

NIKIREYEV, V.M. (Moskva)

Designing momentless slanting shells for permanent vertical loads. Stroi.mekh.i rasch.soor. 1 no.6:1-9 '59.

(MIRA 13:4)

(Elastic plates and shells)

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S/124/62/000/001/036/046
D237/D304

24.4200

AUTHOR: Nikireyev, V. M.

TITLE: Calculating multimembered sloping shells under a vertical load

PERIODICAL: Referativnyy zhurnal, Mekhanika. no. 1, 1962. 7, abstract 1V43 (Stroit. mekhan. i raschet sooruzh., 1961, no. 1, 7-14)

TEXT: The calculation is made of a sloping roof as a system of convex, zero-moment shells with diaphragms attached along the lines of contact and absolutely rigid in their planes. Two cases of uniformly loaded roof are considered, one with load uniform over the whole surface, and the other with the load on one middle unit. Poisson's coefficient is assumed to be equal to zero. Formulas for stresses satisfying the basic equations of the problem and boundary and contact conditions are based on the earlier work (Stroit. mekhan. i raschet sooruzh., 1959, no. 6, 1-9-

✓B

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Calculating multimembered...

S/124/62/000/001/036/046
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RZhMekh, 1960, no. 12, 16581). Expressions for stresses give the geometrical relations of the shell in the plane for which this shell can be considered as isolated. The solution is given for two cases of supporting the shell with a rectangular plane. Limits are determined of applicability of the zero-momentum theory for calculating a sloping transfer shell. [Abstracter's note: Complete translation.]

B

Card 2/2

NIKIREYEV, V.M.

Conference on three-dimensional precast reinforced concrete
elements. Stroi.mekh.i rasch.soor. 5 no.2:49 '63.

(MIRA 16:t)

(Precast concrete—Congresses)

NIKIFUMOVA, Ye.V., vrach-ekspert

Importance of some hemodynamic indexes for disability evaluation
of patients with bronchiectasis. Trudy LIETIN 2:90-96 '59.

(MIRA 13:7)

(DISABILITY EVALUATION) (BRONCHIECTASIS) (BLOOD-CIRCULATION)

MILWAUKEE, Wis.

Breaking news...
member... vest... no...

S/020/61/136/001/03A/037
B004/B056

AUTHORS: Mardaleyshvili, R. Ye., Popov, A. G., Nikisha, V. V., and Yakushin, F. S.

TITLE: On Two Types of Elementary Reactions in the Catalytic Hydrogenation of Olefins

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 151-152

TEXT: A paper by N. N. Semenov, V. V. Vovodskiy, and F. F. Vol'kenshteyn (Ref. 1) gave rise to the present investigation. In the former it was assumed that the free valences upon solid surfaces lead to the formation of so-called surface radicals. These cause heterogeneous catalysis. The authors completed this assumption by assuming formation of two types of radicals: $C_2H_4 + 2cat \rightleftharpoons \underset{\substack{| \\ cat(a)}}{CH_2}-\dot{C}H_2 + cat \rightleftharpoons \underset{\substack{| \\ cat}}{CH_2}-\underset{\substack{| \\ cat}}{CH_2} \quad (1);$

$\underset{\substack{| \\ cat}}{CH_2}-\dot{C}H_2 + \dot{H} \rightleftharpoons \underset{\substack{| \\ cat}}{CH_2}-CH_2 \rightleftharpoons \underset{\substack{| \\ cat(b)}}{CH_2}-\dot{C}H_2 \quad (2).$ The radicals (a) are bound to the catalyst (cat) by two electrons, the radicals (1) by one electron only.

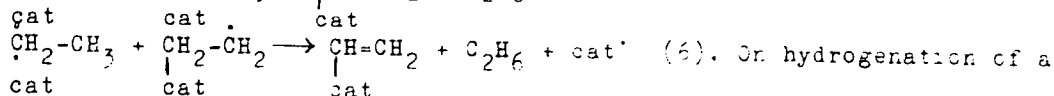
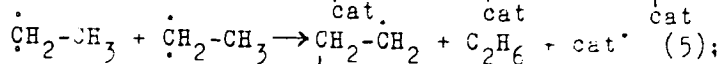
Card 1/6

On Two Types of Elementary Reactions in the Catalytic Hydrogenation of Olefins

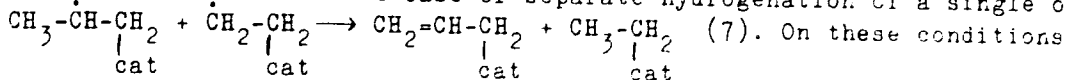
S/020/61/136/001/034/137
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The latter recombine with hydrogen according to the scheme $\dot{C}H_2-CH_3 + H \rightarrow C_2H_6 + 2cat'$ (3). However, also disproportionation processes

should occur besides the processes mentioned, if the assumption of surface radicals is correct: $\dot{C}H_2-CH_2 + \dot{C}H_2-CH_2 \rightarrow \dot{C}H_2-CH_3 + CH=CH_2$ (4);



On hydrogenation of a mixture of two olefins, such a disproportionation would lead to products which do not occur in the case of separate hydrogenation of a single olefin:



On these conditions the following predictions are made: 1) In the case of joint hydrogenation of ethylene and propylene, the ratio w_{32}/w_{23} of the initial reaction rates

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On Two Types of Elementary Reactions in the Catalytic Hydrogenation of Olefins

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B054/B056

will be smaller than w_3/w_2 (ratio of the initial rates in the case of separate hydrogenation of the two olefins). 2) The difference between w_{32}/w_{23} and w_3/w_2 will decrease with increasing hydrogen pressure because then recombination of the surface radicals with hydrogen atoms will be the chief process. 3) The greatest difference between w_{32}/w_{23} and w_3/w_2 must be observed at low temperatures, at which olefin concentration on the catalyst is higher than in the case of high temperatures, and therefore the portion of disproportionations will increase. In order to check these assumptions, joint hydrogenation of ethylene and propylene was carried out in a circulation device with electrically heated platinum wire as catalyst. Reaction was studied by means of a pressure-gauge (measurement of pressure variations in the system) and mass-spectroscopic analysis of the reaction products. The experiments were performed at 525 mm Hg, a ratio of olefins: hydrogen = 1 : 1 to 1 : 20, in the temperature range of 0 - 280°C. The results are presented in Table 1. They confirm the assumptions and predictions made by the authors. Two types of reactions occur on olefin hydrogenation, namely recombination and disproportionation.

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On Two Types of Elementary Reactions in the
Catalytic Hydrogenation of Olefins

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B004/B056

Besides, the results may be taken a proof of the existence of surface
molecules. There are 3 figures, 1 table, and 7 references: 2 Soviet,
8 US, 5 British, and 1 Japanese.

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

PRESENTED: July 14, 1960 by N. N. Semenov, Academician

SUBMITTED: July 7, 1960

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S/020/61/136/001/034/037
 BOC4/B056

Table 1 Таблица 1

№№ опытов 1)	H ₁	C ₁ H ₁	C ₂ H ₁	ω ₁	ω ₂	ω	ω _{тп}	ω _{ст}	ω ₁ ω ₁	ω ₂₁ ω ₂₁	ω ₂₂ ω ₂₂	ω ₂₃ ω ₂₃	ω ₂₄ ω ₂₄	2ω ω ₁ + ω ₂
46	25	25	25	0,45	0,68				1,46	0,32	0,90	0,22		1,06
26	25	25	25	0,85	0,50	0,445	0,145							
11 с	25	25	25	0,05	1,00	0,645	0,355		1,00	0,55	0,68	0,375		1,05
7	50	25	25	1,87	1,45	1,65	1,00	0,85						
5 с	50	25	25	2,85	1,62	2,10	1,26	0,81	0,508	0,66	0,44	0,52		0,94
19	100	25	25	3,75	1,90				0,508					
22	100	25	25	3,90	1,90									
20 с	100	25	25	1,90	2,85	1,65	1,20		0,487	0,73	0,423	0,63		0,98
31	150	25	25	2,80	1,35	2,00	1,16	0,835	0,482	0,72	0,415	0,617		0,96
70	150	25	25	1,06	0,56				0,471	0,79	0,45	0,637		1,04
11 с	200	25	25		0,84	0,484	0,356							
18	200	25	25											
23	200	25	25											
15	250	25	25											
32	250	25	25											
9 с	270	25	25											
43	350	25	25											
46	350	25	25											
45 с	350	25	25											
37	500	25	25											
39	500	25	25											
10 с	500	25	25											

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BC04/B056

Legend to Table 1. 1) Number of the experiment; 2) torr; 3) torr/min.

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S/137/61/000/012/037/149
A006/A101

AUTHORS: Yevstyukhin, A.I., Leont'yev, G.A., Nikishanov, V.V.

TITLE: Arc melting of refractory metals and alloys under laboratory conditions

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 19, abstract 120137 (V sb. "Metallurgiya i metalloved. chist. metallov", no. 1, Moscow, 1959, 106 - 121)

TEXT: The authors describe the design of a laboratory arc-melting furnace, suitable for remelting Zr and the production of its alloys. In this furnace it is possible to perform melting with both consumable and non-consumable electrodes, on a-c or d-c (the latter is preferable because of the arc stability in this case). An inspection of the mechanical properties of Zr and Cr specimens produced showed very slight contamination of the metal during melting (up to 0.01% W and 0.03% Cu). The furnace is equipped with a hermetic melting chamber with a water-cooled Cu-crucible. A power connection with a non-consumable tungsten electrode is top supplied to the chamber; its motion does not disturb the hermeticity of the chamber. The crucible has exchangeable bottoms to obtain different

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Arc melting of refractory metals ...

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A006/A101

shapes of castings. Cooling of the chamber conductor and crucible is regulated. The displacement of remelted metal during melting with a non-consumable electrode is carried out with the aid of manipulators. The arc ignition is performed with the aid of a spark generator. A table is presented showing the duration of melting depending on the weight and shape of the specimen; the order of the melting process is described; means of absorbing the gases, liberating inside the chamber, are analyzed. ✓

L. Povedskaya

[Abstracter's note: Complete translation.]

Card 2/2

GRUZIN, P.L.; YEVSTYUKHIN, A.I.; ZEMSKIY, S.V.; NIKISHANOV, V.V.

