereas in 2) an increasing Me_aO_b content causes a transition from electronic to ionic conductivity. There are 2 figures and 5 tables.

ASSOCIATION: Ural'skiy filial Akademii nauk SSSR (Ural Branch of the Academy of Sciences USSR)

SUBMITTED: December 7, 1961

Card 2/2

S/076/62/036/011/002/021
B101/B180

AUTHORS: Manakov, A. I., Yesin, O. A., and Lepinskikh, B. M. (Sverdlovsk)

TITLE: Surface tension, potential, and density of molten niobates

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 11, 1962, 2317 - 2321

TEXT: In the systems Cs_2O - Nb_2O_5, K_2O - Nb_2O_5, Fe_2O_3 - Nb_2O_5 and CaO - Nb_2O_5 σ the surface tension and d the density were determined by the method of maximum pressure in a gas bubble at 1450 - 1650°C, and χ_s the surface potential was measured in the $\mathrm{Pt}\,{}_1\,\mathrm{Nb_2O_5}\,{}_2\,\mathrm{O_2}\,{}_3\,\mathrm{Pt}\,{}_4|\mathrm{O_2}\,{}_5|\mathrm{Nb_2O_5} + \mathrm{Me_xO_y}\,{}_6|\mathrm{Pt}$ element at 1500°C. The basic oxides in these systems are present in industrial niobium ores and slags. Results: (1) When 10 mole% K_2O is added to Nb_2O_5, σ falls from 220 to 170 erg/cm^2. Further K_2O addition causes only a slight further reduction. The system Cs_2O - Nb_2O_5 behaves similarly, and in the systems with CaO and Fe_2O_3 σ rises linearly with basic oxide concentration.

Card 1/3

Thus, K^+ and Cs^+ show capillary surface-activity with respect to Nb_2O_5. (2) V the molar volumes of the melts K_2O - Nb_2O_5, Fe_2O_3 - Nb_2O_5 and CaO - Nb_2O_5 vary almost linearly with the composition. (3) The temperature coefficient $r = d\sigma/dT$ of Nb_2O_5 is -0.01, while it is +0.01 for V_2O_5. (4) The expansion coefficient $= dV/dT$ is $24 \cdot 10^{-3}$ for Nb_2O_5, $22 \cdot 10^{-3}$ for $K_2Nb_2O_6$, but only $5 \cdot 10^{-3}$ for V_2O_5. (5) ε_s falls with increasing Me_2O concentration. At 10 mole% the reduction $\Delta\varepsilon_s$ is ~ 65 mv for Cs_2O, 45 mv for K_2O and 2 mv for CaO. The Cs^+ and K^+ ions thus lie at the melt - gas interface. (6) Calculated by the Gibbs equation and from Δq the change in the charge assuming that the double layer is like a flat condenser, the surface concentration of atoms is different, suggesting that the adsorbed Cs_2O and K_2O oxides are orientated toward the surface mainly by their oxygen atoms, and only to a lesser extent (3 - 5%) by the Cs^+ or K^+ cations. There are 2 figures and 3 tables.

Surface tension, potential, and density... S/076/62/036/011/002/021
B101/B180

ASSOCIATION: Ural'skiy filial AN SSSR (Ural Branch of the AS USSR)

SUBMITTED: January 30, 1961

Card 3/3

S/076/62/036/012/008/014
B101/B180

AUTHORS: Manakov, A. I., Yesin, O. A., and Lepinskikh, B. M.
(Sverdlovsk)

TITLE: Thermoelectromotive forces and conductivity of vanadium and niobium pentoxides

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 12, 1962, 2734 - 2740

TEXT: The paper describes measurements of the conductivity $\varkappa$ and the thermo-e.m.f. α in solid and liquid V_2O_5 and Nb_2O_5, and of the Hall constant in V_2O_5. The following results are given:

	V_2O_5		Nb_2O_5	
t°, C	600	1000(liq)	1200(sd)	1500(liq)
$\Delta\varepsilon\cdot 10^{12}$, erg	1.58	2.73	3.50	6.42
n_1	$7.0\cdot 10^{17}$	$9.16\cdot 10^{16}$	$3.5\cdot 10^{16}$	$7.3\cdot 10^{14}$

Card 1/3

	V_2O_5			Nb_2O_5
n, cm^{-3}	n_2 $4.1 \cdot 10^{16}$	$1.13 \cdot 10^{16}$		
U, $cm^2/v \cdot sec$	U_1 2.2	U_n 33	22	-
	U_2 38	U_p 189		
α_{th}, $\mu v/deg$	α_1 820	-		
	α_2 1030	-	1100	-
α_{exp}, $\mu v/deg$	~700	200	950	220

$\Delta\varepsilon$ is the activation energy of conductivity, n is the number of current carriers, U their mobility. The subscripts $_2$ give values calculated from the Hall constant. Conclusions: The oxides studied are n-type semiconductors in both states of aggregation. In solid state, their forbidden band is narrower and extrinsic conduction prevails, which changes into intrinsic conduction on melting. As the Hall constant of V_2O_5 becomes negative at below 670°C, V_2O_5 is an anomalous semiconductor whose hole mobility is higher than the electron. Goodman's rule stating that the width of the forbidden band in oxides of equal valencies increases with the energy of electrostatic interaction of ions, was also confirmed for CuO - CoO - MnO - MgO, Fe_2O_3 - Al_2O_3, and V_2O_5 - Nb_2O_5. There are 6 figures and 1 table.

ASSOCIATION: Ural'skiy filial AN SSSR, Ural'skiy politekhnicheskiy institut (Ural Branch of the AS USSR, Ural Polytechnic Institute)

SUBMITTED: August 8, 1961

34829

S/020/62/142/005/021/022
B110/B101

24.7700 (1385,1137,1138

AUTHORS: anakov, A. I., Yesin, O. A., and Lepinskikh, B. M.

