SPIRIN, K. F.

"Physiological Reasons for the Time of Mating of Sows." Cand Biol Sci, Poltava Sci Res Inst of Swine Breeding, Min Agriculture and Procurement, Odessa, 1953. (KL, No 16, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

USSR / Farm Animals. Swine. Q

Abs Jour : Ref Zhur - Biologiya, No 5, 1959, No. 21270

Author : Spirin, K. T.; Kusnetsov, S. Ya.
Inst : Not given
Title : Using Raw and Cooked Potatoes in the Fattening of Pigs

Orig Pub : Sots. tvarinnitstvo, 1958, No 2, 15-16

Abstract : The control group obtained cooked mashed potatoes in a mixture with barley waste, the experimental group, raw potatoes reduced to fragments in a grinder, also mixed with barley waste and thickly mixed with water. All nursing piglets were additionally given corn-cobs and soured milk. In the course of the entire experiment the control group consumed its ration completely, in the experimental group raw potatoes were left over every day averaging 0.8 kg per animal (it consumed 1.8 kg instead of 2.6 kg). On the average the control group

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SPIRIN, K.F.

USSR/Farm Animals - Swine. Q-4

Abs Jour : Ref Zhur - Biol., No 18, 1958, 83429

Author : Borts, Z.L., Bryushinin, I.G., Kovalenko, N.A., Nazarenko, V.A., Pochernyayeva, G.N., Spirin, K.F.

Inst :

Title : Corn Waste as Valuable Swine Fodder.

Orig Pub : Svinovodstvo, No 12, 30-44

Abstract : When corn waste (CW) was fed to adult pregnant and nursing sows in proportions reaching 23-25 and 41.45 percent of fodder rations, negative effects in terms of the sows' fertility and milk productivity, or in terms of piglet development were not observed. It was determined that CW may be fed to suckling piglets as additional fodder, and to weaned piglets as basic fodder in feed mixtures. When raising pure-bred sows to mating age, it is possible to repalce grain feeds by CW, limiting it to 60 percent of the feeds' nutritional values. As swine which were

Card 1/2

fattened for meat and lard production were fed with 35-70 percent of CW, harmful effects were not encountered provided that 10 percent of protein and 15-20 percent of green fodder were included into the rations. Costs of weight gains were 14.36 percent lower than when barley, oats, or wheat waste were used for feedings. Digestibility coefficients of rations containing 70 percent of CW were higher than when rations without CW were used for animals of all age groups. -- A.D. Masis

Card 2/2

SMOLYARENKO, Daniil Abramovich; YEFANOV, Nikolay Ivanovich; MASLOVSKIY, P.M., retsenzent; BORODULIN, A.I., retsenzent; GONCHAROV, G.I., retsenzent; SPIRIN, N.I., retsenzent; KOROLEV, M.N., nauchnyy red.; ZINGER, S.L., red.izd-va; KARASEV, A.I., tekhn.red.

[Large-capacity open-hearth furnace plants] Martenovskie tsekhi s pechami bol'shoi emkosti. Izd.2., perer. i dop. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1960. 356 p. (MIRA 13:9)
(Open-hearth furnaces--Design and construction)

SPIRIN, N.V., assistant

Everbody gains in competition. Tekst. prom. 24 no.11:
1-5 N '64.
(MIRA 17:12)

1. Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti.

SPIRIN, P. (Sverdlovsk)

Important potential for the economy of fuel. Vop. ekon. no.8:
139-143 Ag '62. (MIRA 15:8)
(Ural Mountain region--Power resources)

SPIRIN, P. (Sverdlovsk); KOSYAKOV, P. (Sverdlovsk); BRYUKHOV, G.
(Sverdlovsk)

Works of the Department of Economic Research of the Ural Branch of the Academy of Sciences of the U.S.S.R. Vop. ekon. no.11:157-160 N '63. (MIRA 17:2)

SPIRIN, P.A.

Protecting underground oil and gas pipelines from corrosion. Izv. vys. ucheb. zav.; neft' i gaz 8 no.3:16 '65.

(MIRA 18:5)

1. Azerbaydzhanskiy institut nefti i khimii im. M. Azizbekova.

ZABABURIN, M.I.; SPIRIN, P.P.

Course of the development of the peat winning and utilization in the Urals. Torf.prom. 36 no.1:11-12 '59. (MIRA 12:3)

1. Sverdlovskoye upravleniye torfyanogo fonda (for Zababurin). 2. Ural'skiy filial AN SSSR (for Spirin).
(Ural Mountain region--Peat)

SOLDATOV, A.M.; SPIRIN, P.V.; TIMOFEYEV, A.I.

Treating oil wells with a sodium-sulfide salt reagent in the fields of Kuybyshev Province. Nefteprom. delo. no.9:12-15 '64. (MIRA 17:10)

1. Kuybyshevskiy nauchno-issledovatel'skiy institut neftyanoy promyshlennosti.

SOLDATOV, A.M.; TIMOFEYEV, A.I.; SPIRIN, P.V.; MERKULOV, V.P.; MENDKOVICH, Z.Ya.

Disintegration of rocks and metal by the sand-jet method. (MIRA 18:3)
Nefteprom. delo no.11:12-16 '64.

1. Kuybyshevskiy nauchno-issledovatel'skiy institut neftyanoy promyshlennosti.

SPIRIN, S.

Change the attitude towards the machine plant. Muk.-elev.prom. 25 no.6:30 Je '59. (MIRA 12:9)

1. Direktor liteyno-mechanicheskogo zavoda Chelyabinskogo upravleniya khleboproduktov.
(Grain-milling machinery)

SPIRIN, S.; LUK'YANOV, Ye.

Birth of a new grain cleaning machine. Muk.-elev.prom. 26 no.1: 21-22 Ja '60. (MIRA 13:6)

1. Direktor liteyno-mekhanicheskogo zavoda Chelyabinskogo upravleniya khleboproduktov (for Spirin). 2. Glavnyy konstruktor spetsial'nogo konstruktorskogo byuro liteyno-mekhanicheskogo zavoda Chelyabinskogo upravleniya khleboproduktov (for Luk'yanov).
(Grain--Cleaning)

YERMAKOV, V.S.; SPIRIN, S.A.; CHIZHOV, D.G.; UGORETS, I.I.; LAVRENENKO, K.D.; SMIRNOV, G.V.; CHUPRAKOV, N.M.; MKHITARYAN, S.G.; ASMOLOV, G.L.; KOTILEVSKIY, A.M.; MOLOKANOV, S.I.; SYROMYATNIKOV, I.A.; FAYERMAN, S.Ts.; SOKOLOV, B.M.; KOMISSAROV, Yu.P.; MALYUTIN, I.P.; POBEGAYLO, K.M.; MORYAKOV, A.V.; MELAMED, M.F.; KUMSIASHVILI, P.G.; GARKAVAYA, L.A.; LIVSHITS, E.M.; NEKRASOV, A.M.