Investigating the redistribution of sulfur during the local
melting of chromium in arc furnaces. Met. 1 metalloid.
hist. met. no. 2:276-279 '60. (MIRA 13:12)
(Chromium--Metallography) (Sulfur--Isotopes)

S/137/62/000/006/050/163
A006/A101

AUTHORS: Yevstyukhin, A. I., Nikishanov, V. V. Milov, I. V.

TITLE: Niobium zone melting by the arc method

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 17, abstract 6G133
(In collection: "Metallurgiya i metalloved. chist. metallov", no. 3,
Moscow, Gosatomizdat, 1961, 152 - 162)

TEXT: A unit was designed and tested, intended for zone melting of refractory metals by the electric-arc method. Zone melting was carried out with 5 specimens, 230 mm long, and 15 mm in diameter; the zone width was 20 mm. The speed of the zone motion was 0.5 mm/sec for all the specimens. The number of zone passes was different and equal to 16, 32, 32, 64 and 128 passes respectively. A chemical analysis of the specimens subjected to zone melting at 0.5 mm/sec zone motion speed shows that there is no substantial refining of Nb from Si, Ti, Fe. Pb admixtures were concentrated after refining in the end section. The refining effect increased with a greater number of passes. The coefficient of C distribution in Nb is more than one, i. e. C is concentrated in the initial portion

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Niobium zone melting by the arc method

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of the ingot and moves opposite to the zone motion. There are 7 references.

G. Svodtseva

[Abstracter's note: Complete translation]

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S/137/62/000/006/017/163
A006/A101

AUTHORS: Yevstyukhin, A. I., Milov, I. V., Nikishanov, V. V.

TITLE: Electron-beam method of metal melting and refining

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 1, abstract 607
(In collection: "metallurgiya i metalloved. chist. metallov", no. 3,
Moscow, Gosatomizdat, 1961, 249 - 263)

TEXT: The authors review the principles of developing and designing of
units with electron-beam heating, used for melting, zonal refining of refractory
metals and welding pure metals. The difficulties are pointed out which are en-
countered in the way of development of this method.

G. Svodtseva

[Abstracter's note: Complete translation]

Card 1/1

S/755/61/000/003/025/027

AUTHORS: Yevstyukhin, A.L., Milov, I.V., Nikishanov, V.V.

TITLE: Electron-beam equipment of the type MIFI-9-4 for the melting and zone refining of metals.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallove-deniye chistykh metallov. no.3. 1961, 264-276.

TEXT: The paper describes the design and construction of a laboratory equip-ment for the melting and zone refining of metals by means of an electron beam, and substantiates its suitability for a number of scientific investigations and for the smelting of control specimens of pure metals and alloys, all of which are of especial value in nuclear-power production, semiconductor electronics, and the making of heat-resistant and refractory alloys. Fast-electron heating with a deep vacuum (10^{-6} torr) above the melt is conducive to fast and complete evaporation of volatile impurities. The electron beam is uniquely effective in the remelting of such metals as Mo, W, Zr, V, Be, Cr, Fe, Nb, and Ta. Its power requirements are negligibly small, and the purity achieved is extremely high. Design target: Construction of a powerful lab equipment with a fairly low accelerating potential (up to 10 kv) and great emission current (up to 5 a), which is safe (small emission of γ -radiation)

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Electron-beam equipment of the type ...

S/755/61/000/003/025/027

up to its maximum power. An extremely high vacuum (exceeding that of existing metallurgical furnaces and any hitherto described in literature) was achieved by using a sorption pump with a Ti sorbent. The equipment (photograph and 5 cross-sectional drawings shown) comprises a vacuum melting chamber, the evacuating system, the high-voltage rectifier, the electron-beam power supply, the control desk, and mechanisms for the rotation of the annular crucible for zone melting and for the lowering of the ingot. Each of these components is depicted and described in detail. Three crucibles were designed: One for the smelting of small rod-shaped or oblate muffin-shaped ingots, another for the zone melting of metals, and a third for the smelting of cylindrical ingots. The mechanical details of the crucibles, provisions for the getter, the manipulator, and the reversible 3-phase rotor equipment are shown and explained. The provision of special speed reducers for the slow rotation of the crucible, ranging in 7 steps from 1/31.4 to 1/3,550 rpm, slow linear speeds from 10 to 0.089 mm/min, and gear-train values from 44,000 to 4,400,000, is described and illustrated. The electron gun can be raised and lowered 80-100 mm. The electron-gun displacement mechanism consists of two control handles, placed symmetrically with respect to the axis of the chamber, and the electron-gun lift mechanism. The pass hinges of the handles are rendered airtight by means of bellows. Any one electron-gun position can be locked. The evacuation system comprises a vacuum aggregate VA-2-3 with an oil-vapor diffusion pump

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Electron-beam equipment of the type ...

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capable of 1,200 liters/sec at 10^{-4} - 10^{-5} torr and a VN-1 backing pump. At 10^{-5} torr the sorption pump (illustrated in cross-section) is engaged. Iodide Ti on a W core serves as the sorbent. The Ti wire is 1.5-mm diam and 400 mm long; it is heated to 1,300-1,350°C to produce a Ti evaporation rate of 7 mg/min. The hardest vacuum attainable is $5 \cdot 10^{-8}$ torr. The electrical equipment consists of a powerful high-voltage rectifier and a heating equipment. The rectifier includes six gas-filled BR-237 (VG-237) rectifier tubes, a starting device, and a transformer. The circuitry of the 3-phase star-connected rectifier, yielding a 6-phase pulsation wave, is shown. The 2-stage pre-heat and full-voltage automatic starting procedure is described. The stabilizing resistor network, intended to forestall any arc discharges, is described. There are 8 figures and 14 references (7 Russian-language Soviet, 4 Russian-language translations of English-language originals, 1 French, and 2 English-language).

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

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S/180/62/000/003/013/016
E071/E192

AUTHORS: Yevstyukhin, A.I., Nikishanov, V.V., and Milov, I.V.
(Moscow)

TITLE: Redistribution of carbon and tungsten in niobium
during zone refining

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye
tekhnicheskikh nauk. Metallurgiya i toplivo,
no.3, 1962, 98-101

TEXT: Commercial niobium was zone refined in a 500 amp
arc discharge working closely to its transition into glow
discharge by operating at low helium pressures and imposing a
coaxial constant magnetic field, shifting a 15 mm long molten
zone at a constant velocity of 0.75 mm/min. Into one niobium
ingot with the initial carbon content of 0.03%, 0.005% of C¹⁴ and ✓
into another with tungsten content of 0.03%, 0.01% of W¹⁸² were ✓
introduced to follow the zone refining. The isotopes were
introduced into a few holes uniformly distributed along the length
of the ingots and plugged with Nb. Uniform diffusion was
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Redistribution of carbon and tungsten.. S/180/62/000/003/013/016
E071/E192

indicating that carbon has a smaller influence on the hardness of niobium than other admixtures which concentrate at the beginning of the ingot. It is concluded that the C and W content in commercial grade Nb can be considerably reduced by zone refining. There are 2 figures.

SUBMITTED: September 23, 1961

Card 3/3

YEVSTYUKHIN, A.I.; NIKISHANOV, V.V.; MILOV, I.V.

Zonal refining of niobium by the electric arc method. Issl. po
zharopr. splav. 9:218-226 '62. (MIRA 16:6)
(Niobium—Electrometallurgy) (Zone melting)

ACCESSION NR: AT4005961

S/2755/63/000/004/0069/0083

AUTHOR: Yevstyukhin, A. I., Nikishanov, V. V., Milov, I. V.

TITLE: Distribution of impurities in zone refined niobium

SOURCE: Moscow. Inzhenerno-fizicheskiy Institut. Metallurgiya i metallovedeniye chisty*
kh metallov, no. 4, 1963, 69-83

TOPIC TAGS: niobium zone refining, niobium zone melting, niobium impurity, impurity
distribution, impurity transfer, impurity accumulation, impurity elimination, niobium
zone melting, zone refined niobium, high impurity niobium

ABSTRACT: Following a brief discussion of the theoretical basis of zone refining, in
which the authors classify the impurities in Nb on the basis of their solubility properties
and point out that W should move in the opposite direction from C, Fe and Pb, they report
experiments in which the distribution of C14, Fe59, W182 and nonradioactive Pb was
determined in bars of commercially pure niobium (230 mm long and weighing 150 g)
after zone recrystallization in an electric arc furnace (500 amps., 24.5 volts). The bars
were smelted in a helium atmosphere in Cu crucibles, with a zone length of 25 mm and a
rate of 0.75 mm/min. (also 30 mm/min. for Pb). The results shown in Figs. 1-4 of the

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ACCESSION NR: AT4005961

Enclosure confirmed the theoretical expectations and revealed good agreement between the radioactive and chemical techniques. Thus, the distribution coefficients of C, Fe and Pb were less than 1.0, while that of W was greater than 1.0; the concentration gradients between the beginning and end of the refined bar were 1:8 for C (best purification in zone 3-4), 1:5 for Fe and Pb, and 3.1-4.65:1 for W (Accumulation of W in the bottom of the bar). Due to the high solubility of Pb in Nb, evaporation plays a significant role here, this being the reason why purification is more effective at 0.75 than at 30 mm/min. Orig. art. has: 7 tables and 8 figures.

ASSOCIATION: Inzhenerno-fizicheskiy institut, Moscow (Institute of Physics and Engineering)

SUBMITTED: 00

DATE ACQ: 17Jan64

ENCL: 04

SUB CODE: MM

NO REF SOV: 013

OTHER: 020

-2/6

Cards

ACCESSION NR: AT4005968

S/2755/63/000/004/0175/0181

AUTHOR: Milov, I. V.; Skorov, D. M.; Nikishanov, V. V.

TITLE: Mechanical properties of zone refined beryllium

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chisty*kh metallov, no. 4, 1963, 175-181

TOPIC TAGS: beryllium zone refining, beryllium property, beryllium micro-hardness, beryllium ductility, high purity beryllium, zone refined beryllium, beryllium zone melting, beryllium purification, beryllium mechanical property, beryllium

ABSTRACT: Wide application of beryllium as a structural material is limited because of its brittleness at room temperature. There are several techniques currently being tested for the production of plastic beryllium:

- (1) hot working of ingots, aimed at a certain orientation of crystallites;
- (2) alloying, aimed at fixation of the beta phase having a cubic lattice;

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ACCESSION NR: AT4005968

- (3) grain refinement to 25 microns by powder-metallurgy processes;
- (4) purification by distillation, thermal decomposition of halides, and zone recrystallization.