TITLE: Semiconductor properties of vanadium and niobium pentoxide in solid and liquid state

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no 5, 1962, 1124 - 1127

TEXT: The specific electroconductivity $\varkappa$, the termo-emf and the Hall
constant of V_2O_5 and Nb_2O_5 were determined. The relatively high $\varkappa$ values
and the absence of jumps on the polytherms when melting proved the semi-
conductor properties of V_2O_5 and Nb_2O_5 in both states. The activation
energies calculated from $\varkappa = \varkappa_0 \exp(-\Delta\varepsilon/2kT)$ are much higher for molten
V_2O_5 and Nb_2O_5 than for solid ones since the intrinsic conductance is
likely to prevail in the molten state but the impurity conductivity domi-
nate in the solid state. At $< 0°C$, $\varkappa(V_2O_5)$ is very low (T = -30°C:

Card 1/4

S/020/62/142/005/02
110/B101

Semiconductor properties of...

$\varkappa \approx 10^{-5}$, $\Delta\varepsilon = 0.72\cdot 10^{-12}$) and is determined by accidental impurities
At higher temperatures, the activation energy increases due to partial
dissociation of V_2O_5 to lower oxides ($\Delta\varepsilon_{430^{\circ}C} = 1.56\cdot 10^{-12}$). $\Delta\varepsilon(Nb_2O_5$
is greater than $\Delta\varepsilon(V_2O_5)$, probably due to the stronger O-Nb bond. The
number of current carriers in solid state is:
$n_{imp} = \sqrt{N_{imp}}\sqrt{2(2\pi m_n kT)^{3/2}/h^3}\cdot \exp(-\Delta\varepsilon/2kT)$ The effective electron
mass m_n was equated to the mass at rest, the number N_{imp} of impurity
centers to the number of low-valency cations determined by chemical analy
sis. Results obtained for T = 130°C: $n_{imp\,1} = 0.9\cdot 10^{17}$; T = 1000°C:
$n_{imp\,1} = 1.6\cdot 10^{17}$; T = 1100°C: $n_{imp\,1} = 0.6\cdot 10^{17}$. Since for the impuri-
ty conductivity, $\varkappa$ is only determined by one type of current carriers the
mobility of the latter is: u_n: $\varkappa = neu_n$. $u_n(Nb_2O_5)$ is near the values for
$_2O$ and ZnO ($u \approx 100$); $u_n(V_2O_5)$ is near that for TiO_2 ($u \approx$. For the

Semiconductor properties of...

[illegible]
B110/B101

molten state, the number of current carriers is calculated from the equation for crystals: $n = \left\{\left[2(2\pi m_n kT)^{3/2}\right]/h^3\right\} \cdot \exp(-\Delta\varepsilon/2kT)$. The higher-heated part of the sample was charged positively. V_2O_5 and Nb_2O_5 have n-type conductivity. For the thermo-emf is: $\alpha = (k/e) \cdot \left[r + 2 + \ln\left\{2(2\pi m_n kT)^{3/2}\right\}/n_t h^3\right]$, where r = [illegible] in the scattering of electrons on impurity ions. As in other anomalous semiconductors, Mg_3Sb_2, ZnSb, the decrease in thermo-emf with increasing temperature is probably due to partial compensation of the electron diffusion by hole conductivity. The thermo-emf consists of: (I) the difference of electrode potentials at the boundaries Pt|melt (heterogeneous effect, α_{het}), and (II) the potential drop between the hot and cold parts of the sample (homogeneous effect, α_{hom}). From

$$\alpha_{het} = 1/4F \left[\int_0^T c_{O_2}\, dT/T - \int_0^T 2/7\, c_{V_2O_5}\, dt/T\right]$$, the following was obtained:

Card 3/5

Semiconductor properties of... S/020/62/142/005/021/022
B110/B101

α_{het} (liq) = 325; α_{het} (sd) = 394 μv/deg Results of calculation: α_{hom}(liq) = -125; α_{hom}(sd) = 300 μv/deg. α_{hom} caused by diffusion of current carriers changes its sign during melting of V_2O_5. The Hall constant drops with temperature and changes its sign when passing through the melting point of V_2O_5 (670°C). In the range of proper conductivity, the negative sign of the Hall constant indicates electron conductivity. There are 1 figure, 1 table, and 13 references: 6 Soviet and 7 non-Soviet. The two references to English-language publications read as follows: J. O'. M. Bockris, Modern Aspects of Electrochemistry, No. 2, N. Y. London 1959. P. L. Baynton et al., J. Electrochem. Soc., 104, No. 4, 237 (1957).

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences USSR)

PRESENTED: October 9, 1961, by A. N. Frumkin, Academician

Card 4/5

MANAKOV, A.I.; YESIN, O.A.; LEPINSKIKH, B.M. (Sverdlovsk)

Surface tension, potential, and density of molten niobates.
Zhur. fiz. khim. 36 no.11:2317-2321 N'62. (MIRA 17:5

1. Ural'skiy filial AN SSSR.

ACCESSION NR: AT4035155 S/2765/64/000/000/0148/0153

AUTHOR: Manakov, A. I.; Yesin, O. A.; Lepinskikh, B. M.

TITLE: Thermoelectromotive forces and the electrical conductivity of vanadium and niobium pentoxides

SOURCE: Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 6th, 1961. Fiziko-khimicheskiye osnovy* proizvodstva stali (Physicochemical basis of steel production); trudy* konferentsii. Moscow, Izd-vo "Nauka," 1964, 148-153

TOPIC TAGS: vanadium, niobium, vanadium pentoxide, niobium pentoxide, electrical conductivity, thermoelectromotive force, metal oxide conductivity

ABSTRACT: To confirm the previously established occurrence of conductive electrons in many solid and molten oxides, the authors measured the electrical conductivity and thermoelectromotive forces of solid and molten V_2O_5 and Nb_2O_5, identified the nature of the conductivity by calculating the energy of activation and evaluated the number and mobility of current carriers. Electrical conductivity was measured with a bridge circuit using an EO-7 electron oscillograph and a ZG-11 audiogenerator. The electrodes were 0.5 mm platinum wires, and the temperature was measured with a platinum-platinum-rhodium thermocouple immersed in the melt. The crucible was of zirconium dioxide in a carbon-resistance oven.