Moisei Vul'fovich Safro; obituary. Elek.sta. 24 no.11:60 N '53. (MLRA 6:11)

(Safro, Moisei Vul'fovich, ?-1953)

YERMAKOV, V.S.; KLOCHKOV, I.M.; CHIZHOV, D.G.; KOGTEV, G.I.; LAVRENENKO, K.D.; NEKRASOV, A.M.; SPIRIN, S.A.; VESELOV, N.D.; KOTILEVSKIY, D.G.; SMIRNOV, G.V.; MARINOV, A.M.; MAKSIMOV, A.A.; IVANOV, M.I.; NEMOV, A.P.; CHUPRAKOV, N.M.; AVTONOMOV, B.V.; SYROMYATNIKOV, I.A.; MOLOKANOV, S.I.; FAERMAN, S.TS.; GORSHKOV, A.S.; GOL'DENBERG, P.S.; SOKOLOV, B.M.; MAKUSHKIN, Ya.G.; MKHITARYAN, S.G.; RASSADNIKOV, Ye.I.; GRUDINSKIY, P.G.; FOMICHEV, G.I.; SHCHERBININ, B.V.; ZAYTSEV, V.I.; KOKOREV, S.V.; KLYUSHIN, M.P.; PESCHANSKIY, V.I.; SAFRAZBEKYAN, G.S.; i dr...

IUrii Prokhorovich Komissarov; obituary. Elek.sta. 25 no.5:60 My '54.
(Komissarov, IUrii Prokhorovich, 1910-1954) (MLRA 7:6)

SPIRIN, S. I.

[redacted]

PA 6/49T8

USSR/Engineering Aug 48
Metallurgical Plant
Furnaces, Open Hearth

"Reconstruction of 150-Ton Martin Furnaces at the Kuznets Metallurgical Factory," S. S. Gudovshchikov S. I. Spirin, Engineers, Kuznets Metallurgical Combine, 8 pp

"Stal'" No 8

Reconstruction of 150-ton open hearth furnaces of Kuznets plant, which increased their capacity to 185 and 350 tons, resulted in a considerable increase in their hourly production rate. Certain modifications

[redacted] 6/49T8

USSR/Engineering (Contd) Aug 48

had to be made in view of new requirements. Considerable lack of proportion is observed between increased productivity of furnace and almost unaltered volume of checker brick and slag pockets. Sketches show furnaces and dimension tables.

6/49T8

SPIRIN, S.L.

Methods of prospecting for bauxites in the southwestern part of the Chulym-Yenisey Lowland. Razved. i okh.nedr 24 no.10: 10-17 O '58. (MIRA 12:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya.

(Chulym-Yenisey Lowland--Bauxite)

GORETSKII, Iu.K. [deceased]; ORLOVA, P.V.; SPIRIN, S.L.

Prospects for finding bauxite in Siberia and the trends in and the methods of further prospecting. Min.syr'e no.5:3-19 '62.
(MIRA 16:4)

(Siberia--Bauxite)

Spirin, V.A.

USSR/Chemical Technology. Chemical Products and Their Application--Wood chemistry products. Cellulose and its manufacture. Paper. I-25

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 10027

Author : Arkhipov, M. I. and Spirin, V. A.
Inst : Ivanovsk Chemical Engineering Institute
Title : Investigations in the Field of Cuprammonium Cellulose Solution. Effect of the Composition of the Reagent on the Changes in the Structural Viscosity of a 1% Cellulose Solution. Arkhipov, M. I. and Bol'shakov, A. G.: Effect of Agitation Time and Rate on the Variation in the Structural Viscosity of a 1% Cellulose Solution.

Orig Pub: Tr. Ivanovsk. khim.-tekhnol. in-ta, 1956, No 5, 144-148; 149-153

Abstract: The effect of the concentration of Cu and NH_3 in the cuprammonium solution and of the type of

Card 1/3

SHAGOV, N.P., inzh.; SPIRIN, V.A., tekhnik

Determining some technological parameters in coating pipe with polymer strips. Stroi. truboprov. 6 no.6:14-16 Je '61.
(MIRA 14:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov, Moskva.
(Protective coatings)
(Pipe)

SPIRIN, V.A., inzh.

Device for insulating pipes with strips of polymer material.
Stroi. truboprov. 7 no.5:27 My '62. (MIRA 16:6)

(Pipelines) (Protective coatings)

SHAGOV, N.P.; SPIRIN, V.A.

Machine for insulating medium-diameter pipes with adhesive polymer bands. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh. inform. no.1:18-20 '63. (MIRA 16:2)
(Insultaion (Heat)—Equipment and supplies)

ACCESSION NR: AP4041020 S/0120/64/000/003/0078/0079

AUTHOR: Spirin, V. D.; Bugorkov, A. S.

TITLE: Circuit for separating pulse pairs

SOURCE: Pribory* i tekhnika eksperimenta, no. 3, 1964, 78-79

TOPIC TAGS: double pulse, pulse separation system, nuclear measurement, thorium, scintillation counter, Schmidt trigger, amplitude discriminator, univibrator, scaling circuit, scaler

ABSTRACT: The authors describe an electronic circuit for separating pulse pairs during a given interval τ, from the packet of pulses which are being fed to the input of the circuit. The interval may be 0.05 to 0.5 sec. The system makes it possible to measure minute quantities of thorium in samples. The operation of the system consists in the following: a pulse of positive polarity taken from a scintillation counter is applied to the input of an amplifier, phase inverted, and shaped by Schmidt trigger, which acts also as an amplitude discriminator. After shaping, the pulse is applied to the grid circuit of a univibrator. The amplitude of the shaped

ACCESSION NR: AP4041020

pulse is 20 v. The pulse is only able to trigger the univibrator of long pulses (grid bias, -15 v). The univibrator of short pulses cannot be triggered by the same signal, because of its grid bias (-25 v). A positive pulse appears at the output of the long-pulse univibrator. Its duration is adjusted by a variable resistor. If another pulse comes to the system input during interval τ, the univibrator of short pulses will be triggered. A pulse from the plate of the univibrator tube is fed through a cathode follower into the input of the scaling circuit and recorded. The maximum value of the interval τ corresponds to about three periods of ThA half-decay, i.e., the time during which the disintegration (probability, 90%) of a developed ThA atom takes place. The possibility of reducing the interval up to 0.05 sec can be realized by the selection of an optimum value of τ at a considerable counting rate, when the probability of recording spurious coincidences increases. Orig. art. has: 1 figure.