Beryllium ingots were zone refined in a water-cooled copper crucible by the inert gas electric arc method, applying a zone propagation velocity of 0.75 mm/min. A columnar growth of grains was observed directly from the bottom and walls of the cooled crucible toward its axis and bending in the direction of the path of zone propagation. The length of the obtained grains reached 40-45 mm at a cross section of 2x3 mm. X-ray evidence did not disclose a clearly defined crystallographic orientation. Micro-hardness measurements, conducted at surfaces cut at right angles to the ingot axis, revealed that micro-hardness increases along the ingot in the direction of applied zone propagation. On the basis of micro-hardness measurements and crystallographic evidence, it was concluded that the basal plane, with small deviations, is oriented in the ingot at right angles to the direction of grain growth. This conclusion also confirmed the results of X-ray investigations.

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Specimens for compression tests, 7mm in diameter x 9mm long, were prepared from different regions of the zone refined ingots, choosing for the specimens a similar grain orientation. Beryllium plasticity is strongly dependent on preferred grain orientation and grain size. Basal planes (0001) in the test specimens were inclined approximately 50° with respect to their axes. Prepared specimens were compression tested on the recording type testing machine (TsNIITMASH-I) with a capacity of 4000 kg. The stress-strain curves obtained were similar to compression curves of plastic metals. The following mechanical properties were determined by compression testing of specimens taken from different locations along the ingot, and from ingots subjected to different numbers of zone refining passes: ultimate compressive strength, ultimate longitudinal strain, yield strength, longitudinal strain at yield stress. Specimens which have been cut from the zone-travel-starting-end, exhibited the greatest strength and ductility. The zone-travel-starting-end contained beryllium of higher purity, and the impurities migrated in the direction of zone propagation. It was concluded that strength and ductility of beryllium decreased with an increase of impurities content. It was observed that some of the failed test specimens were somewhat twisted around their axis. Difficulties arose in the investigations of deformation and plastic properties of polycrystalline beryllium when directions of grain growth during recrystallization were curvilinear in the

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ACCESSION NR: AT4005968

ingot. Investigation of the deformation mechanism on specimens exhibiting a normal grain growth was suggested. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Inzhenerno - fizicheskiy institut, Moscow (Engineering - Physics Institute)

SUBMITTED: 00

DATE ACQ: 17Jan64

ENCL: 00

SUB CODE: *MM, IC*

NO REF SOV: 004

OTHER: 004

Card

4/4

18(4)

AUTHORS: Sharov, M. V., Nikishayeva, O. I. SOV/163-59-1-13/50

TITLE: Degassing of Aluminum-Silicon Melts With the Help of Fluxing Agents (Degazatsiya alyuminiyevokremniyevykh splavov pri pomoshchi flyusov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 58-62 (USSR)

ABSTRACT: This is an examination of the opportunities of using degassing fluxing agents in pot furnaces and in radiation furnaces intended for the melting of cast iron alloys. The results were also checked under operation conditions. The experiments were conducted with the alloy AL-10V, which is widely used in piston production. At the beginning of each experiment hydrogen at a rate of 0.8 - 0.9 cm³/100 g was introduced into the melt. The hydrogen content was measured with an instrument developed by A. P. Gudchenko. Three fluxing agents were investigated: Nr 1, with 47% of KCl + 30% of NaCl + 2% of Na₃AlF₆, Nr 2, with 50% of KCl + 40% of NaCl + 7% of Na₃AlF₆ + 3% NaF, and Nr 3 with K₂ZrF₆. The method applied in the experiments and that applied in the tests on a production

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Degassing of Aluminum-Silicon Melts With the Help
of Fluxing Agents

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scale are described. The experiments lead to the following conclusions: 1) If the alloy AL-10V in a liquid state is treated with the fluxing agents in question degassing proceeds to a sufficient degree if the melting is done in pot furnaces. The fluxing agents Nr 1 or 2 are added in a quantity of 0.2% of the alloy weight. The total time required for the treatment with the fluxing agents depends on the depth of the bath and is 2-3 hours on the average. 2) For the production of steel free from blowholes a treatment of the melt with potassium fluozirconate is very effective. The treatment can be limited to a time of 5-7 minutes. 3) If the metal is melted in radiation furnaces with continuous charging, the use of the fluxing agents Nr 1 and 2 leads to a reduction of the hydrogen content in the melt. This reduction is but smaller than if melting is done in pot furnaces. 4) A treatment of the melt with potassium fluozirconate reduces the gas content of the melt by a factor of 2. If degassing is carried out with potassium fluozirconate this salt is added in a quantity of 0.4-0.5% of the melt weight and is kept at the surface of the bath for 10 - 15 minutes at 730-780°.

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Degassing of Aluminum-Silicon Melts With the Help
of Fluxing Agents

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Afterwards the melt is mixed through. In this case the
fluxing agents Nr 1 and 3 are used as a blanket which must
be replaced at least every hour. There are 2 figures, 2
tables, and 1 Soviet reference.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskii institut (Moscow
Aviation Technology Institute)

SUBMITTED: December 10, 1957

Card 3/3

25835

183000A

2508 } only
1087 }

S/536/61/000/049/003/003
E021/E435

AUTHORS: Sharov, M.V., Candidate of Technical Sciences
Nikishayeva, O.I.

TITLE: Degassing of aluminium alloys by hexachlorethane

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskii institut.
Trudy. No.49. 1961. pp.47-72. Voprosy tekhnologii
liteynogo proizvodstva

TEXT: The disadvantages of using chlorine and chlorides for degassing aluminium melts are discussed and the use is recommended of hexachlorethane which is readily available and inexpensive in relation to manganese chloride. Experiments on the degassing ability of hexachlorethane have been carried out on alloys ~~AL2~~ (AL2) and ~~AL9~~ (AL9). Melts of 5.5 kg were prepared in a graphite crucible. Gas contents were measured by the method due to A.P.Gudchenko (M.V.Sharov, A.P.Gudchenko, Fundamental metallurgy of light alloys, p.306, Collection of Papers, Oborongiz, 1957). The hydrogen content before degassing was 0.75 to 0.9 cm³/100 g metal. This was obtained by addition of moist asbestos wads. Samples 50 mm in diameter were cast and plates 3 mm thick were cut from them for radiographic examination. Experiments on AL2 alloy were Card 1/10

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S/536/61/000/049/003/003
E021/E435

Degassing of aluminium alloys ...

carried out at 700 to 710°C. Fig.3 shows the change in hydrogen content (H_2 in $cm^3/100$ g of metal) with increase in quantity of hexachlorethane (%), the analysis being carried out 10 to 15 min after degassing. Radiographic investigations showed that sound castings were obtained with 0.2 to 0.25% hexachlorethane. Experiments showed also that sound sand-castings of modified AL2 alloy could also be obtained if the alloy was first degassed. It was shown that temperature, in the range 700 to 750°C, had no effect on the soundness of AL2 castings. Table 2 shows the effect of degassing time on the hydrogen content by adding a number of portions of hexachlorethane over a period of time using a constant total amount. The best results were obtained when each portion was less than 25 to 30% of the total added. Table 3 shows that hexachlorethane is a more efficient degassing agent than manganese chloride. Radiographs of AL2 alloy after degassing with 0.1% hexachlorethane, or with 0.1% manganese chloride, are reproduced in the paper. Degassing of AL2 alloy was tried under production conditions. It was shown that degassing by hexachlorethane was advantageous both from porosity checks and tests of mechanical properties. Experiments on AL9 alloy showed that the

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Degassing of aluminium alloys ... S/536/61/000/049/003/003
E021/E435

hydrogen content (in $\hat{c}m^3/100$ g metal) decreased with increase in addition of hexachlorethane (%), Fig.7. To produce sound castings 0.7 to 0.75% hexachlorethane was required. Table 6 shows the effect of increasing the degassing time by increasing the number of portions added, using the same total quantity of degassing agent. The best results were obtained when each portion was less than 20% of the total amount. Table 7 shows that for AL9 alloy, with increase in melt temperature there is a decrease in hydrogen content. Experiments on modified AL9 alloy showed that it was practically impossible to obtain sound castings. Tests under production conditions showed that a lower porosity and higher mechanical properties were obtained when hexachlorethane was used as a degassing agent for AL9 alloys. Acknowledgments are expressed to Ye.L.Bibikov, B.A.Tikhomirov and N.M.Galdin for assistance in tests. M.F.Nikitina is mentioned in the paper for her contribution in the field. There are 11 figures, 12 tables and 11 references: 9 Soviet and 2 non-Soviet. The two references to English language publications read as follows:
W.Mannchen, W.Fisher, Metal, 1953, No.6.
Herrman, Aluminium archiv, 1937, No.6.
Card 3/10

S/806/62/000/003/013/018

71500
AUTHORS: Sharov, M. V., Nikishayeva, O. I.

TITLE: Modern methods for the elimination of gaseous porosity in aluminum-silicon-alloy castings.

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniye splavov tsvetnykh metallov. no.3. 1962, 149-162.

TEXT: The paper describes an investigation of the diffusional elimination of H from a melt, the degassing by means of special fluxes (a relatively slow process), and the more effective degassing of Al alloys by means of blowing gases (Cl, N, Ar, or He) through the melt. Of the latter, Cl is the most effective but is little used because of its toxicity. Chlorides (of Mn, Zn, and Al) are effective and nontoxic, but are highly hygroscopic and, hence, require prolonged drying and protection during storage. Hexachloroethane (carbon trichloride (C_2Cl_6)) appears to be effective and nonhygroscopic. At melt temperature the following reaction appears to occur: $3C_2Cl_6 + 2Al = 2C_2Cl_4 + 2AlCl_3$. Both the tetrachloroethylene and the $AlCl_3$ remain in vapor form and participate in the degassing process. The losses in Al are relatively small. The C_2Cl_6 does not require preliminary dehydration, nor does it require any special protection in storage, and is readily and inexpensively available. Comparisons with $MnCl_2$ are given in each instance. Tests were made with the Al-Si alloys AA 2 (AL2),² AL 4, and AL9 in graphite crucibles (mean charge: 5.5 kg). The initial H content was near the maximum observed in industrial conditions.

Card 1/2

SHAROV, M.V.; NIKISHAYEVA, O.I.