Card 1/4

ACCESSION NR: AT4035155

The temf in V_2O_5 was measured in a 15 mm diameter quartz U-tube, placed in a crucible furnace with a thermostat. From both tube ends, platinum-platinum-rhodium thermocouples were immersed into the molten V_2O_5 and the cold thermocouple junctions were connected to a PPTB-1 potentiometer which measured the t° and temf in both parts of the melt. The temf in Nb_2O_5 was measured in a ZrO_2 cylindrical crucible ($d = 25$ mm, $h = 100$ mm) placed in a carbon-resistance quartz-lined oven. The lower crucible section was thermoinsulated which produced a thermal gradient over the crucible height, thus permitting the determination of temf with the use of thermocouples. The results shown in Figs. 1 and 2 of the Enclosure indicate that the oxides are electron semiconductors with intrinsic conductivity in the liquid state and admixture-induced conductivity in the solid state. Orig. art. has: 4 figures , 5 formulas and 1 table.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 30Apr64 ENCL: 02

SUB CODE: MM, EM NO REF SOV: 014 OTHER: 006

ACCESSION NR: AT4035155

ENCLOSURE: 01

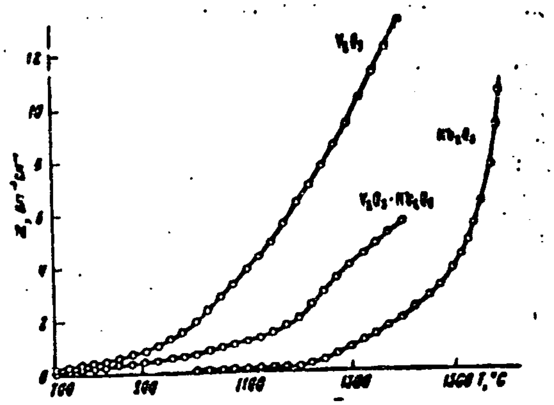

Fig. 1. Variation in the electrical conductivity of the compounds V_2O_5, Nb_2O_5 and $V_2O_5 \cdot Nb_2O_5$ with temperature.

Card 3/4

ACCESSION NR: AT4035155

ENCLOSURE: 02

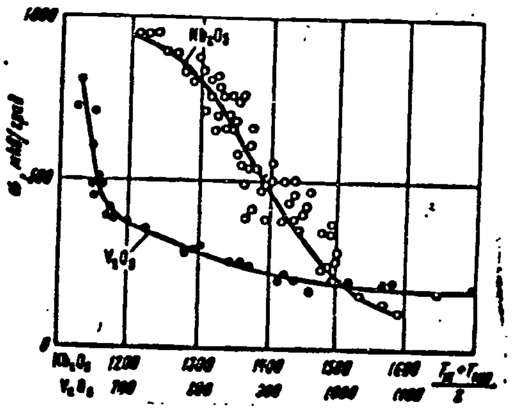

Fig. 2. Variation in the differential thermoelectromotive force of V_2O_5 and Nb_2O_5 with temperature.

Card 4/4

L 29250-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR. AP6019316

SOURCE CODE: UR/0370/65/000/004/0068/0071

36
B

AUTHOR: Manakov, A. I. (Sverdlovsk); Lepinskikh, B. M. (Sverdlovsk)

ORG: none

TITLE: Surface tension and density of oxide melts containing vanadium or niobium pentoxide

21 21 21

SOURCE: AN SSSR. Izvestiya. Metally, no. 4, 1965, 68-71

TOPIC TAGS: surface tension, density, inorganic oxide, niobium compound, vanadium compound

ABSTRACT: There is little data available on the physico-chemical properties of oxide melts containing vanadium or niobium pentoxides although they are of considerable interest to metallurgical production. With this in mind the surface tension (σ) and density (d) of a number of binary systems containing Nb_2O_5 and V_2O_5 were determined. The surface tension and density of melts of the systems below were measured: $K_2O-Nb_2O_5$, $Cr_2O_3-Nb_2O_5$, $CaO-Nb_2O_5$, $Fe_2O_3-Nb_2O_5$ and $CaO-V_2O_5$, $Fe_2O_3-V_2O_5$, $Cr_2O_3-V_2O_5$ at 1200-1500°C. The cations K^+ and Cs^+ in contrast to Ca^{2+} and Fe^{3+} are capillarily active in the molten niobates. In systems containing V_2O_5 the added oxides (in the range of the compositions studied) increase

Card 1/2

UDC: 669:532.61

L 29250-66

ACC NR: AP6019316

0

surface tension. The change in the molar volumes of melts of the indicated systems with composition is examined. The thermal coefficient $\gamma = d\sigma/dT$, $\beta = dV.dT$ are found for molten vanadium and niobium pentoxides. Their values are discussed starting from the quasi-molecular structure of melts in the group V oxides. Orig. art. has: 2 figures and 2 tables. [JPRS]

SUB CODE: 07, 20 / SUBM DATE: 21Jan64 / ORIG REF: 012 / OTH REF: 008

Card 2/2 LC

ACC NR: AR6035422 SOURCE CODE: UR/0137/66/000/009/E043/E043

AUTHOR: Krivov, V. V.; Fal'kov, A. I.; Manakov, A. I.

TITLE: Contact roller welding of thin sheets of the alloy AMG-6N using commercial type MShM-25M machines

SOURCE: Ref. zh. Metallurgiya, Abs. 9E296

REF. SOURCE: Tr. Kurganskogo mashinostroit. in-ta, vyp. 2, 1966, 74-80

TOPIC TAGS: pressure welding, automatic welding, sheet metal, ignitron/AMG-6N alloy

ABSTRACT: The possibility of roller welding thin-sheet structures of the AMG-6N alloy is disclosed, and some of its features are discussed. Sheets of this alloy, of 0.3 mm thickness, were successfully welded with an ordinary low-power roller machine (25 kva) using an ignitron timer; some individual units of the machine had to be slightly modified. Certain structures made of thin-sheet AMG-6N alloy by roller welding can operate at differential pressures up to 1.0 -- 1.5 atm. M. Frolova.

SUB CODE: 13, 11

UDC: 621.791.763.3:669.715

Card 1/1

KANAKOV, I. A.