ACCESSION NR: AP4041020

ASSOCIATION: Leningradskiy nauchno-issledovatel'skiy institut radiatsionnoy gigieny* (Leningrad Scientific Research Institute of Radiation Hygiene)

SUBMITTED: 04Jun63 ATD PRESS: 3068 ENCL: 00

SUB CODE: EC, NP NO REF SOV: 000 OTHER: 002

Card 3/3

L 3770-66 EWT(m)/EWA(h) GS

ACCESSION NR: AT5023960 UR/0000/65/000/000/0461/0465

24
541

AUTHOR: Spirin, V. D.

TITLE: Methods for measuring ultra-small α-activities

SOURCE: Nauchnaya konferentsiya po yadernoy meteorologii. Obninsk, 1964. Radioaktivnyye izotopy v atmosfere i ikh ispol'zovaniye v meteorologii (Radioactive isotopes in the atmosphere and their use in meteorology); doklady konferentsii. Moscow, Atomizdat, 1965, 461-465

TOPIC TAGS: alpha particle, alpha particle detector, alpha particle spectroscopy, alpha counter / SAS 1 scintillator, FEU 44 photomultiplier

ABSTRACT: Three devices for the determination of ultra-small α-activities are described. They were developed at the Leningradskiy nauchno-issledovatel'skiy institut radiatsionnoy gigiyeny (Leningrad Scientific Research Institute for Radiation Hygiene). The first device, used in the determination of the concentration of long-lived isotopes in air filters, consists of scintillation counter SAS-1 and photomultiplier FEU-44. For an effectiveness of 30-33% per 4π and a sensitivity of 1×10^{-13} curie/g per impulse/h, the background of the counter is 5 imp/h. The second device is a scintillation radonmeter. It is used in

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Card 2/2

L 10618-66

ACC NR: AP5027300 SOURCE CODE: UR/0241/65/010/010/0010/0014

AUTHOR: Yershov, E. B.; Karan, A. A.; Spirin, V. D.; Shamov, V. P.

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B

ORG: Scientific Research Institute of Radiation Hygiene, Leningrad (Nauchnoissledovatel'skiy institut radiatsionnoy gigieny)

TITLE: Experimental determination of absorbed dose from alpha-emitters in contact media

SOURCE: Meditsinskaya radiologiya, v. 10, no. 10, 1965, 10-14

TOPIC TAGS: radiation dosimetry, alpha particle, ~~medical nuclear application, applied mathematics, mathematic prediction, anatomic model~~ irradiation, radiation biologic effect, histology

ABSTRACT: Present calculation of absorbed radiation doses and their distribution in tissues upon internal irradiation by alpha particles does not sufficiently consider the layer between the active and the passive medium, that is, the secretion layer in intestinal irradiation. This work involves study of factors influencing the dose and experimental determination of the absorbed dose according to the depth of the irradiated tissue, either without filter between the contact media or for any filter thickness, by means of an alpha spectrometer and calculation. The model for the active medium was a thick layer of pressed

Card 1/3 UDC: 615.849.7-031

talc with evenly distributed Pu^{239}, and that for the passive layer was koloxylin lamellae simulating cellular layers of various thickness. Even distribution of radioactive isotope and irradiation throughout the media was assumed. Based on the spectra obtained and insertion of values into the formula

$$\bar{E} = \frac{\sum_{1} E_i \cdot N_i}{\sum_{1} N_i} \qquad (1)$$

where E_i is the energy of alpha particles corresponding to the i-channel; N_i the number of alpha particles with E_i energy, and further calculation in consideration of Δd layer, the formula

$$D\Delta d = \frac{E\Delta d \cdot 1{,}6 \cdot 10^{-8}}{\Delta d \cdot t \cdot 100} \underset{\text{RAD/MIN}}{(\text{рад/мин})}. \qquad (5)$$

was arrived at for the dose absorbed in layer Δd. It is concluded that this method of simulation permits determination of the distribution of the quantity of dose absorbed according to the depth of the irradiated medium (mucosal cover of the gastrointestinal tract) from the known thickness of the filter layer (secretion layer in the tract). The mean energy of alpha particles leaving the thick emitter is equal to 0.56 of

L 10618-66

ACC NR: AP5027300

O

the maximal value. Energy liberation beyond the boundary of the source of a thickness equal to the path of alpha particles is 14% of the maximal energy liberation within this layer. In the absence of an absorbing filter the amount of absorbed dose on each cellular layer compared to the mean dose over the whole path is equal to:

$$D_I = 2{,}64 \cdot \bar{D}_{Ra};\quad D_{II} = 1{,}26 \cdot \bar{D}_{Ra};\quad D_{III} = 0{,}48\bar{D}_{Ra};$$

$$D_{IV} = 0{,}1 \cdot \bar{D}_{Ra}.$$

The indices I, II, III and IV designate the corresponding cellular layers. Orig. art. has: 5 formulas and 4 figures.

SUB CODE: 06 / SUBM DATE: 12Aug64/ ORIG REF: 000/ OTH REF: 003

HW

Card 3/3

SHIRIN, V.D.; BELLE, Yu.S.; CHIMINA, V.F.

Measuring the radon concentration in water by γ-radiation. (MIRA 19:1)
Med. rad. 10 no. 12:11-13 D '65

1. Leningradskiy nauchno-issledovatel'skiy institut radiatsionnoy gigiyeny.

SHINDEL', Ya.G. [Shyndel', IA.H.]; CHEPOVETSKIY, V.M. [Chepovets'kyi, V.M.];
SPIRIN, V.K.

Automation of manual operations in dyeing and finishing processes.
Leh.prom. no.1:20-22 Ja-Mr '64. (MIRA 19:1)

GINEVICH, G.I.; PREOBRAZHENSKIY, V.N.; SPIRIN, V.V.

Continuous unit for milling aminoplastics. Plast.massy no.11:58-59 '61. (MIRA 14:10)
(Aminoplastics) (Milling machinery)

L 22445-66 EWT(1)/EWA(h)

ACC NR: AP6005003 SOURCE CODE: UR/0106/66/000/001/0076/0078

AUTHOR: Spirin, V. Ya.; Styblik, V. A.