Degassing aluminum alloys by hexachloroethane. Alium. splavy
no.1:129-138 '63. (MIRA 16:11)

L 29683-66 EWP(j)/EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) RM/JD

ACC NR: AT6011848 (N)

SOURCE CODE: UR/2536/65/000/063/0045/0061

AUTHORS: Nikishayeva, O. I. (Candidate of technical sciences); Sharov, M. V.
(Professor); Fadyeyeva, G. S. (Engineer)39
38
B+1ORG: Moscow Aviation Technology Institute (Moskovskiy aviatsionnyy tekhnologicheskii institut)TITLE: Coatings for surfaces of casting molds for aluminum-silicon alloysSOURCE: Moscow. Aviatsionnyy tekhnologicheskii institut. Trudy, no. 63, 1965.
Proizvodstvo otlivok iz legkikh splavov (Production of castings from light alloys),
45-61TOPIC TAGS: aluminum alloy, silicon alloy, metal casting/ AL2 aluminum alloy, AL9
aluminum alloyABSTRACT: The effect of coating the surfaces of casting molds with carbon black, hexachloroethane, and hexachlorobenzene on the properties of the melt and the quality of aluminum-silicon castings was investigated. The results supplement the investigations of G. F. Balandin, Yu. A. Stepanov, et al (Liteynoye proizvodstvo, 1961, No. 8). The experiments were carried out on alloys AL2 and AL9, with the chlorinated hydrocarbons being applied to the surfaces with an atomizer in the form of a 20% acetone solution. The carbon black was deposited with an acetylene gas burner. The experimental procedure followed is described by M. V. Sharov and O. I. Nikishayeva (Trudy

UDC: 669.7.16:001.5

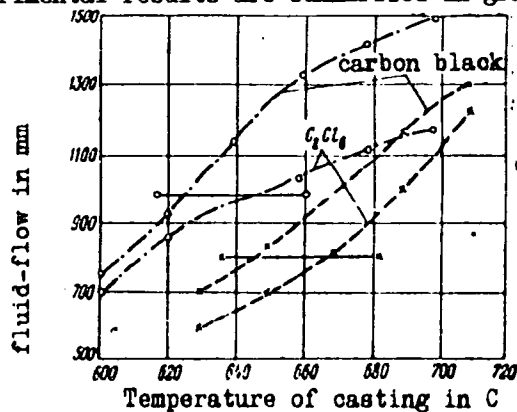
Card 1/2

L 29683-66

ACC NR: AT6011848

MATI, vyp. 43, Oborongiz, 1961), and the experimental results are summarized in graphs and tables (see Fig. 1).

Fig. 1. Influence of the temperature of melt on the fluid-flow of AL2 and AL9 alloys when cast into a mold coated with carbon black and hexachloroethane. Open circle, dash, dot, dash, open circle - alloy AL2; cross, dash, dash, dash, cross - alloy AL9; open circle, dash, open circle - no coating, cast temperature 700C; cross, dash, dash, dash, no coating, cast temperature 710C.



The use of carbon black or hexachloroethane coatings considerably improves the degree of mold filling, permits lowering of the casting temperature, increases the density of castings, and prevents the formation of hot cracks in the castings. Coating of molds with hexachlorobenzene had little or no effect either on the properties of the alloy melt or the quality of the castings. P. F. Odinyy participated in the experimental work. Orig. art. has: 12 tables and 2 figures.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 004

Card 2/2 CC

KREMNEV, L.Ya.; NIKISHECHKINA, L.A.; RAVDEL', A.A.

Stability of emulsions. Dokl. AN SSSR 152 no.2:372-374 S '63.
(MIRA 16:11)

1. Leningradskiy tekhnologicheskij institut im. Lensoveta.
Predstavleno Akademikom P.A. Rebinderom.

NIKISHENKO, A.A. (Kiyev, ul. Chelyuskintsev, D.6, kv.8)

Intussusception of the large intestine as sequel of submucous lipoma. Vest.khir. 78 no.3:114 Mr '57. (MLRA 10:6)

1. Iz 2-y kafedry khirurgii (sav. - prof. I.I.Kal'chenko) Kiyevskogo instituta usovershenstvovaniya vrachey.

(INTUSSUSCEPTION, etiol. & pathogen.

large intestine caused by submucous lipoma (Rus))

(LIPOMA, compl.

submucous lipoma causing intussusception of large intestine (Rus))

NIKISHENKO, A.A. (Kiyev, u. Oktyabr'skoy revolyutsii, d.36, kv.5)

Pathogenesis of pleuropulmonary shock; experimental investigation.
Nov.khir.arkh. no.2:32-40 Mr-Apr '58 (MIRA 11:6)

1. Kafedra khirurgii (zav. prof. B.Ye Pankrat'yev) i kafedra
patologicheskoy fiziologii (zav. - prof. R.Ye. Kavetskiy) Kiyevskogo
instituta usovershenstvovaniya vrachey.
(SHOCK)

NIKISHENKO, A. A. Cand Med Sci -- (diss) "Experimental data on the
pleuropulmonary shock and its prophylaxis," Kiev, 1960, 15 pp, 150 cop.
(Department of Biological Sciences AS U.S.S.R) (KL, 44-60, 132)

NIKISHENKO, A.A. (Kiyev, ul.Oktyabr'skoy revolyutsii, d.16, kv.5)

Two cases of benign nonepithelial gastric tumors. Nov. Khir. arkh.
no.2:118-119 Mr-Apr '60. (MIA 14:11)

1. Kafedra khirurgii II (zav. - prof. I.I.Kal'chenko) Kiyevskogo
instituta usovershenstvovaniya vrachey.
(STOMACH--TUMORS)

NIKISHENKO, A.A.

Invagination of the stomach due to a submucous neurinoma.
Khirurgiia 36 no.8:125 Ag '60. (MIRA 13:11)

1. Iz kafedry khirurgii (zav. - prof. D.F. Skripinchenko) Kiyev-
skogo instituta usovershenstvovaniya vrachey.
(STOMACH—TUMORS)

NIKISHENKO, A.A. (Kiyev, ul. Otktyabr'skoy revolyutsii, d.36.kv.5)

Multiple liver abscesses caused by ascariasis. Vest.khir. 85
no.11:125-127 N '60. (MIRA 14:2)

1. Iz 2-y kafedry khirurgii (zav. - prof. I.I. Kal'chenko) Kiyev-
skogo instituta usovershenstvovaniya vrachey.
(LIVER—ABSCESS) (ASCARIDS AND ASCARIASIS)

NIKISHENKO, A.A.

Clinical aspects and treatment of gastric tetany. Vrach.
delo no.2:35-37 F '62. (MIRA 15:3)

1. Kafedra khirurgii II (zav. - prof. I.I. Kal'chenko)
Kiyevskogo instituta usovershenstvovaniye vrachey.
(TETANY)
(STOMACH--DISEASES)

SUKHOV, Vladimir Ivanovich, professor doktor tekhnicheskikh nauk; YUROVSKIY, Ya.I., dotsent, kandidat tekhnicheskikh nauk; LIODT, G.N., professor, doktor geograficheskikh nauk [deceased]; NIKISHEV, M.I., starshiy nauchnyy sotrudnik, kandidat geograficheskikh nauk; OZEROV, V.N., redaktor; SOKOLOVA, N.N., tekhnicheskiy redaktor

[Compiling agricultural maps] Sostavlenie sel'skokhoziaistvennykh kart. Pod red. V.I.Sukhova. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1957. 263 p. (MLRA 10:9)
(Agriculture--Maps)

NIKISHICHEV, V.N.; SINITSYN, R.V.

Colloquium on the design and use of betatrons. Atom. energ. 14.
no. 5:596-597 Je '63. (MIRA 16:7)

(Betatron)

ACCESSION NR: AT4011453

S/3065/63/000/044/0103/0118

AUTHOR: Nikishin, A. A.

TITLE: Analysis of various methods for calculating the bending stress in sandwich plates and comparison with experimental results

SOURCE: Moscow. Inzhenerno-stroitel'nyy institut. (Trudy*), no. 44, 1963.
Sterzhni i plastinki, 103-118

TOPIC TAGS: elasticity modulus, sandwich plate, sandwich panel, filler, deflection, bending stress, foam plastic, elastic deformation

ABSTRACT: In sandwich plates, the thin, strong outer layers are connected by a relatively weak filler which guarantees joint operation and durability of the entire panel. The stress in such plates is usually calculated by one of six different methods, varying in their degree of simplification. In the present paper, the values of stress and displacement for various segments of a sandwich plate are calculated by these different methods and compared both with each other and with the experimental results obtained at the Laboratoriya armirovannykh plastikov IKhF AN SSSR (Reinforced Plastics Laboratory) with a 350 x 155 x 77.8 mm panel made of KAST-V glass-textolite and reinforced foam plastic. The results of these calculations show that the main stresses in a sandwich panel and the nature of the stress-

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ACCESSION NR: AT4011453

ed state in the filler depend on two principal parameters: Θ_1 (the relative rigidity of the filler compared to that of the outer layer) and Θ_2 (the relative rigidity of the filler compared to that of a hollow beam. When Θ_2 is greater than 3500, the deflections calculated by the various methods differ only slightly. With smaller values of Θ_2 , however, the deflections can best be calculated by the method which assumes that E_{xx} (the modulus of longitudinal elasticity of the anisotropic filler) = 0. This method is also applicable to the estimation of the distribution of normal and oblique stress through the depth of the filler, as well as the maximal stress and the distribution of stress along the length of the filler. The approximate values of the normal stresses in the outer layer during elastic deformation can be determined by the usual formulas for the resistance in a hollow beam, over a wide range of values of Θ_1 and Θ_2 . Although the stressed state in the filler can thus be described by a method which assumes that $E_{xx} = 0$, the elastic deformation in the outer layer should be taken into consideration when determining the carrying capacity of a sandwich panel under prolonged stress. Orig. art. has: 7 figures, 15 formulas and 1 table.

ASSOCIATION: Inzhenerno-stroitel'nyy Institut, Moscow (Institute of Construction Engineering)

Card 2/3

ACCESSION NR: AT4011453

SUBMITTED: 00

SUB CODE: AS, MT

DATE ACQ: 23Jan64

NO REF SOV: 010

ENCL: 00

OTHER: 003

Card 3/3

L 19563-63

EPR/EPF(c)/EWP(j)/EWT(m)/BDS

AFFTC/ASD

Ps-4/Pr-4/Rc-4

RM/WW/MAY

ACCESSION NR: AP3004338

S/0028/63/000/007/0028/0032

AUTHOR: Nikishin, A. A.