5551. Kanakov, I. A. Frezerovshchik-ratsionalizator I. Ya. Tol[illegible]rov. (Ural'skiy vagonostroit. zavod im. Stalina). M., 1954. 16s. s chert. 20 sm. (M-vo transp. mashinostroyeniya SSSR. Vsesoyuz. proyektno-tekhnol. in-t VPTI. Obmen tekhn. opytom. Vyp. 130). 2000 ekz. B. ts.----Avt. ukazan na 3-y s.----(55-1052i) 621.914 st

So: Knizhnaya Letopis', Vol. 1, 1955

1962/5

MANAKOV, I.D.

DECEASED
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SEE ILC

VETERINARY PHYSIOLOGY

PENKA, Miroslav, prof., Ph.Mr., RNDr. (Brno, Obrancu miru 10); KOZISKOVA, Blanka; MALKOVA, Vera; MANAKOVA, Irena.

Accumulation of essential oils in the plant Carum carvi L. Acta pharmac 5:17-49 '61.

1. Department of Pharmaceutical Botany, Faculty of Pharmacy, Bratislava.

MANAKOV, K.N.

Assimilation of minerals and nitrogen from soils by vegetation in the forests of the Kola Peninsula. Pochvovedenie no.8:34-41 Ag '61. (MIRA 14:11)

1. Polyarno-al'piyskiy botanicheskiy sad, Kol'skiy filial Akademii nauk SSSR.
(Kola Peninsula--Plants--Assimilation)

MANAKOV, K.N.

Nitrogen and ash element enrichment of soils with litter in Kola Peninsula forests. Pochvovedenie no.4:55-61 Ap '62. (MIRA 15:4)

1. Polyarno-Al'piyskiy botanicheskiy sad, Kol'skiy filial Akademii nauk SSSR.
(Kola Peninsula—Soils—Nitrogen content) (Minerals in soil)

MANAKOV, K.N.

Litter characteristics in some forest plantations of Murmansk Province. Bot. zhur. 47 no.8:1201-1207 Ag '62. (MIRA 15:10)

1. Polyarno-al'piyskiy botanicheskiy sad AN SSSR, Kol'skiy filial imeni S.M. Kirova, g. Kirovsk.
(Murmansk Province—Forest litter)

MANANKOV, M.K.

Effect of gibberellic acid on fruit formation in grape varieties with a female functional type of flower. Fiziol. rast. 7 no.3:350-354 '60. (MIRA 13:6)

1. Department of Viticulture of Crimean M.I. Kalinin Agricultural Institute, Simferopol.
(Gibberellic acid) (Grapes) (Fertilization of plants)

27497
S/062/61/000/009/013/014
B117/B101

5 3700

AUTHORS: Nefedov, O. M., Manakov, M. N., and Petrov, A. D.

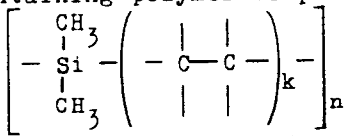
TITLE: New method of preparing cyclic organo-silicon compounds

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 9, 1961, 1717

TEXT: The present letter to the editors reports the following: It was found that the reaction of dimethyl-dichloro silane with lithium in tetrahydrofuran (THF) at 10°-70°C in the presence of styrene (2 mole to 1 mole $(CH_3)_2SiCl_2$) gives diphenyl-dimethyl silicacyclopentane (probably a mixture of isomers) in 30-50% yield; b.p. 127°-129°C (0.2 mm Hg) and 136°-137°C (0.2 mm Hg), n_D^{20} 1.5722-1.5759, d_4^{20} 1.0077-1.0133, found MR 86.99-87.20, calculated MR 86.69, found mol.wt. (cryoscopically in benzene) 262; 257; calculated mol.wt. 266. Found: C 81.02, 80.90, H 8.60, 8.32, Si 10.40, 10.43%. $C_{18}H_{22}Si$ calculated: C 81.15, H 8.32, Si 10.53%. Together with this compound, a considerable amount of a

Card 1/4

resinous silicon-containing polymer of probable structure



$$\left[-\overset{\mathrm{CH_3}}{\underset{\mathrm{CH_3}}{\mathrm{Si}}}-\left(-\overset{|}{\underset{|}{\mathrm{C}}}-\overset{|}{\underset{|}{\mathrm{C}}}-\right)_k-\right]_n$$

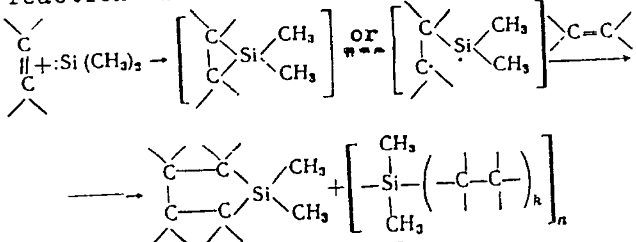
is formed. It is easily soluble in water, acetone, and other solvents. This reaction which was discovered by the authors proceeds in a similar manner with styrene derivatives vinyl naphthalenes, divinyl benzene and methyl methacrylate. Under the same conditions, but in absence of unsaturated compounds, the main reaction product is the high-molecular polydimethyl silylene $[>\mathrm{Si(CH_3)_2}]_n$, obtained in 65-75% yield, m.p. 340°-345°C (under decomposition). It exhibits a much higher resistance to thermal oxidation than a similar polymer obtained from $(CH_3)_2SiCl_2$ and sodium in benzene (200°C, 15-20 atm) (Ref. 1: see below). It is assumed that the reactions described involve dimethyl silylene, a silicon analog of the carbene compounds, as an intermediate:

$$(CH_3)_2SiCl_2 \xrightarrow[\mathrm{THF}]{\mathrm{Li}} (CH_3)_2SiLiCl \xrightarrow{-\mathrm{LiCl}} (CH_3)_2Si:$$

27497
S/062/61/000/009/013/014
B117/B101

New method of preparing ...