14

B

ORG: none

TITLE: Tunnel-diode generating converter and heterodyne converter

SOURCE: Elektrosvyaz', no. 1, 1966, 76-78

TOPIC TAGS: frequency converter, tunnel diode converter, radio relay line

ABSTRACT: Operating conditions, gain, and gain area of (A) generating and (B) heterodyne-type frequency converters are theoretically considered. It is found that: (1) A-type is less stable in operation than B-type; (2) In allowing for the input conductance of the converter, the heterodyne amplitude decreases with $g_{oc} > 0$ and increases with $g_{oc} < 0$; here, g_{oc} is the converter tunnel-diode conductivity at its operating point; (3) Optimal conditions of the converter require a definite conductivity of the oscillator which may determine the type of tunnel diode to be used; (4) Under $g_{oc} < 0$ conditions, stable operation is possible only at oscillator voltages exceeding a certain value. Experimental verification is claimed. Orig. art. has: 6 figures and 9 formulas.

SUB CODE: 17, 09 / SUBM DATE: 15May65 / ORIG REF: 004

Card 1/1 UDC: 621.372.632

SPIRIN, Ya.I., aspirant.

Etiology and treatment of coprostasis and atonia of the large intestine in horses. Veterinariia 32 no.3:68-70 Mr '55.
(MLRA 8:2)

1.Novocherkasskiy zoovoterinarnyy institut imeni 1-y Konnoy Armii.
(HORSES--DISEASES) (INTESTINES--DISEASES)

SPIRIN, Ye. I.

SPIRIN, Ye. I. -- "On the Motor Function of the Colon of Horses Based on Experiments with 'fistula' Horses." Min Higher Education. Novocherkassk Zooveterinary Inst imeni First Cavalry Army. Chair of Pathological Physiology. Novocherkassk, 1955. (Dissertation for the Degree of Candidate in Veterinary Sciences)

SO: Knizhnaya Letopis', No 1, 1956

VIRNIK, D.I., starshiy nauchnyy sotrudnik; ARTEMOVA, N.N., mladshiy nauchnyy sotrudnik; RADKEVICH, D.P., mladshiy nauchnyy sotrudnik; SEROCHKINA, V.P., mladshiy nauchnyy sotrudnik; KUZNETSOV, V.P., mladshiy nauchnyy sotrudnik; TRUDOLYUBOVA, G.B., mladshiy nauchnyy sotrudnik; SPIRIN, Ye.T., starshiy inzh.

Development of a new technology and mechanized continuous production line for the manufacture of edible gelatin from collagen-containing pigskins. Trudy VNIIMP no.15: 84-94 '63. (MIRA 17:5)

SPIRIN, Yu.L.; GANTMAKHER, A.R.; MEDVEDEV, S.S.

Mechanism of polymerization in the presence of alkali metal organic compounds. Vysokom.soed. 1 no.8:1258-1265 Ag '59. (MIRA 13:2)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Polymerization) (Alkali metal compounds)

GANTMAKHER, A.R.; SPIRIN, Yu.L.; MEDVEDEV, S.S.

Polymerization and copolymerization of fluorinated styrenes. Vysokom.soed. 1 no.10:1526-1530 O '59. (MIRA 13:3)

1. Fiziko-khimicheskiy institut im.L.Ya.Karpova.
(Styrene) (Polymerization)

~~5 (4)~~ 5.3830 (A), 5.3831

66433

AUTHORS: Spirin, Yu. L., Gantmakher, A. R., Medvedev, S. S., Academician

SOV/20-128-6-38/63

TITLE: The Copolymerization of Parachlorostyrene With α-Methylstyrene and Styrene Under the Influence of Alkaline Catalysts

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1232 - 1233 (USSR)

ABSTRACT: An investigation is made of the reactivity of chlorine-containing monomers under the influence of lithium-organic and sodium-organic catalysts in different media. The polymerization took place in a vacuum, to exclude the effects of air and humidity. Previous experiments with monomers containing a relatively mobile chlorine atom (chlorovinyl, chloroprene) showed that the chlorine atom quickly reacts with lithiumethyl and that no polymerization takes place even at low temperatures. The chlorine atom of parachlorostyrene is, however, less mobile, and thus it is possible to carry out the polymerization. Table 1 gives the results of the experiments. Lithiumethyl, sodium triphenylmethyl, α-sodium naphthalene and γ-radiation were used as catalysts; the solvents were benzene, ether, triethylamine, and tetrahydrofuran. The composition of the copolymers strongly depended on the kind

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The Copolymerization of Parachlorostyrene With α-Methylstyrene and Styrene Under the Influence of Alkaline Catalysts SOV/20-128-6-38/63

of catalyst and medium. In the case of hydrocarbons the radical polymerization is predominant in the polymerization with lithiumethyl. The same radical polymerization also prevails under the effect of γ-radiation. In the case of triethylamine the polymerization according to the anion mechanism is most frquent, while when lithiumethyl is used in ether radical mechanism and anion mechanism are found side by side. The constants of anionic copolymerization calculated for styrene ($\alpha = 0.1 \pm 0.1$) and parachlorostyrene ($\beta = 6.5 \pm 0.1$) show that the introduction of the chlorine atom into styrene increases the activity of the monomer for anionic polymerization. There are 1 table and 2 references, 1 of which is Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

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SUBMITTED: July 6, 1959

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PHASE I BOOK EXPLOITATION SOV/4983

International symposium on macromolecular chemistry. Moscow, 1960.

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

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

Tech. Ed.: T.A. Prusakova.

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

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

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81612

S/190/60/002/02/11/011
B004/B061

5.3831

AUTHORS: Spirin, Yu. L., Gantmakher, A. R., Medvedev, S. S.