TITLE: Methods of determining hyperelastic deformation parameters of oriented fiberglass

SOURCE: Standartizatsiya, no. 7, 1963, 28-32

TOPIC TAGS: oriented fiberglass, hyperelastic deformation, parameter, Maxwell's equation, compression, tension, relaxed deformation, SVAM fiberglass

ABSTRACT: Samples of oriented fiberglass of the SVAM type with a BF-4 binder were used in this study. The samples were tested for stability of properties and the insoluble part of the binder was determined by the extraction method. Maxwell's equation generalized for the case of an anisotropic body was used to describe the various load conditions for oriented fiberglass. The hyperelastic deformation modulus, the logarithmic speed modulus, and the coefficient of initial viscosity were determined experimentally by deformation relaxation after removal of compression. A special piston type

Card 1/2

L 19563-63

ACCESSION NR: AP3004338

device with an electronic deformation meter (EID) and an oscillator measured deformation relaxation. The after-effect curve was recorded after unloading. Hyperelastic deformation for tension can be measured similarly. The other parameters can be found by substituting the experimental parameters in the after-effect equation based on a generalized form of Maxwell's equation. Orig. art. has: 4 figs, 6 equations.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 20Aug63

ENCL: 00

SUB CODE: MA

NO REF SOV: 006

OTHER: 000

Card 2/2

L 14361-63

EPR/EWP(r)/EWP(j)/EPP(c)/EWT(m)/BDS/T-2 AFFTC/ASD Pa-4/

PC-4/Pr-4 RM/WH

ACCESSION NR: AP3003844

S/0020/63/151/003/0528/0531

AUTHORS: Nikishin, A. A.; Rabinovich, A. L.

75
74

TITLE: Some problems on cylindrical flexure of sandwich plates with consideration of plastic deformation of fiberglass skin.

26

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 528-531

TOPIC TAGS: cylindrical flexure, sandwich plate, plastic deformation, fiberglass, creep

ABSTRACT: Calculations and experiments show that the total flexure and tensions in skins of elastic sandwich plates, determined by different theories, are practically the same if the parameter characterized by compression of filler in transverse direction is sufficiently large. At the same time, in materials with fiberglass skins, due to the presence of binding polymers, elastic deformation occurs which causes a much higher dependency of mechanical parameters on the speed of deformation and temperature, than in the case of metals. There is also the possibility of creep at normal temperature. Orig. art. has 2 figures and 17 formulas.

1/2/ Association: Inst. of Chemical Physics, Academy of Sciences, SSSR

Card

SARKISOV, D.S.; FIRSOVA, P.P.; NIKISHIN, A.A. (Moskva)

Giant-cell malignant thymoma. Arkh. pat. 26 no.12:26-31 '64.
(MIRA 18:5)

1. 2-ye khirurgicheskoye otdeleniye (zav. - doktor med.nauk
M.M.Voropayev) i otdel patologicheskoy anatomii (zav. - prof.
D.S.Sarkisov) Inst'tuta khirurgii imeni Vishnevskogo (dir. -
deystvitel'nyy chlen AMN SSSR prof. A.A.Vishnevskiy) AMN SSSR.

31067
S/166/6/000/006/008/010
B102/E138

24.6700 (also 1191)

AUTHORS: Azimov, S. A., Corresponding Member AS Uzbekskaya SSR
Nikishin, B. K., Chernova, L. P., Chernov, G. M., Chudakov,
V. M.

TITLE: Investigation of the azimuthal angular distribution of
shower particles

PERIODICAL: Akademiya nauk Uzbekskoy SSR Izvestiya Seriya fiziko-
matematicheskikh nauk, no. 6, 1961, 65-76

TEXT: This is a continuation of previous studies, covering: investigation
of the influence of energy and momentum conservation law on the azimuthal
characteristics of secondary particles; study of azimuthal effects in the
collision of singly charged cosmic particles with heavy emulsion nuclei
($\mu\text{-n}$) and in pN collisions of 9-Bev primary particles; comparison
between theory and experiment. The influence of momentum conservation was
studied by evaluating experimental data on random stars imitating the
9-Bev pp collisions of statistical theory. The characteristic parameters
of the azimuthal angular distributions were found to be below the values
Card 1/3

11067
S/166/61/000/006/009/010
E102/B-38

Investigation of the azimuthal

expected for isotropic. The effect of energy and momentum conservation decreases with increasing number of shower particles. Data from nuclear emulsions exposed to 9 Bev protons at the Ob'yedinenny Institut yadernykh issledovaniy (Joint Institute of Nuclear Research) were used to study the azimuthal effects in pN collisions. Most of the "jets" formed in the emulsion by single charged cosmic particles were pN collisions and displayed an azimuthal anisotropy of the secondary particles. The angular distribution was less disturbed by azimuthal effects than was isotropy. An azimuthal effect was found to be also present in collisions between singly charged cosmic particles and heavy emulsion nuclei ($n_1 + n_2 > 5$).

It was weaker than in "jets". This is due to the number of nucleons in the target nucleus. The azimuthal anisotropy of secondary particles is in contradiction with the hydrodynamic theory of "jet" formation but agrees with the results of the two-center model. Conservation of angular momentum has also to be taken into account. Some conclusions of the two-center model are discussed. Azimuthal anisotropy indicates the presence of high angular momentum of the excited centers, which can be assumed to be rotating spheres. There are 2 figures, 4 titles and 20 references.

Card 2/3

Investigator of the azimuthal

31067
S/166/61/000/006/008/010
B102/B138

13 Soviet and 8 non-Soviet The reference to the English-language
publication reads as follows: W. L. Kraushaar, L. J. Marks, Phys. Rev. 93,
326, 1954

ASSOCIATION: Fiziko-tekhnicheskii institut AN UzSSR (Physics-technical
Institute of AS Uzbekskaya SSR)

SUBMITTED: April 7, 1954

Card 3/3

AZIMOV, S.A.; NIKISHIN, B.K.; CHERNOVA, L.P.; CHERNOV, G.M.; CHUDAKOV, V.M.

Azimuthal angular distribution of atmospheric shower particles.
Izv. AN Uz. SSR. Ser. fiz.-mat. nauk no.6:65-76 '61.

(MIRA 16:12)

1. Fiziko-tehnicheskiy institut AN UzSSR.
2. Chlen-korrespondent AN UzSSR (for Azimov).

SUB CODE: 20 / SUBM DATE: 09Aug65 / ORIG REF: 003 / OTH REF: 061

NIKISHIN F.M.

USSR/Physiology of Plants - Respiration and Metabolism.

I-2

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10372

Author : Nikishin, F.M.

Inst : Kalinin State Pedagogical Institute.

Title : Conditions of the Formation of Anthocyanins in Petals of the Chinese Primrose.

Orig Pub : Uch. zap. Kalininsk. gos. ped. inst., 1956, 20, 269-274

Abstract : The petals lost anthocyanins both when starved of carbohydrates at a 35° temperature (created by placing them in a light chamber with a 150 watt light bulb) and when kept under weak illumination or when the leaves were removed. When cut plants with white flowers were nourished with a 2% glucose solution, the flowers turned red.

Card 1/1

NIKISHIN, F.M.

Biological characteristics of seeds and vegetative reproduction of
Salicaceae in the temperate zone. Bot.zhur. 43 no.10:1473-1478
0 '58. (MIRA 11:11)

1. Kalininskiy gosudarstvenny pedagogicheskiy institut.
(Willows) (Plants--Reproduction)

NIKISHIN, F.M.

A new habitat of the water lily *Nymphaea tetragona* Georgi Ben.
in Kalinin Province. Nauch. trudy Kal. otd. MOIP no. 2: 29-231
'60. (MIRA 14:10)

(KOKOSHKI REGION...WATER LILIES)

NIKISHIN, F.M.

Extremely large oak stump in Kalinin Province. Nauch. trudy Kal.
otd. MOIP no.2:232-234 '60. (MIRA 14:10)
(SHIRYAKOVO REGION--OAK)

NIKISHIN, F.M.

Floral pollen and prospects for its utilization in the national economy. Bot. zhur. 47 no.7:982-986 J1 '62. (MIRA 15:9)

1. Kalininskiy pedagogicheskiy institut.
(POLLEN) (MATERIA MEDICA, VEGETABLE)

S. I. NIKISHIN

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

Chem
Synthesis and properties of unsaturated silicohydrocarbons: Dimethylbis(2-methylallyl)silane, methylbis(2-methylallyl)silane, methyltris(2-methylallyl)silane, tetrakis(2-methylallyl)silane, trimethylcyclopentadienylsilane, and trimethyl-3-butenylsilane. A. D. Petrov and G. I. Nikishin. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1953, 1055 (Eng. translation). See C.A. 48, 1247d.
H. L. H.

NY

NIKISHIN, G. I.

Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Organic Chemistry

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2

Synthesis and properties of unsaturated silicohydrocarbons: dimethylbis(2-methylallyl)silane, methylbis(2-methylallyl)silane, methyltris(2-methylallyl)silane, tetraakis(2-methylallyl)silane, trimethylcyclopentadienylsilane, and trimethyl-3-butenylsilane. A. D. Petrov and G. I. Nikishin. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1952, 1128-30. Heating RMgX with corresponding halosilanes in Et₂O of xylene 12-20 hrs. gave the following compds. [R = CH₂CMe:CH; yield (%), b.p., n_D²⁰ and d₄ shown]: Me₂SiR₂, 46, 178-8.5°, 1.4516, 0.8012; MeSiHR₂, 21, b_p 61-3°, 1.4550, 0.7886; MeSiR₂, 35, 231.0-2.1°, 1.4772, 0.8338; SiR₄, 40, 209.5-70.5°, b_p 130-3°, 1.4950, 0.8600. Litu from 7.9 g. Li and 82.2 g. BuBr was treated with 34 g. cyclopentadiene with cooling over 40 min. in N atm., then immediately with 65 g. Me₂SiCl₂ and the mixt. allowed to stand overnight, refluxed 12 hrs., and hydrolyzed as usual with H₂O, yielding 9 g. trimethylcyclopentadienylsilane, b. 138-40°, n_D²⁰ 1.4622, d₄ 0.8308; which forms an adduct, m. 102-2.5° with maleic anhydride. The Grignard reagent from 8.2 g. Mg and 41 g. Me₂SiCH₂Cl refluxed 12 hrs. with 50 g. CH₂:CHCH₂Br in Et₂O, evapd., and heated 8 hrs. to 70-80° gave 27.4 g. Me₂SiCH₂CH₂CH:CH₂, b. 111.5-12.5°, n_D²⁰ 1.4148, d₄ 0.7368, whose Raman spectrum showed lines (cm⁻¹) 148(2), 207(5), 247(2), 271(1), 324(3), 521(3), 577(3), 589(9), 616(4), 637(3), 652(6), 899(1), 940(3), 1014(2), 1103(3), 1173(3), 1280(7), 1298(6), 1415(8), 1639(10), 2845(5), 2897(20), 2959(8), 3002(6), 3090(5). The γ-double bond frequency 1639 fits well with existing data on such compds. Passage of HBr yielded the satd. Br deriv., b_p 64°, n_D²⁰ 1.4542, d₄ 1.0894, which, added to R₂MgBr, concd., and heated to 90°, finally to 100° (19 hrs.), gave 22% Me₂Si(CH₂CH₂CHMe)₂, b. 154-4.3°, n_D²⁰ 1.4170, d₄ 0.7460. The results are held to support alternation of p. priority in C atom chain.