In the absence of alkenes the latter is polymerized to $[>Si(CH_3)_2]_n$. In the presence of alkenes, dimethyl silylene probably adds to the double bond with formation of unstable silicon analogs of cyclopropane or the corresponding diradicals. These then form derivatives of silicacyclopentane and polymers by reaction with excess alkene:



[Abstracter's note: Complete translation.]
There is 1 non-Soviet reference. This reference to English-language publications reads as follows: C. A. Burkhard, J. Am. Chem. Soc. 71, 963 (1949); pat. USA 2554976, 29. V. 1951; Chem. Abstr. 45, 8809 (1951).

Card 3/4

27497
S/062/61/000/009/013/014
B117/B101

New method of preparing ...

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)

X

SUBMITTED: June 27, 1961

Card 4/4

NEFEDOV, O.M.; IVASHENKO, A.A.; MANAKOV, M.N.; SHIRYAYEV, V.I.;
PETROV, A.D.

New method of preparing carbenes. Izv. AN SSSR Otd.khim.nauk no.2:367 F '62. (MIRA 15:2)

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

NEFEDOV, O. M.; MANAKOV, M. N.; PETROV, A. D.

Organolithium synthesis of germanium hydrocarbon compounds from dimethyldichlorogermane. Certain reactions with a possible intermediate formation of $(C^{H})_2$Ge. Dokl. AN SSSR 147 no.6:1376-1379 D '62. (MIRA 16:1)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.
2. Chlen-korrespondent AN SSSR (for Petrov).

(Lithium organic compounds)
(Germanium organic compounds)
(Germane)

S/062/62/000/007/006/013
B117/B180

AUTHORS: Nefedov, O. M., Manakov, M. N., and Petrov, A. D.

TITLE: Synthesis of substituted 1,1-dialkyl silica cyclopentanes from dialkyl dichlorosilanes and styrenes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 7, 1962, 1228 - 1237

TEXT: The reaction of dialkyl dichlorosilane and aryl ethylene with alkali metals (lithium, sodium) in an inert solvent is here described, as a new method of synthesizing aryl-substituted 1,1-dialkyl silica cyclopentanes (30-75%). The reaction set in immediately with considerable heat evolution when a mixture of aryl ethylene and dimethyl dichlorosilane was slowly added to lithium in tetrahydrofuran. The reaction with sodium was less vigorous. Diethyl ether or benzene instead of tetrahydrofuran decelerated the reaction, but hardly affected the yield (35 - 50%) of the end products. In addition to silica cyclopentanes, polymers with silicon atoms in the principal chain also formed during the above reaction (yield up to 70%). (Their composition and structure will be studied in detail.)

Card 1/2

Synthesis of substituted...

S/062/62/000/007/006/013
B117/B180

These polymers were the main products obtained by the reaction of dichlorosilanes and conjugate dienes (e.g., piperilene) with alkali metals (Li, Na). As a possible mechanism of the formation of silica cyclopentanes, the reaction of dichlorosilane with dilithium derivatives of styrolene and their dimers (reaction A) is suggested, or possibly that of dichlorosilane with the "dimerizing" adduct of lithium to styrene (reaction B) are suggested or the carbenoid mechanism. Synthesized aryl-substituted silica cyclopentanes might possibly be used as monomers for the synthesis of chemically and heat resistant polymers but this has not yet been confirmed by experiment. There are 1 figure and 1 table.

√

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 26, 1962

Card 2/2

NEFEDOV, O.M.; MANAKOV, M.N.; IVASHENKO, A.A.

Addition of dichlorocarbene to some 1-substituted 1-cyclohexenes.
Izv.AN SSSR.Otd.khim.nauk no.7:1242-1248 Jl '62. (MIRA 15:7)

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

44542

S/020/62/147/006/023/034
B144/B101

AUTHORS: Nefedov, O. M., Manakov, M. N., Petrov, A. D., Corresponding Member AS USSR

TITLE: Organolithium synthesis of germanium hydrocarbon compounds from dimethyl dichloro germane. Some reactions with $(CH_3)_2Ge$ as a possible intermediate product

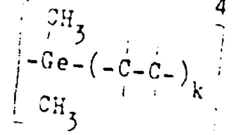
PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 6, 1962, 1376-1379

TEXT: $(CH_3)_2GeCl_2$ which behaves like $(CH_3)_2SiCl_2$ combines with Li dissolved in tetrahydrofuran (I) at 20 - 45°C to form a cyclic hexamer, $[(CH_3)_2Ge<]_6$, easily soluble in organic solvents; m.p. 211 - 213°C; yield up to 80%. At ~0°C, $[(CH_3)_2Ge<]_n$, a strongly hydrophobic compound similar to polydimethyl germylene and insoluble in organic solvents was also obtained; m.p. 200 - 240°C; yield 49%. Reaction scheme:

$$n(CH_3)_2GeCl_2 \xrightarrow[-nLiCl]{2nLi} n(CH_3)_2Ge(Li)Cl \xrightarrow{-nLiCl} n(CH_3)_2Ge: \longrightarrow [(CH_3)_2Ge<]_n.$$

Card 1/3

$(CH_3)_2GeCl_2$, styrene, and Li (molar ratio 1 : 2 : 4) in I yields the following products when stirred violently at ~0°C: (1) X,X'-diphenyl-1,1-dimethyl germanacyclopentane; yield 40.5%, b.p. 140 - 141°C/0.2 mm Hg; n_D^{20} 1.5920; d_4^{20} 1.1688; (2) A polymer with the general structure



$$\left[-\underset{CH_3}{\overset{CH_3}{Ge}}-(-\overset{|}{\underset{|}{C}}-\overset{|}{\underset{|}{C}}-)_k \right]_n$$

which is easily soluble in ether, I, and benzene; after twofold reprecipitation with methanol a white powder is obtained : m.p. 74 - 89°C; molecular weight 2790, 2960. Substitution of vinyl toluene for styrene yields 43% X,X'-ditolyl-1,1-dimethyl germanacyclopentane under otherwise equal conditions; b.p. 150 - 151°C/0.18 mm Hg; n_D^{20} 1.5825; d_4^{20} 1.1346. The melting point of the linear polymer obtained by reprecipitation was between 58 and 70°C, and its molecular weight was 1280, 1220. The course of the reaction as given shows that the products

Organolithium synthesis of ... S/020/62/147/006/023/034
B144/B101

obtained from Li and styrene with $(CH_3)_2GeCl_2$, and also the intermediate product $(CH_3)_2Ge$: react immediately with $C_6H_5CH=CH_2$. The structure of the resulting compounds and their similarity with the corresponding silicon compounds were confirmed by the IR spectra. There is 1 figure.