TITLE: Electron Absorption Spectra of Carbanions in the Polymerization of Styrene in the Presence of Organometallic Compounds

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 2, pp. 310-312

TEXT: The authors proceed from the data published in Refs. 1-4, according to which the composition of copolymers changes when, instead of organosodium- organolithium compounds are used as catalysts, and the polymerization occurs in hydrocarbons instead of in amines and ethers. The polymerization is accelerated by the conversion of LiR to NaR and the substitution of amines, ether, or tetrahydrofurane for hydrocarbon. The authors infer from this that the structure of the carbanion components of the catalysts for LiR and NaR differ not only in hydrocarbons but also in polar solvents. This was checked by examining the

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Electron Absorption Spectra of Carbanions in the Polymerization of Styrene in the Presence of Organometallic Compounds

S/190/60/002/02/11/011
B004/B061

absorption spectra in the near ultraviolet range. The spectra of carbanions formed by polymerization of styrene in the presence of LiR or NaR in different media were taken with an СФ-4 (SF-4) spectrophotometer according to I. V. Astaf'yev's method (Ref. 6), excluding dampness and oxygen. Fig. 1 shows the dependence of the optical density on the wavelength for lithium polystyrene in different media, Fig. 2, the same for sodium polystyrene, and Table 1 gives the absorption maxima. The results are: The absorption maximum is shifted to longer waves (from 330 mμ to 395 mμ) by the use of organosodium compounds. This confirms the strengthening of the carbanion character in NaR as opposed to LiR. The solvent (toluene, toluene + triethylamine, toluene + tetrahydrofurane) has no effect on the position of the absorption bands, and only changes the intensity of absorption. There are 2 figures, 1 table, and 6 references: 3 Soviet and 3 US.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

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81612

Electron Absorption Spectra of Carbanions in the Polymerization of Styrene in the Presence of Organometallic Compounds

S/190/60/002/02/11/011
B004/B061

SUBMITTED: December 4, 1959

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S/190/60/002/007/012/017
B020/B052

11.2211

AUTHORS: ~~Spirin, Yu. L.~~, Polyakov, D. K., Gantmakher, A. R., Medvedev, S. S.

TITLE: Polymerization and Copolymerization of Isoprene Initiated by Ethyl Lithium

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 7, pp. 1082-1092

√C

TEXT: In a previous paper it has been shown (Ref. 1) that the polymerization mechanism of styrene in the presence of ethyl lithium changes considerably with the transition from a hydrocarbon solvent to a triethylamine toluene mixture. Here, the polymerization and copolymerization laws of isoprene and styrene by ethyl lithium are investigated under various conditions. Ethyl lithium was synthesized by reaction of metallic lithium and ethyl chloride in benzene (Ref. 2). After recrystallization it was solved in toluene, vacuum-filtered and filled into ampoules. From them, the solution was filled into the device shown in Fig. 1. The polymerization was carried out in the dilatometer shown in Fig. 2. The polymers

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were precipitated from the obtained solutions by methanol. During the isolation of polyisoprene, the antioxidant Неозон-Д (Neozone-D) was added to methanol. The polymers were vacuum-dried, and the viscosity of polystyrene in benzene (Ref. 1), and that of polyisoprene in toluene were determined at 30°. The composition of the copolymers was IR-spectrographically and refractometrically determined from their hydrogen and carbon contents on the basis of the supposition that the intrinsic viscosity is an additive quantity. The difference in the results obtained by various methods, was not more than ±2.5%. The dependence of the polymerization rate of isoprene on the concentration of the monomer in toluene, ethyl lithium in toluene, triethyl amine and the catalyst in a toluene - triethyl amine mixture, is graphically presented in Fig. 3. It is shown that the polymerization rate is proportional to the monomer concentration. In the toluene - amine mixture, the polymerization rate is proportional to the concentration of the catalyst. However, the dependence of the polymerization rate in hydrocarbons in connection with the lithium polyisoprene association, on the concentration of the catalyst, is more complicated. Fig. 4 shows the kinetic curves of the isoprene and styrene polymerization with 0.003 mole/l of ethyl lithium solution in toluene, and in a toluene -

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amine mixture. The temperature dependence of the polymerization rate of isoprene in toluene and a toluene - amine mixture, is shown in Figs. 5 and 6. Table 1 gives the activation energies and rate constants during the increase of the chains in the isoprene and styrene polymerizations. For comparison, the same quantities are given as to radical polymerization. $E = 14.3$ kcal/mole, $k_{300} = 0.5$ in the polymerization of isoprene in toluene, and in the amine - toluene mixture: $E = 9.2$ kcal/mole, and $k_{300} = 0.03$. The dependence of log $[\eta]$ on log M for polyisoprene in toluene, and toluene with a triethylamine addition, are shown in Fig. 7. Table 2 gives the composition of isoprene styrene copolymers in various solvents at 27°C; the kinetic curves of the system under different conditions are given in Fig. 8. The constants of the copolymerization of isoprene and styrene in toluene were found to be $r_1 = 9.5$, $r_2 = 0.25$; in a toluene - amine mixture $r_1 = 1$, $r_2 = 0.8$. On the basis of the results obtained, a polymerization mechanism was suggested for vinyl and diene-monomers in the presence of ethyl lithium under various conditions. There are 8 figures, 2 tables, and 11 references: 6 Soviet and 5 US.

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Polymerization and Copolymerization of Isoprene Initiated by Ethyl Lithium

S/190/60/002/007/012/017
B020/B052

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: March 17, 1960

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S/074/60/029/05/02/005
B008/B006

5,3800

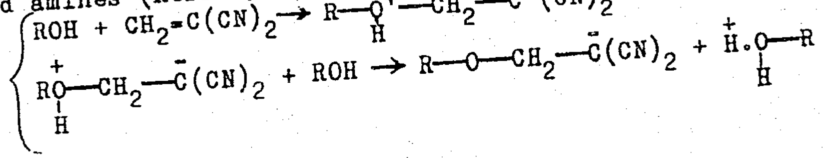
AUTHORS: Gantmakher, A. R., Spirin, Yu. L.

TITLE: Anionic Polymerization Under the Influence of Alkali Metals and Their Derivatives

PERIODICAL: Uspekhi khimii, 1960, Vol. 29, No. 5, pp. 629-647

TEXT: This survey deals with polymerization under the influence of alkali metals and their derivatives. Anionic polymerization proceeds according to an ionic mechanism of the type of an acid-base interaction (Ref. 1), in which the catalysts, or the active centers act as electron donors, while the monomers act as electron acceptors. Vinylidene cyanide and nitro-ethylene monomers, which readily react in anionic polymerization reactions, polymerize in presence of water, alcohols and amines (Refs. 3-7) without heating. The following mechanism is assumed:

initiation



$$\left\{\begin{array}{l}\mathrm{ROH + CH_2{=}C(CN)_2 \rightarrow R{-}\underset{H}{O}{}^{+}{-}CH_2{-}C^{-}(CN)_2} \\ \mathrm{R\underset{H}{\overset{+}{O}}{-}CH_2{-}\bar{C}(CN)_2 + ROH \rightarrow R{-}O{-}CH_2{-}\bar{C}(CN)_2 + \overset{+}{H}\cdot\underset{H}{O}{-}R}\end{array}\right.$$

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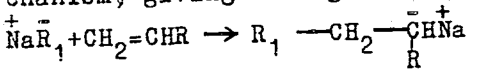
chain reaction $R—O—CH_2—\bar{C}(CN)_2+nCH_2=C(CN)_2 \rightarrow R—O—[CH_2—C(CN)_2]^{-}_{n+1}$.