G. M. Kosolapoff

NE 9-20-54

104-111, G. 1

Synthesis and properties of isobutenylsilanes, isopropenylsilanes, and methylisobutenylacetylene. A. D. Petrov and G. I. Nikishin (N. D. Zelinski Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 93, 1049-52 (1953). To 10.5 g. Li in 450 ml. Et₂O was added 120 g. Me₂C=CHBr over 3.5 hrs., followed by 54 g. Me₂SiCl₂; after standing overnight the mixt. was filtered and distd. yielding 23 g. Me₂SiCH=CMe₂ (I), b. 111.5-12°, d₄ 0.7418, n_D²⁰ 1.4250. This adds HBr even at -70° but the products decomp. on distn. yielding Me₂SiBr. The Raman spectrum of I shows a line at 1620 cm.⁻¹ for the C-C link. Similarly were obtained: 43% Me₂Si(CH₂CMe₂), b. 172.5°, d₄ 0.7950, n_D²⁰ 1.4590; Me₂Si(CH₂CMe), b. 221.5-2.5°, d₄ 0.8262, n_D²⁰ 1.4820, 37.2%; and Si(CH₂CMe₂), m. 54.5°. Similar reaction with H₂C=CMeBr gave 32% Me₂SiCMe₂CH₂, b. 82.8-3.0°, d₄ 0.7186, n_D²⁰ 1.4070. Addn. of 143 g. PBr₃ to 107 g. 2-butyn-1-ol in Et₂O with 7 ml. pyridine gave after 2.5 hrs. reflux 60% 1-bromo-2-butyn-3-ol, b. 98°, d₄ 1.4828, n_D²⁰ 1.5083. This (101 g.) and 65 g. Me₂SiCl₂ were added together to 50 g. Mg in Et₂O over 9 hrs. (reaction started with iodine and a little EtBr); after standing overnight the mixture was refluxed 5 hrs. yielding 40% Me₂SiCH₂C=CMe₂, b. 123.8-4.2°, d₄ 0.7975, n_D²⁰ 1.4312, whose Raman spectrum showed several lines in the region of 2100 cm.⁻¹ caused by the C≡C link. Formation of isomeric products is not excluded. G. M. Kosolapoff

13-52

USSR/Chemistry - Polymerization

Card 1/1 Pub. 22 - 31/56

Authors : Petrov, A. D.; Korshak, V. V., Memb. Correspondents of Ac. of Sc. USSR.; Polyakova, A. M.; Sakharova, A. A.; Mironov, V. F.; and Nikishin, G. I.

Title : High-pressure polymerization of mono- and polyalkenylsilanes

Periodical : Dok. AN SSSR 99/5, 785-788, Dec 11, 1954

Abstract : Nineteen silico-olefines of different structure were subjected to polymerization by heating to 130° in the presence of tertiary butyl peroxide and 5500 atm pressure. The results show that under such rigid conditions the polymerizability of various alkenyl silanes and the nature of the polymers derived vary to a large extent. The reactivity of alkenyl silanes is determined by the structure of the latter and the orientation of the multiple bond relative to the Si-atom. The products, obtained through high-pressure polymerization of alkenyl silanes, are tabulated. Seven references: 5-USSR 1-USA and 1-English (1937-1953). Table; drawing.

Institution: Academy of Sciences USSR, Institute of Organic Chemistry and Institute of Elementary Organic Compounds

Submitted : June 29, 1954

Nikishin, G. I.

5

Synthesis of 1,1-dichloro-3-pentene. A. D. Petrov,
G. I. Nikishin, N. P. Smetankina, and Yu. P. Rogov,
Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci. 1949, 861-3
(Engl. translation).—See C.A. 50, 9292i. H. M. R.

chem 4

PM

NIKISHIN, G.I.

~~✓~~ Synthesis of 1,1-dichlorocyclohexane, A. D. Petrov, G. I. Nikishin, N. P. Smetankina, and Yu. P. Prorok (~~USSR~~ ~~Soviet~~ ~~Union~~ ~~Chem.~~ ~~Moscow~~), *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk*, 1955, 947-8. -- $\text{C}_6\text{H}_2\text{Cl}_2\text{C}(\text{Cl})\text{CH}_2\text{CH}_2$ (416 g.) passed at 23 g./hr. through a 40 x 600-mm. glass tube filled with pieces of 60/20 alloy of Si-Cu at 300° and the product distd. gave 15.6% ($\text{C}_6\text{H}_2\text{Cl}_2\text{SiCl}_2$) (I), b. 135°, d_4^{20} 1.2190, n_D^{20} 1.4782, and 9% ($\text{C}_6\text{H}_2\text{Cl}_2\text{SiCl}$) (II), b. 243°, d_4^{20} 1.3115, n_D^{20} 1.4870. Methylation of I with MeMgCl gave 30.4% ($\text{C}_6\text{H}_2\text{Cl}_2\text{SiMe}_2$) (III), b. 100.5-1°, d_4^{20} 0.8007, n_D^{20} 1.4433 (Raman spectrum in cm^{-1} : 183(4), 214(2), 310(4), 411(5), 620(7), 730(3), 915(8), 950(1), 1100(4), 1200(4), 1258(1), 1465(5), 1810(4), 2804(10), 2962(8), 3024(5)). Hydrogenated over Pt to ($\text{C}_6\text{H}_2\text{SiMe}_2$), b. 107°, d_4^{20} 0.7871, n_D^{20} 1.4228. II with MeMgCl gave ($\text{C}_6\text{H}_2\text{SiMe}_2$), b. 157.6-8.5°, d_4^{20} 0.7789, n_D^{20} 1.4398. G. M. Kosolapoff

7

RM

Nikitshin, G.I.

Direct synthesis of propyl-, isopropyl-, butyl-, and iso-
butylchlorosilanes. A. D. Petrov, N. P. Smetankina, and
G. I. Nikitshin. *J. Gen. Chem. U.S.S.R.* 25, 2305-8(1956)
(Engl. translation).—See *C.A.* 50, 9280f. B. M. R.

3

NIKISHIN, G.I.

1000

Direct synthesis of *sec*-butyl-, *isopropyl*-, *butyl*-, and *isobutyl*-chlorosilanes. A. D. Prilov, N. P. Savel'nikov, and G. I. Nikishin (D. P. Mendeleev Chem. Technol. Inst., Moscow), *Zh. Obshch. Khim.*, 29, 2322-4 (1955). Fractions of PrCl over 80/20 Si-Cu alloy at 250-60° gave 27.7% PrSiHCl_2 and 15.5% PrSiCl_3 ; in another run there was formed 19.0% PrSiCl_3 , 32.5% PrSiHCl_2 , and 10% PrSiCl_4 . Similarly BuCl gave 30.5% BuSiHCl_2 and 18.2% BuSiCl_3 . *iso*- PrCl gave 38.2% *iso*- PrSiHCl_2 , 21.3% *iso*- PrSiCl_3 , and 11% apparently *iso*- PrSiCl_4 . *iso*- BuCl gave 29.3% *iso*- BuSiHCl_2 and 14.5% *iso*- BuSiCl_3 . In all cases numerous other products formed and extensive fractionation was needed to isolate the above products. The chlorosilanes were treated with $\text{CH}_3\text{CHCl}_2/\text{MgX}$, yielding the following: 55.5% $(\text{CH}_3\text{CHCl})_2\text{SiHCH}_2\text{CHMe}_2$, *bp* 179.3°, *dn* 0.7900, *n*_D²⁰ 1.4556; 30.5% $(\text{CH}_3\text{CHCl})_2\text{SiHCHMe}_2$, *bp* 167.2°, 0.78534, 1.4539; 39% $(\text{CH}_3\text{CHCl})_2\text{SiH}_2$, *bp* 167.2°, 0.7944, 1.4579; 23% $(\text{CH}_3\text{CHCl})_2\text{SiHPr}$, *bp* 165.8°, 0.7833, 1.4525; 58% $(\text{CH}_3\text{CHCl})_2\text{SiHPr}$, *bp* 200.5°, 0.8037, 1.4611.