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: September 26, 1962

Card 3/3

NEFEDOV, O.M., MANAKOV, M.N., AND PETROV, A.D.

Investigation of the reaction of organohalides of silicon and germanium with lithium and its compounds.

Report to be submitted for the Second Dresden Symposium on Organic and non-silicate silicon chemistry, from 26-30 March 63, East Germany

Institute for Organic Chemistry of the Academy of Sciences of the USSR, Moscow.

L 17069-63 EPF(c)/EWP(j)/EWT(m)/BDS S/062/63/000/004/019/022
ASD Pc-4/Pr-4 RM/WW/MAY 66

AUTHOR: Nefedov, O.M. and Manakov, M.N.

TITLE: Catalytic dehydrogenation of silicon and germanium heterocyclics (direct preparation of organo-elemental analogs of cyclopentene and cyclopentadiene)

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 4, 1963, 769

TEXT: Silacyclopentane and substituted silacyclopentanes, passed over 10% Pt/C or aluminum-chromium-potassium oxide catalyst (84:14:2) at about 600° undergo partial dehydrogenation into the corresponding silacyclopentenes and silacyclopentadienes. Germaniumcyclopentanes (1,1-dimethylgermaniumcyclopentane, x,x'-diphenyl-1,1-dimethylgermaniumcyclopentane and others) also undergo similar catalytic rearrangement with the formation of unsaturated heterocyclics under the conditions given above. The research in this area is continuing.

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

SUBMITTED: January 17, 1963

Card 1/1

L 22659-65 EPF(c)/EPR/EWT(m)/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL RM/WW/MLK
ACCESSION NR: AT5002112 S/0000/64/000/000/0067/0074

AUTHOR: Nefedov, O.M., Manakov, M.N., Petrov, A.D. (Deceased)

TITLE: Utilization of carbenes and their organo-metallic analogs in reactions for the preparation of monomers and polymers

SOURCE: AN SSSR. Institut neftekhimicheskogo sinteza. Sintez i svoystva monomerov (The synthesis and properties of monomers). Moscow, Izd-vo Nauka, 1964, 67-74

TOPIC TAGS: carbens, carbene analog, organometallic compound, carbenoid, silicoorgani compound, cyclopentane derivative, chlorosilane

ABSTRACT: An extremely simple method is described for the preparation of carbenes, involving the direct reaction of lithium with di- and polyhalomethanes or their aryl(alkyl) derivatives in a medium of tetrahydrofuran at a temperature of -40 to +40C. Some of the carbenes formed under these conditions were utilized for the preparation of monomer and polymer products. A new general method has been developed for the preparation of aryl- and vinylsubstituted silicocyclopentanes (yields up to 75-80%), which consists of reacting dichlorosilanes and alkali metals in the presence of aryl-ethylenes or conjugated dienes in

Card 1/2

L 22659-65
ACCESSION NR: AT5002112

a medium of inert polar solvents. Along with the silicocyclopentanes, all reactions led to the formation of the corresponding organo-silicon polymers with silicon atoms in the main chain; the yields were up to 80-90%. Such polymers, but having a cross-linked structure, were also the main products in the reaction of alkali metals with trichlorosilanes and $SiCl_4$ in the presence of arylethylenes or 1,3-dienes. The indicated reaction can also be applied to similar organo-halides of other elements in groups III--V. Orig. art. has: 1 table and 10 formulas.

ASSOCIATION: None

SUBMITTED: 30Jul64 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 009 OTHER: 013

Card 2/2

ACCESSION NR: AP4037241 S/0062/64/000/005/0840/0844

AUTHOR: Nefedov, O. M.; Manakov, M. N.

TITLE: Reaction of dialkyl(aryl)dichlorosilanes with alkali metals in the presence of conjugated dienes.

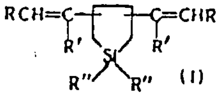
SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 5, 1964, 840-844

TOPIC TAGS: dialkyldichlorosilane, diaryldichlorosilane, reaction, conjugated diene, divinyl substituted silicacyclopentane, unsaturated silicon containing polymer, silicacyclopentene, production

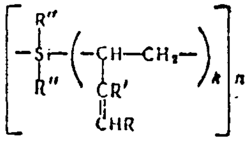
ABSTRACT: Continuing their earlier works (Izv. AN SSSR Otd. khim. n. 1961, 1717; 1962, 1228) the authors investigated the reaction of dialkyl(aryl)dichlorosilane and conjugated dienes with alkali metals in tetrahydrofuran. A mixture of 0.2 M dichlorosilane (dimethyl-, diethyl- or diphenyldichloro-silane), 0.4 M diene (divinyl, isoprene, piperylene) and 4.5 gm Li or 12 gm Na was reacted for 0.5-1 hour at about 30C in 50-200 ml absolute tetrahydrofuran under dry nitrogen. The product was filtered and the filtrate vacuum fractionated (0.2-0.5 mm hg). Three types of products, whose relative yield depends on the initial reagents and

ACCESSION NR: AP4037241

reaction conditions, (see Table) were formed: I--divinyl substituted silicacyclopentanes, 10-50% yield; II--unsaturated silicon hydrocarbon polymers with Si atoms in the main chain, molecular weight of 1000 or more; and III--silicacyclopentenes, 0-10% yield.

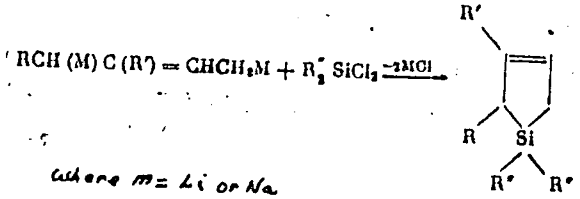


(I)



(II)

where R = H, CH_3; R' = H, CH_3; R'' = CH_3, C_2H_5, C_6H_5.