Refs. 8-13 are the first papers published in the field of polymerization in the presence of alkali metals, amides and organic alkali-metal compounds. Further investigations in this field rendered it possible to clarify the nature of this process. Polymerization in liquid ammonia in the presence of alkali-metal amides is discussed in Refs. 14-16. The following reaction mechanism was suggested: $\bar{N}H_2+CH_2=CHR \rightarrow NH_2—CH_2—\bar{C}HR$ (initiation), $NH_2—(CH_2—CHR)_n—CH_2—\bar{C}HR+CH_2=CHR \rightarrow NH_2—(CH_2—CHR)_{n+1}——CH_2—\bar{C}HR$ (chain reaction), $NH_2—(CH_2—CHR)_{n+1}—CH_2—\bar{C}HR+HNH_2 \rightarrow NH_2——(CH_2—CHR)_{n+1}—CH_2—CH_2R+NH_2$ (chain termination). Polymerization in the presence of alkali metals and their organo-metallic compounds is discussed in Refs. 1,17-35. For this type of reaction, the following mechanism, giving an organo-sodium catalyst as an example, is assumed:



$\overset{+}{Na}\overset{-}{R}_1+CH_2=CHR \rightarrow R_1—CH_2—\underset{R}{\overset{-}{C}}H\overset{+}{Na}$ (initiation) $R_1—(CH_2—CHR)_n—CH_2—$

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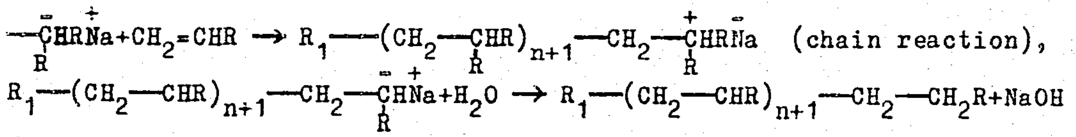
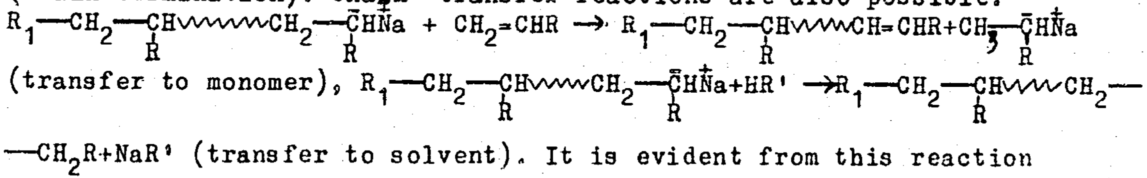


$-\underset{R}{\overset{-}{C}}HR\overset{+}{Na}+CH_2{=}CHR \rightarrow R_1-(CH_2-\underset{R}{C}HR)_{n+1}-CH_2-\underset{R}{\overset{+}{C}}HR\overset{-}{Na}$ (chain reaction),

$R_1-(CH_2-CHR)_{n+1}-CH_2-\underset{R}{\overset{-}{C}}H\overset{+}{Na}+H_2O \rightarrow R_1-(CH_2-CHR)_{n+1}-CH_2-CH_2R+NaOH$

(chain termination). Chain transfer reactions are also possible:



$R_1-CH_2-\underset{R}{C}H\sim\sim\sim CH_2-\underset{R}{\overset{-}{C}}H\overset{+}{Na} + CH_2{=}CHR \rightarrow R_1-CH_2-\underset{R}{C}H\sim\sim CH{=}CHR+CH_3-\underset{R}{C}H\overset{+}{Na}$

(transfer to monomer), $R_1-CH_2-\underset{R}{C}H\sim\sim CH_2-\underset{R}{\overset{-}{C}}H\overset{+}{Na}+HR' \rightarrow R_1-CH_2-\underset{R}{C}H\sim\sim CH_2-$

$-CH_2R+NaR'$ (transfer to solvent). It is evident from this reaction scheme that the structure of the growing active center differs little from that of the initial organo-metallic compound. Only the structure of the organic radical bound to the metal changes. The initiation rate depends on the nature of the radical of the initial organo-metallic compound. It can be smaller, equal, or greater than the rate of the chain reaction. It is a special property of organo-metallic catalyst initiated polymerization that, under certain conditions, lengthening of the chain can be continued until the monomer present in the reaction

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mixture is completely used up. The kinetics of polymerization in the presence of alkali metals have scarcely been investigated. Polymerization by metallic lithium and its organic compounds is treated in Refs. 26, 28, 36-55. A special property of monomer polymerization under the influence of organic alkali-metal compounds is that the structure of the polymer chain, and thus also the properties of the polymer formed, depend on the nature of the catalyst and the medium applied (Tables 1, 2). X Polymerization in the presence of "alfin" catalysts is described in Refs. 37, 56-62 (the term "alfin" was formed at an early investigation stage of this new catalyst, when it was assumed that only two components - sodium alcoholates and olefine compounds of sodium - were required for its preparation). The mechanism of polymerizations initiated by this catalyst is not yet wholly understood. The nature of the catalyst, however, and rules observed in the reaction, indicate it to be an anionic polymerization. The simultaneous occurrence of anionic- and radical polymerizations in the presence of alkali metals is described in Refs. 23, 63-70. It was shown that the formation of an ion-radical in the reaction of an alkali metal with an unsaturated molecule does not always lead to anionic polymerization. In some cases the competitive radical

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polymerization predominates, while in other cases, both reactions occur simultaneously (Table 3). The preparation of polymers of regular structure - so-called isotactic and syndiotactic polymers - by anionic polymerization methods are described in Refs. 59, 60, 71-80. It is mentioned that stereoregular polymers can be prepared not only in heterogeneous systems, but also in homogeneous mediums, but only in the presence of organo-lithium compounds. Anionic copolymerization is discussed in Refs. 23, 28, 50, 68, 81-90. The latter reaction is widely applied for preparing polymers with valuable properties (Tables 4, 5). It is finally stressed that there is very little quantitative information on the mechanisms of the reactions mentioned in this paper. The following persons are mentioned: I. L. Kondakov, S. V. Lebedev, I. I. Ostromyslenskiy, S. S. Medvedev, A. D. Abkin, O. D. Mamontova, A. A. Korotkov, K. B. Piotrovskiy, V. A. Kropachev, B. A. Dolgoplosk, N. N. Nikolayev, N. N. Chesnokova, L. B. Trukhmanova, G. Mark, Ye. B. Lyudvig. There are 5 tables and 90 references, 22 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy in-t im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

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To be submitted for the International Symposium on Macromolecular Chemistry, Montreal, Canada, 27 Jul -1 Aug 1961.