DM

Nikishin, G. I.

g/ Synthesis and transformations of methylchlorosilanes.
 A. D. Petrov and G. I. Nikishin (N. Y. Zelinskii Inst. Org.
 Chem., Acad. Sci. U.S.S.R., Moscow): *Izvest. Akad.
 Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 243-9; *Bull. Acad.
 Sci. U.S.S.R. Div. Chem. Sci.* 1956, 233-8 (Engl. translation).
 —Passage of $\text{CH}_3\text{CMeCH}_2\text{Cl}$ at 30 g./hr. through a
 tube filled with 80-20 Si-Cu alloy at 230° gave from 900 g.
 chloride 726 g. product, which after extensive fractionation
 gave 40% individual substances: $\text{CH}_3\text{CMeCH}_2\text{SiHCl}_2$, b_{11}
 119.5°, n_D^{20} 1.4469, d_4^{20} 1.0678 (n_D^{20} and d_4^{20} given for each
 compd. following b.p.): $\text{CH}_3\text{CMeCH}_2\text{SiCl}_3$ (I), b_{11} 139°,
 1.4533, 1.1920; $(\text{CH}_3)_2\text{CMeCH}_2\text{SiCl}_2$, b_{11} 210-11°, 1.4805,
 1.0566. Small amts. of dimethylsilyl and diisocrotyl also
 formed. MeMgCl and I gave 39.5% $(\text{Me}_2\text{Si})_2\text{O}$ (after the
 aq. treatment), and 1.5% $\text{Me}_2\text{SiCH}_2\text{CMe:CH}_2$, b_{11} 110.5-
 12°, 1.4196, 0.7436. Use of MeMg gave only the former
 product. MeMgCl and $\text{CH}_3\text{CMeCH}_2\text{SiHCl}_2$ gave 40%
 $\text{Me}_2\text{SiHCH}_2\text{CMe:CH}_2$, b_{11} 94.5-8°, 1.4190, 0.7318. To
 24.3 g. Mg in Et_2O was added a mixt., over 6 hrs., of 64.5 g.
 Me_2SiCl_2 and $\text{CH}_3\text{CMeCH}_2\text{Cl}$; after refluxing 4 hrs. there
 was obtained 44.8% $\text{Me}_2\text{Si(CH}_2\text{)CH}_2\text{CMe:CH}_2$ (Ia), b_{11} 130-4°,
 and 9% $\text{Me}_2\text{Si(CH}_2\text{)CMe:CH}_2$ (II). The former on purification
 b_{11} 132-4°, 1.4372, 0.8068; pure II b_{11} 176-9°, n_D^{20}
 1.4556. Ia and MeMgCl gave 40% $\text{Me}_2\text{SiCH}_2\text{CMe:CH}_2$

Chem 2

K2

Petrov, A.D., and Nikishin, G.I.

brs 111-1.5°, 1.4193, 0.7397, and a small amt. of $(Me_2Si)_2O$; MeMgI gave only the latter in 55% yield. Ia and EtMgI gave 32% $(EtMe_2Si)_2O$. Chlorination of I 8 hrs. in ultra-violet light up to a final temp. of 173° gave some $SiCl_4$, $CH_3-CMeCH_2Cl$, unreacted I and 31.5% $CH_3C(CH_2Cl)CH_2SiCl_3$; brs 188-9°, 1.4846, 1.3473, which with MeMgCl gave 53.5% $Me_2SiCH_2C(CH_2Cl)CH_3$; brs 162-3°, 1.4510, 0.8998 (the structure confirmed by its spectrum). The reaction of MeMgI with $Et_2SiCH_2CMe:CH_2$ or the tri-Me analog gave $(Et_2Si)_2O$ or $(Me_2Si)_2O$ and some isobutylene; $Et_2SiCl_2:CH_2:CH_2$ failed to react.

G. M. Kosolantoff

2/2
EM

NIKISHIN 6-1

USSR/Chemistry - Reaction processes

Card 1/2 Pub. 40 - 11/25

Authors : Petrov, A. D.; Yegorov, Yu. P.; Mironov, V. F.; Nikishin, G. I.; and Bugorkova, A. A.

Title : Reactivity and the molecular-optical properties of alkenylsilanes

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 50-55, Jan 1956

Abstract : The existence of a parallelism between the rates of thiocyanogen additions and the spectral line intensity was experimentally established for a majority of alkenylsilanes of various structure. It was found that allylsilanes and alkenylsilanes with a ternary double bond are characterized by very high activity of the double bonds toward addition reactions and also by very high spectral line intensity, infrared absorption bands as well as by the presence of

Institution : Acad. of Sc., USSR, Inst. of Organ. Chem. Im. N. D. Zelinskiy

Submitted : March 18, 1955

Card 2/2 Pub. 40 - 11/25

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 50-55, Jan 1956

Abstract : an exaltation of the molecular refraction. The connection between the alkenylsilane characteristics and the $\sigma-\pi$ conjugations is explained. The causes for the changes in the spectral line intensity values of double bonds are discussed. Twenty references: 16 USSR, 1 Swedish, 1 Eng., 1 Australian and 1 USA (1946-1955). Tables; graphs.

Nikitin G.T.

polymerization of some silolefins
Makovskiy V. E. et al.

PM
12 May

acrylate. I-IV did not form high molecular compounds under the influence of ionic catalysts (A, B) and V polymerized at room temp. with formation of trimeric polymers. II and III formed copolymers with methyl methacrylate (VI) and styrene (VII) and IV copolymerized with VI but not with VII. Of all silolefins containing two or more double bonds, only III formed trimeric polymers with VI.

PM
MT

~~SECRET~~ NIKISHIN, G. I.

6

Organosilicon synthesis and properties of α - and β -alkenylsilanes. A. D. Petrov and G. I. Nikishin (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow)

Zh. Khim. Fiz. 26, 1224-9 (1953). To 2.4 g. silicid Li in 300 ml. Et₂O was added 75 g. 2-bromo-2-butene over 3.5 hrs. with stirring; after addn. of 35 g. Me₂SiCl the mixt. was left overnight, filtered from excess Li, treated with H₂O and dried; yielding 44.6% Me₂SiCMe:CHMe, bp 112-113.5°, d₄ 0.7513, n_D 1.4223. Similarly were prepd.: 30% Me₂SiCH:CHMe, bp 80-7°, 0.7187, 1.4080; 30.2% Et₂SiCH:CHMe, bp 100.5-9.5°, 0.7814, 1.4411; 43% Me₂SiCMe:CH₂, bp 82.8-8°, 0.7190, 1.4070; 40% Et₂SiCMe:CH₂, bp 163-3.5°, 0.7878, 1.4430; 64% Me₂SiCH:CMe₂, bp 111.6-2°, 0.7418, 1.4250; 70% Et₂SiCH:CMe₂, bp 136-3°, 0.7976, 1.4638; 43% Me₂Si(CH:CMe)₂, bp 163-70°, 0.7968, 1.4600; 37.2% Me₂Si(CH:CMe)₂, bp 221-2.5°, 0.8202, 1.4820; unstated yield of Si(CH:CMe)₂, m. 54.5°; 40% Me₂SiClCH:CMe, bp 130-7°, 0.9092, 1.4436; 27.5% Cl₂SiCH:CMe, bp 152-3°, 1.1908, 1.4580; unstated yield of Cl₂SiCMe:CH₂, bp 114-15°, —, 1.4428; 1.5% (EtO)₂SiCH:CMe, bp 184-5°, 0.8938, 1.4231. Chlorination of 80 g. Cl₂SiCH:CMe, under ultraviolet light 3 hrs. until the pot temp. rose to 185° gave among other products 22.6 g. Cl₂SiCH:CMeCH₂Cl, bp 179-80°, 1.3320, 1.4803, which with MeMgCl gave 20% Me₂SiCH:CMeCH₂Cl, bp 155-0°, 0.8116, 1.4634 (Raman spectrum shows no bands at λ 3000-3100 cm.⁻¹ which are characteristic of the terminal olefin group). Isocrotyl bromide (50 g.) treated with the Li deriv. from 5.3 g. Li and 30.5 g. ClCH₂SiMe₂ gave 16.6 g. Me₂Si(CH₂CH:CMe)₂, bp 132-2.3°, 0.7549, 1.4290. Passage of HBr into 18 g. Me₂SiCMe:CH, at -70° (final temp.) gave 40% colorless sticky solid, m. 124°, which did not react with 0.1N NaOH or MeLi. Similarly HBr passed into 8.0 g. Me₂SiCMe:CHMe gave 50% Me₂SiCHMeCHMeBr, b. 65-0°, d₄ 1.1133, n_D 1.4618, which with 0.1N KOH gave 55% hexamethyldisiloxane, b. 160-3°. Passage of HBr into 8.8 g. Me₂SiCH₂CH:CMe, gave 75.5% Me₂SiBr only.

G. M. Kosolapov

Nikishin, G. I.

7
Organolithium syntheses and properties of α - and β -alkenylsilanes. A. D. Petrov and G. I. Nikishin, *J. Gen. Chem. U.S.S.R.* 26, 1395-1400 (1966) (English translation). -- *Sci. C.A.* 50, 14515f.
4
3 1-4 E 20
2 21 May
DM
107

NIKISHIN

AUTHORS: Nikishin, G.I., Vorob'ev, V.D., Petrov, A.D. 00-12-12/20

TITLE: The Telomerization of Propylene and Ethylene with Methyl Formiate (Telomerizatsiya propilena i etilena s metilformiatom).

PERIODICAL: Izvestiya AN SSSR Otdeleniya Khimicheskikh Nauk, 1957, No. 12, pp. 1488-1489 (USSR)

ABSTRACT: The homolytic telomerization of ethylene in the presence of peroxide catalysts was described on the basis of numerous examples. As a result of this reaction the highest functional compounds with normal carbon atom chain was received. The aforementioned telomerization, on the other hand, has been much more rarely studied. The authors made it their task to investigate the synthesis of acids and their esters with a modified carbon chain and studied the reaction of the telomerization of methyl formiate with propylene. On this occasion they found that with a reciprocal action of the propylene with methyl formiate (in the presence of peroxide tributyle), the reaction of telomerization takes place with methyl esters of the strongest acid. The reaction of the polymerization of the propylene, on the other hand, takes place with the formation of hydromerion. By the interaction of methyl formiate with ethylene methyl remainders with

Card 1/2

The Telomerization of Propylene and Ethylene with
Methyl Formiate

62-12-12/10

an average molecular weight of 1650 were obtained. The telomeriza-
tion of ethylene was carried out under a pressure of 200 atmos-
pheres and at a temperature of 150°C. There are 7 references, 5 of
which are Slavic.

ASSOCIATION: Institute for Organic Chemistry, A. USSR ineni N.D.Zelinskij
(Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk
SSSR).

SUBMITTED: July 4, 1957

AVAILABLE: Library of Congress

Card 2/2

1. Ethylene-Methyl formiate-Telomerization
2. Propylene-Methyl formiate-Telomerization
3. Ethylene-Homolytic telomerization-Peroxide catalyst

NIKISHIN, G.I.
KORSHAK, V.V.; POLYAKOVA, A.M.; SAKHAROVA, A.A.; PETROV, A.D.;
MIRONOV, V.F.; GLUKHOVTSEV, V.G.; NIKISHIN, G.I.

Polymerization of unsaturated silicon organic compounds under
pressure. Part 4: Mono- and disilanes. Zhur. ob. khim. 27 no.9:
2445-2449 S '57. (MIRA 11:3)

1. Institut elementoorganicheskikh soyedineniy i Institut
organicheskoy khimii AN SSSR.
(Silane) (Polymerization)

AUTHORS: Mironov, V. F., Nizibain, G. I.