(III)

where m= Li or Na

ACCESSION NR: AP4037241

Initial Reagents			Reaction Products					
Dichlorosilane	Diene	Metal	Silicacyclopentene (III)		Silicacyclopentane (I)		Polymer (II)	
			Yield		Yield		Yield	Molecular Weight
			gm	%	gm.	%	gm.	
1 $(CH_3)_2SiCl_2$	Divinyl	Lithium	Traces	-	3-4.7	9-14	22-23	
2 $(CH_3)_2SiCl_2$	Isoprene	Lithium	Traces	-	10.0	26	22.5	950,1060
3 $(CH_3)_2SiCl_2$	Piperylene	Lithium	0	0	Traces	-	32	
4 $(C_2H_5)_2SiCl_2$	Isoprene	Lithium	Traces	-	21.6	49.5	16.5	920,810
5 $(C_2H_5)_2SiCl_2$	Isoprene	Sodium	2.7	9	6.9	15.5	23	
6 $(C_6H_5)_2SiCl_2$	Piperylene	Lithium	2.1	7	6.2	14	31	1770,1480
7 $(C_6H_5)_2SiCl_2$	Isoprene	Lithium	Traces	-	8.0	12.5	36	

Orig. art. has: 3 formulas, 2 tables.

ACCESSION NR: AP4037241

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

SUBMITTED: 26Oct62

ENCL: 00

SUB CODE: OC

NO REF SOV: 004

OTHER: 004

Card 4/4

NEFEDOV, O.M.; MANAKOV, M.N.; PETROV, A.D.

Mechanism of the formation of aryl-substituted silacyclopentanes from organodichlorosilanes, styrenes, and lithium. A new method of preparation of substituted disilacyclohexanes. Dokl. AN SSSR 154 no.2:395-397 Ja'64. (MIRA 17:2)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
2. Chlen-korrespondent AN SSSR (for Petrov).

NEFEDOV, O.M.;MANAKOV, M.N.

Formation of reactions of silylenes, silicon analogs of carbenes. Zhur. ob. khim. 34 no.7:2465-2467 Jl '64
(MIRA 17:8)

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

MANAKOV, Nikolay Aleksandrovich; SHCHERBAKOVA, G.A., red.; VODOLAGINA, S.D., tekhn.red.

[Unified State plan for the development of the national economy and the balance of the economy] Edinyi gosudarstvennyi plan razvitiia narodnogo khoziaistva i balans narodnogo khoziaistva. Izd-vo Leningr.univ., 1959. 48 p. (MIRA 12:6)

(Russia--Economic policy)

MANANOV, N.G., inzh.

Determining the humidity and stability of soils in a small device for standard stabilization. Avt. dor. 26 no.5:27 My '63. (MIRA 16:7)

(Soil—Testing)

IVANOV, Fedor Mikhaylovich; VINOGRADOVA, Ol'ga Aleksandrovna;
MANANOV, Niyazbek Gabdianovich; YEGOROV, V.P., red.

[Manual for the research worker in road materials]
Spravochnik laboranta-dorozhnika. Moskva, Transport,
1964. 198 p. (MIRA 17:8)

MANSHILIN, V.V.; AGAFONOV, A.V.; MANAKOV, N.Kh.; VASILENKO, V.P.; MASLOV, I.Ya.; KNYAZEV, V.S.; STEPANENKO, I.A.; Prinimali uchastiye: VAYL', Yu.K.; NEMETS, L.L.; BELOUSOVA, I.V.; STOLYARENKO, Ye.G.; YEMEL'YANOV, A.A.; RYABOV, V.M.; BEREZOVSKIY, V.D.; ZEFIROVA, Ye.G.; CHELOGUZOVA, Ye.F.; SOLOTSINSKIY, S.Ye.; BOL'SHAKOVA, K.A.; KHRAMOV, A.Ye.

Catalytic cracking of raw heavy distillates on a microspheric catalyst of Troshkovskiy clay. Khim. i tekh. topl. i masel. 8 no.3:1-6 Mr '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.
(Cracking process) (Catalysts)

SOV/65-59-4-5/14

AUTHORS: Agafonov, A.V., Basov, A.N., Manakov, N.Kh. and Manshilin, V.V.

TITLE: Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst (Kombinirovannaya ustanovka pryamoy peregonki nefti i kataliticheskogo krekinga ostatochnogo syr'ya na mikrosfericheskom prirodnom katalizatore)

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1959, Nr 4, pp 25-31 (USSR)

ABSTRACT: Petroleum refineries have to process asphalt-tar substances of petroleum which can be extremely difficult. Processing methods hitherto applied use high temperatures (above 450°C) at high or low pressures. A high yield of tarry residues and poor quality gasoline or distillate fractions and petrols of low quality and also hard residues in the form of petroleum coke are obtained by thermo-cracking. The temperature is an important factor during thermal destructive processes. It has been found that temperatures should be selected to give fractions with octane numbers exceeding 70 and that the cetane

Card 1/4

SOV/65-59-4-5/14

Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst

number of the diesel fuel fraction should not exceed 42 to 43. The VNII NP have developed an economical catalytic destructive process for the treatment of residual petroleum crudes which makes it possible to obtain high grade gasoline and diesel fuels in industrial quantities. The process was tested under laboratory, pilot plant and industrial conditions. The VNII NP is, in collaboration with the Giproneftezavod Institute, at present designing two plants where the simultaneous fractional distillation and catalytic cracking of the petroleum crude can be carried out, one with an annual capacity of 2 million tons and a second of 3 million tons. The lay-out of both factories will be the same as is shown in Fig 1. The asphalt-tar substances will be subjected to the direct action of aluminium silicate catalysts which will be sufficiently active to ensure decomposition of the high molecular petroleum fractions (boiling above 530 to 550°C). The light gas-oil fractions of the petroleum will not be decomposed and the cetane number of the diesel fuel