USSR

BIRSHTEYN, T. M., Institute of High Molecular Chemistry, Academy of Sciences USSR, Leningrad, jointly with KRIGBAUM, W. R., and KANEKO, M., Duke University, Durham, N.C. - "Elasticity of cube lattice chain networks" (Group 2)

DOGADKIN, Boris A., and DONTSOV, A. A., Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov - "Interaction of polyethylene with sulphur" (Groups 4-5)

KARGIN, Valentin A., Head, Laboratory of Colloidal Chemistry, Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov, Moscow - "The formation of big crystal structures in polymers and their properties" (Group 2. Invited lecture)

KRENTSEL', B. A., TOPCHIYEV, A. V., and SAKALO, L. A., Institute of Petroleum, Academy of Sciences USSR, Moscow - "Polymerization of some epoxy compounds" (Group 3-B)

MEDVEDEV, Sergey S., SPIRIN, Yu. A., AREST-YAKUBOVICH, A. A., POLYAKOV, D. K., and GANTMAKHER, A. R., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov, Moscow - "Polymerization catalyzed by lithium and lithium alkyl" (In German) (Group 3-B)

(Yu L)

NAMETKIN, N. S., TOPCHIYEV, A. V., and POLAK, L. S., Institute of Petrochemical Synthesis, Academy of Sciences USSR, Moscow - "On the catalytic polymerization and radiochemistry of allylsilanes" (Group 3-A)

PIOTROVSKIY, K. B., All-Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev, Leningrad - "Temperature effect on polymer structure in diene polymerization by alkali metals" (Group 3-B)

PODDUBNYY, I. Ya., and YERENBURG, Ye. G., All-Union Scientific Research Institute of Synthetic Rubber, Leningrad - "Study of branching in regular isoprene polymers" (Group 1)

PODDUBNYI, I. Ya. MOSEVITSKIY, M. I., RABINERZON, M. A., and PERMINOV, A. P., All-Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev, Leningrad - "Nature of molecular-weight distribution and properties of styrene-butadiene rubbers depending on polymerization conditions" (Group 3-A)

PRAVEDNIKOV, A. N., TELESHOV, Ye. N., YING, She-k'ang, and MEDVEDEV, S. S., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov, Moscow - "Investigation of the mechanism of radiolysis of polymers containing quaternary atoms of carbon" (Group 4-5) V. N.

TSVETSOV, Viktor M., Institute of High Molecular Compounds of the Academy of Sciences USSR, Leningrad - "Stereo-regularity and optical anisotropy of macromolecules" (Group not specified)

USMANOV, Khamdam U., and SUSHKEVICH, T. I., Academy of Sciences UzSSR, Tashkent, Uzbekistan - "The investigation of the cotton cellulose polydispersity according to the molecular weight" (Group not specified)

YENIKOLOPYAN, N. S., Institute of Chemical Physics of the Academy of Sciences USSR, Moscow - "On the kinetics of formaldehyde polymerization and polyformaldehyde degradation" (Group 3-B)

SPIRIN, Yu. L.

25859
S/020/61/139/004/019/025
B103/B206

11.2211 also 2209, 1372

AUTHORS: Spirin, Yu. L., Polyakov, D. K., Gantmakher, A. R., and
Medvedev, S. S., Academician

TITLE: Polymerization of styrene, butadiene and isoprene, initiated
by lithium ethyl in various media

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 4, 1961, 899-902

TEXT: The authors investigated the separate polymerization and copolymerization of monomers: a) styrene, b) butadiene, and c) isoprene, which was initiated with lithium ethyl and carried out in 1) toluene, 2) triethylamine (amine), 3) diethyl ether, 4) dioxane, and 5) tetrahydrofuran (THF). Thus, the dependence of the reactivity of these monomers on their structure and on polymerization conditions was to be clarified. The methods were described in previous studies (Ref. 1: Yu. L. Spirin et al., Vysokomolek. soyed., 2, 1082 (1960); Ref. 2: L. M. Lanovskaya et al., ibid., 1391). In all three cases, the molecular weight of the polymers increased in 1)-5) with the intensity of polymerization. Its dependence on the concentration C of the components was close to the ratio M/C (Ref.

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Polymerization of styrene, butadiene ...

3: M. Szwarc & al. J. Am. Chem. Soc., 78, 2656 (1956), Ref. 4: F. Welch, ibid. 81, 1345 (1959)). The walls of the dilatometer were subjected to special treatment when the investigation took place at a low concentration of the initiator ($\sim 10^{-5}$ mole/l). In these cases the concentration of the active centers was determined on the basis of the molecular weight. In the presence of 2) to 5), a bulb dilatometer melted from one piece of quartz was used for polymerization, the concentration of active centers being determined spectrophotometrically at a given wavelength. 1): Even at relatively low concentrations of the initiator, deviations from the proportional dependence of the rate on the concentration of the initiator occurred. The rules observed were previously explained (Ref. 1) by the formation of mutually associated "live" polymers in hydrocarbon media. They are inactive during polymerization. The association of the active centers was also proved viscosimetrically: The viscosity of the solutions of the "live" Li polyisoprene in toluene dropped considerably due to deactivation. The equilibrium between the associates and the monomer centers which are active during polymerization, is displaced with the temperature rise in the direction of the latter. Thus, the activation energy of the process is lowered. This takes place even at a

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Polymerization of styrene, butadiene ...