TITLE: The Relation Between the Structure of Some Organic Compounds and Their Molecular Refraction [Svyezshaya svyaz mezhdu strukturoy nektorykh khraneniya i ikh molekulyarnymi refraktsiyami]

PERIODICAL: Izvestiya Akademii Nauk SSSR. Khimicheskaya Seriya, 1958, Nr 9, p. 1600 - 1617 (USSR)

ABSTRACT: The method of calculating molecular refraction (MR) of organic compounds has been based upon the principle of the summation of the individual contributions of each bond in the molecule. The structural peculiarities of the molecule must be taken into consideration in the calculation. The calculation of this quantity for silicon compounds is only briefly considered in the papers which do treat it (Refs 1-3). The authors of this paper succeeded in discovering a series of elements whose presence in or on silicon compounds is accompanied by an exaltation in the molecular refraction. They also observed several similarities in the chemical structure of these

Card 1/2

The Relation Between the Structure of Some Organosilicon Compounds and Their Molecular Refraction

newly-discovered radicals. It was found that the increase in the molecular refraction is an additive quantity which is directly proportional to the number of groups which cause this increased refraction. The authors have ascertained the group refraction contributions of 21 radicals which were bonded to the silicon atom. There are 5 tables and 18 references, 21 of which are listed.

ASSOCIATION: Institut organicheskoy khimii im. N.D.Zelinskogo, Akad. Nauch. SSSR (Institute of Organic Chemistry im. N.D. Zelinskii, Acad. USSR)

SUBMITTED: February 15, 1957

Card 2/2

5(3)

SOV, 62-48-12-10, 22

AUTHORS: Petrov, A. D., Smetankina, N. P., Nikishin, G. I.

TITLE: Direct Synthesis of 1,1-Dichloro-1-Silacyclopentane (Pryamoy sintez 1,1 dikhlora-1silatsiklopentana)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr. 12, pp. 1468-1471 (USSR)

ABSTRACT: In the present paper it was found that in a reaction of 1,4-dichloro butane with silicon as basic product the 1,1-dichloro-1-silacyclopentane is formed. Its yield (in the condensation product) was 30%. Some of its chemical properties were investigated. Thus, in the chlorination with sulfuryl chloride the hydrogen on the β -carbon atom is substituted by chlorine. In an interaction between 1,1,3-trichloro-1-silacyclopentane with methyl magnesium chloride the substitution of the chlorine atoms by methyl groups and an opening of the cycle behind the Si-C bond, or the so-called β -decomposition take place. The properties of the 1-(trimethyl silyl)-butene-3 formed due to the opening of the cycle turned out to be identical with the properties of this silicon hydrocarbon earlier obtained after the Grignard-Vyurts reaction from chloro-methyl trichlorosilane

Card 1/2

Direct Synthesis of 1,1-Dichloro-1-silacyclopentane

SOV/62-58-12-10/22

and allyl bromide (Ref 6). In the hydrolysis of 1,1-dichloro-1-silacyclopentane with aqueous alkali (Ref 9) only the condensation product - tetramethylene polysiloxane - was separated. The reactions of 1,1-dichloro-1-silacyclopentane with allyl magnesium bromide and acetic anhydride take place in the same way, i.e. the chlorine atoms are correspondingly substituted by allyl and acetoxy groups. HBr at -10° is energetically affiliated to 1,1-diallyl-1-silacyclopentane. The dihalide formel $(CH_2)_4Si(CH_2CHBrCH_3)_2$ is unstable. Heating causes the decomposition with propylene being separated and 1,1-dichloro-1-silacyclopentane being formed. There are 10 references, 5 of which are Soviet.

ASSOCIATION: Institut Khimicheskoy Kibernetiki imeni N. D. Zelinskogo Akademii Nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences, USSR)

SUBMITTED: March 30, 1967

Card 2, 2

PETROV, A.D., NIKISHINA, G.I., kand. khim. nauk, NEVOLIN, F.V., kand. tekhn. nauk, KRAL'-OSIKINA, G.A., OREKHOVA, M.V., YUSHKEVICH, A.V.

Effect of the size and structure of the alkyl chain of alkyl derivatives of benzenesulfonic acid on their surface active and detergent properties. Masl.-zhir. prom. 24 no. 8:23-29 '58.

(MIRA 11:8)

1. Chlen-korrespondent AN SSSR (for Petrov). 2. AN SSSR (for Petrov, Nikishina). 3. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov (for Nevolin, Kral'-Osokina, Orekhova, Yushkevich).
(Benzenesulfonic acid)
(Surface active agents)

AUTHORS: Petrov, A. D., Nikishin, G. I., Vorob'yev, V. D. SSR/2-1-1-10/64

TITLE: The Synthesis of Undecyl- and Dodecyl Benzenes and Their Perhydrides (Sintez undetsil- i dodecilsilbenzolov i ikh pergidrirov)

PERIODICAL: Zhurnal obshchey khimii, 1950, Vol. 26, Nr 7, pp. 1761 - 1766 (USSR)

ABSTRACT: From the mainly foreign papers mentioned by the authors (Refs. 1-15) may be seen that dodecyl benzenes with ramified alkyl chains which serve as model hydrocarbons for the technical dodecyl benzene are only insufficiently investigated. They synthetic hydrocarbons of the composition C₁₇ and C₁₈ according to the mentioned reaction schemes with a dodecyl benzene with a normally ramified alkyl chain being obtained as final product. The selection of the isomer forms was caused by the intention to decide either in favor of the technical dodecyl benzene with a highly ramified aliphatic chain, or in favor of hydrocarbons with a little ramified chain. The data obtained from the reaction schemes 1-5 for all hydrocarbons and their hydrides (boiling- and condensation temperatures and kinematic viscosities at 20 and 50°C)

Card 1, 3

The Synthesis of Unieetyl- and Dodecyl Benzenes and
Their Perhydrides

DOI: 10.1007/BF01000000

are mentioned in the table, where also the n-dodecyl benzene synthesized by Schmidt (Schmidt) (Ref. 4) is included for reasons of comparison. The solidification temperatures of the alkyl benzenes and of the corresponding alkyl alcohols differ only by about 5°. Also the influence exerted by the structure on the kinematic viscosity data at 20°, and especially at 50° is only small, which is, however, not the case at temperatures below 0°. These are the title and 17 references, but not the Soviet.

ASSOCIATION: Institut organicheskoy khimii Akademiya Nauk SSSR (

SUBMITTED: June 20, 1957

Card 2/3

The Synthesis of Undecyl- and Dodecyl Benzene and
Their Perhydrides

SOV/77-18-7-10, 11

1. Benzenes--Synthesis 2. Hydrides--Chemical reactions

Card 3,3

SOV/79-28-8-18/66

AUTHORS: Petrov, A. D., Nikishin, G. I., Smetankina, N. P.

TITLE: The Behavior of Several Dichloroalkanes and Dichloroalkenes Under Conditions for Direct Synthesis (Povedeniye nekotorykh dikhloralkanov i dikhlorakenov v usloviyakh pryamogo sinteza)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 8, pp. 2085-2089 (USSR)

ABSTRACT: In the decomposition reaction of dichloroethane (Ref 1) and 1,2-dichloropropane (Ref 2) with silicon only disilane, besides silicochloroform and silicon tetrachloride, was found in the reaction products. In the case of the chlorobutane (Ref 3) and 1,2-dichlorobutene-3 (Ref 4) cyclic monosilane with a silicon atom in a five-membered ring forms in addition to the disilane, as the author had shown earlier. In the work reported in the present paper the next homologs of dichloroethane, the 1,2-dichloropropane and the 1,2-dichloro-2-methylpropene, were studied, since not enough work had previously been done on these compounds. The isomers of 1,2-dichlorobutene-3 (the 1,4-dichlorobutene-2 and the 3-chloro-2-(chloromethyl)propene-1) were also studied. It was found

Card 1/3

SCY/79-28-8-18/66

The Behavior of Several Dichloroalkanes and Dichloroalkenes Under Conditions for Direct Synthesis

that under the synthetic conditions used 1,2-dichloropropane and 1,2-dichloro-2-methylpropane split easily in the presence of HCl into allylchloride and methallylchloride, respectively. These two products can then be converted using silicon into allyltrichlorosilane and methallyltrichlorosilane. Using 1,2-dichloropropane previously unknown disilanes were obtained: the 1,2-bis-(trichlorosilyl)-propane and the 1-(trichlorosilyl)-2-(dichlorosilyl)-propane (see Diagram 1). The reaction of the 1,4-dichlorobutene-2 with silicon proceeded according to diagram 2. The reaction of the 3-chloro-2-(chloromethyl)-propene-1 with silicon yielded the methallyltrichlorosilane and 3-(trichlorosilyl)-2-(trichlorosilylmethyl)-propene-1. There are 1 table and 11 references, 7 of which are Soviet.

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SUBMITTED: July 6, 1957
Card 2/3

007/79-28-8-19/66

The Behavior of Several Dichloroalkanes and Dichloroalkenes Under Conditions
for Direct Synthesis

Card 3/3

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Interaction between β -(magnesium chloride)-tert.-butyl-benzene
with carbonyl compounds. Zhur.ob.khim. 28 no.9:2315-2319
S '58. (MIRA 11:11)

1. Institut organicheskoy khimii AN SSSR.
(Benzene) (Grignard reagents) (Carbonyl compounds)

AUTHORS: Gramenitskaya, V. N., Nikishin, G. I., Petrov, A. D., 20-3-22/59
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TITLE: The Condensation of Alkyl Benzenes With Halide Derivatives of Isobutylene (Kondensatsiya alkilbenzolev s galoidproizvodnymi izobutilena).

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 3, pp. 497-500 (USSR)

ABSTRACT: After a survey of single reactions of the alkylation of aromatic hydrocarbons using sulfuric acid as catalyst (refs 1-5) the authors report on the synthesis of alkyl-aromatic hydrocarbons plus derivatives with branched alkyl radicals containing quaternary carbon atoms. The condensation of the metallylchloride with alkylbenzenes was carried out. The conditions of reaction and the yields are shown in table 1, the properties of the substances produced are mentioned in table 2. The yields amount to 64-98% and depend on the consecutive order of the addition of reagents. The amount of sulfuric acid (catalyst) and the temperature value are essential. Only in one case it was possible to isolate a solid crystalline substance (p(β -chloro-tertiary butyl) tertiary butylbenzene. The liquid residue and all other (β -chloro-tertiary butyl)alkyl benzenes are, as is shown by their infrared spectra, a mixture of p- and m- isomers which could be se-

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