Card 2/4

SOV/65-59-4-5/14

Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst

fraction, obtained during the process, should be 42 to 43 or higher. The newly-formed fraction of the gasoline should have an octane number of 76 to 78 and above. The crude petroleum or fuel oil can be directly supplied into the reactor. Various further improvements in the process are described. The percentage composition of the end product obtained on a natural microspherical catalyst in an industrial plant is given, as well as experimental data, obtained by VNII NP during 1958, on fuel oil subjected to catalytic cracking on a pilot plant. The coke deposited on the catalyst can be separated by roasting at a temperature of about 600°C; the importance of the catalyst is discussed. By using pneumatic transport for the catalyst in a highly concentrated current it is possible to decrease the height of the plant and, therefore, to lower construction costs. The regeneration of the catalyst is intensified. The considerable enlargement of the desorption zone in the reactor, and also the creation of a counter-current

Card 3/4

SOV/65-59-4-5/14

Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst

desorption zone in the regenerator for degasification and activation of the regenerated catalyst, decreases coke-formation and the yield of methane, gives higher grade gasoline and simplifies the further separation of cracking gases. Practically all the heat, generated by burning the coke and other component gases, is utilised. These vapours are used as power and also for desorption or for heating. The plant is also equipped for utilising the effluents. Comparative technical and economical characteristics are listed in a table. The authors also refer to a relevant article by Sherwood which was published in "Petroleum", 1959, Nr 2. There are 2 figures, 1 table and 1 English reference.

Card 4/4

S/065/62/000/006/004/007
E194/E436

AUTHORS: Lanshilin, V.V., Minakov, N.Kh., Agafonov, A.V., Vasilenko, V.P., Maslov, I.Ya., Knyazev, V.S.

TITLE: Testing of engineering development of a new system for fluid catalytic cracking

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.6, 1962, 41-50

TEXT: To prevent spontaneous afterburning of carbon monoxide and other combustible gases which can occur in the regenerators of fluid catalytic crackers, damaging the cyclone and causing other faults, the regenerator temperature is kept below 600°C, though in many respects it would be advantageous to raise it to 650°C. To achieve this the free oxygen content of the gas in the regenerator must be reduced by raising the level of coking of the catalyst, by greatly improving the contact between air and catalyst or by a combination of these two methods. A regenerator which achieves this combined effect is the main feature of the system here described. The construction of a pilot plant reactor unit which includes the reactor, a turbulent scrubber, a regenerator and two pneumatic catalyst transport lines is

Card 1/3

S/065/62/000/006/004/007
E194/E436

Testing of engineering ...

described. The regenerator is a vertical cylinder with fireproof lining of 1400 mm internal diameter; it has a three stage cyclone in the upper part. Within the zone of the fluid bed is an inner hollow steel cylinder 600 mm diameter containing cooling coils with air distribution arrangements. The spent catalyst is delivered to the annular zone of the regenerator and, under conditions close to those of ideal mixing, sufficient coke is burned to maintain the temperature in this zone at about 600 °C. Because of the intensive mixing there is little local overheating. Combustion of the coke is completed in the control zone and the temperature of the catalyst leaving the lower part of the zone for the reactor can be controlled by the cooling coil. The regeneration process is split into these two stages to improve combustion of the coke. Most of the coke is removed in the first zone, where the mean content of coke on the catalyst is high, the combustion being intensified by the counter current conditions and most of the oxygen used up. Operating conditions are given for the various parts of the unit and the results obtained provide all the necessary data for designing full-scale industrial plant with

Card 2/3

Testing of engineering ...

S/065/62/000/006/004/007
E194/E436

reactor and regenerator at the same high level using pneumatic transport of (PVK). The two-stage and three-stage cyclones in the reactor and regenerator respectively gave satisfactory retention of catalyst dust and returned it to the fluid bed. There are 5 figures and 5 tables.

ASSOCIATION: VNII NP

Card 3/3

VASILENKO, V.P.; MANSHILIN, V.V.; MANAKOV, N.Kh.

Pneumatic-tube transportation by a high concentration flow.
Khim.i tekh.topl.i masel 7 no.7:1-4 Jl '62. (MIRA 15:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.
(Pneumatic-tube transportation)
(Cracking process—Equipment and supplies)

GREKOVA, A.M.; MANAKOV, N.Kh.; MANSHILIN, V.V.

Some hydrodynamic properties of a fluidized bed of powdered catalysts. Khim.i tekh.topl.i masel 8 no.1:4-10 Ja '63.
(MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.
(Fluidization) (Catalysts)

MANSHILIN, V.V.; MANAKOV, N.Kh.; VASILENKO, V.P.; VAYL', Yu.K.

Longitudinal mixing of components of the gas phase in a fluidized bed of aluminosilicate catalysts. Khim. i tekh. topl. i masel 8 no.7:30-35 Jl '63. (MIRA 16:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.
(Aluminosilicates) (Fluidization)

GREKOVA, A.M.; NEMETS, L.L.; MANSHILIN, V.V.; MANAKOV, N. Kh.

Using a hydrocyclon as a thickener for suspensions of very low concentrations. Khim i tekh. topl. i masel 7 no.10:46-51 O'62
(MIRA [illegible])

MANAKOV N.N.

TIKHONOV, G.V., vetvrach; MANAKOV, N.N., zootekhnik; MATVEYEV, A.A., vet. fel'dsher.

Eliminating fascioliasis and dictyocaulosis from sheep on the stock farm. Veterinariia 35 no.4:49-50 Ap '58. (MIRA 11:3)

1. Vologodskiy veterinarnyy tekhnikum (for Tikhonov). 2. Kolkhoz "Krasnoye znamya" (for Manakov, Matveyev).
(Sheep--Diseases and pests)

MANAKOV PETR PAVLOVICH

MANAKOV, Patr Pavlovich; MIKHAYLICHENKO, B., redaktor; NEDOVIZ, S., tekhnicheskiy redaktor

[Innovation in machining of cutting tools] Nove v obrobtsi rizal'noho instrumenta. L'viv, Knyzhkovo-zhurnal'ne vyd-vo, 1956. 25 p. (MLRA 10:9)

1. Golovniy inzhener L'vivs'kogo instrumental'nogo zavodu (for Manakov)

(Cutting tools)