concentration of the initiator of ~$0.5 \cdot 10^{-4}$ mole/l. Thus, an association exists also under these conditions. The authors established that the association of the active centers increases as follows: Li polystyrene < Li polyisoprene < Li polybutadiene. The relative reactivity of the monomers increases as follows: styrene < isoprene < butadiene. 2) - 5): Polymerization is accelerated with the introduction of these solvents, but the activation energies are reduced correspondingly. THF (0.6%) which reduces the activation energy of styrene polymerization in toluene from 14.5 to 6.8, has the strongest effect. However, the activation energy of isoprene polymerization in THF rises with temperature increase. This seems to be explained by a degenerate passing on of the chain through the monomer (Ref. 6: S. Ye. Bresler et al., ZhTF, ser. B, 28, 114 (1958)). The association of the "live" polymers is considerably reduced in the presence of 2) to 5), since 2) to 5) form complexes with lithium. Association of the Li polystyrene is absent in the medium of 2) to 5) (there is a proportional dependence between the rate of polymerization and the concentration of the initiator); Li polyisoprene is slightly associated in amine; Li polybutadiene is considerably associated in

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Polymerization of styrene, butadiene ...

amine. Even in THF, which is a solvent of high dissolving capacity, some associations of Li polybutadiene occur. This the authors believe to be a dependence of the degree of association of the active centers on their construction. In previous studies (Ref. 1; Ref. 7: Yu. L. Spirin & al., Vysokomolek. soyed., 1, 1258 (1959)) the authors explained the peculiarities of the polymerization of non-polar monomers of the above type by the participation of the lithium component, besides the carbanion component, in the growth of the chain. The introduction of 2) to 5) which form complexes with the lithium component of the catalyst, reduces the effect of this component on the growth of the chain. The mechanism of the process is changed correspondingly. It approaches a typical anionic polymeriaation in the presence of admixtures of high dissolving capacity (THF). The authors presume that the reduction of the activation energy with increasing THF concentration takes place due to the destruction of associates as well as through a change of the complexes between THF and the active centers, and through the increase of the dielectric constant of the medium. Inspite of different dielectric constants of ether and dixane (4.33 and 2.28 at 20°C), the polymerization of styrene in it proceeds at a comparable rate and activation energy. The authors also

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Polymerization of styrene, butadiene ... B103/B206

investigated the composition of copolymers in the systems styrene-isoprene and styrene-butadiene in the presence of 2) to 5), and calculated the copolymerization constants for amine and THF. The relative portion of styrene in the copolymer rises in these systems when 2) to 5) are introduced. It may be seen from the data that the effect of the solvents on separate polymerization and copolymerization is not always the same. In the presence of THF, the copolymers are strongly enriched with styrene and correspond to the compositions from typical anionic processes (D. E. Kelley, A. V. Tobolsky, J. Am. Chem. Soc., 81, 1597 (1959)). The relative reactivity of monomers increases in THF, e. g., isoprene $<$ butadiene $<$ styrene. The authors presume that the reactivity of monomers on separate polymerization in polar media is changed in the same sequence as in the case of copolymerization. The effect of solvents 1) to 5) on polymerization largely depends on their electron-donor capacity. Relatively weak electron donors like amine, ether, or dioxane change the polarization of the Li-C bond only slightly. In individual cases, they even increase the activation energy of chain growth as compared with hydrocarbon solvents. The strong electron donors (THF), however, entirely eliminate the effect of lithium. Thus, the polarization

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15.8610

40567
S/020/62/146/002/009/013
B101/B144

AUTHORS: Spirin, Yu. L., Gantmakher, A. R., Medvedev, S. S., Academician

TITLE: Association of organolithium compounds and its role during polymerization

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 2, 1962, 368-371

TEXT: When polymerization is initiated by organolithium compounds, the polymerization rate increases more slowly than the concentration of the initiator, owing to deactivation of the active centers by association. The authors studied the effect of the polymer carbanion structure on the association degree during the polymerization of styrene, isopropene, or butadiene initiated by ethyl lithium. The shift of the absorption band toward greater wave lengths and the change in optical density of the band were observed in order to study the conversion of ethyl lithium into associates with the polymer carbanion. The specific effect of the polymers was found to be an increase in initiation rate following the sequence isoprene < butadiene < styrene. An examination of the equation

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Association of organolithium ... S/020/62/146/002/009/013
B101/B144

$-d[M]/dt = K[M][LiR]^{1/n}$ (1), $n > 1$ for chain propagation showed that n depends on the carbanion structure. For polystyrene $n \simeq 2$, for polyisoprene $n \simeq 3 - 4$, and for polybutadiene $n \simeq 5 - 6$. The following reaction for chain propagation is established:

$$RM_xLi + (RM_xLi)_{i-1} \underset{K_{2i}}{\overset{K_{2i-1}}{\rightleftarrows}} (RM_xLi)_i;\ i = 2, 3, 4, \dots ;$$

$$RM_xLi + M \xrightarrow{K_p} RM_{x+1}Li. \quad -d[M]/dt = K_p[M]\left\{[(K_4 \dots K_{2n})/(nK_3 \dots K_{2n-1})][RLi]_0\right\}^{1/n}$$

which shows good agreement with the experimental equation (1). The slight change in activation energy brought about by changing the initiator concentration approximately the 10^3-fold, proves the stability of the associates and the constancy of their composition. The active centers were mainly in an associated state even at an ethyl lithium concentration of 10^{-5} moles/l. There are 3 figures and 1 table. The most important English-language references are: F. Welch, J. Am. Chem. Soc., 81, 1345 (1959); D. I. Worsfold, S. Bywater, Canad. J. Chem. 38, 1891, (1960).

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S/020/62/146/002/009/013
B101/B144

Association of organolithium ...

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: May 31, 1962

Card 3/3

SPIRIN, Yu.I.

Activation energy of radical reactions. Zhur. fiz. khim. 36 no.6:1202-1204 Je'62 (MIRA 17:7)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

SPIRIN, Yu.L.

Head for a vacuum rectification column. Zav.lab. 29 no.4:510 '63. (MIRA 16:5)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya.Karpova.

(Distillation apparatus)

POLYAKOV, D.K.; SPIRIN, Yu.L.; GANTMAKHER, A.R.; MEDVEDEV, S.S., akademik

Nature of carbon - alkali metal bond studied by means of electron absorption spectra. Dokl. AN SSSR 150 no.5:1051-1054 Je '63. (MIRA 16:8)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Chemical bonds) (Carbanions--Absorption spectra)

VEL'SOVSKIY, V.N., kand. tekhn. nauk; SPIRIN, Yu.L., inzh.; MISHKE, A.V., inzh.

Economical method of inserting binder in mineral wool.
Stroi. mat. 10 no.2:24-25 F '64. (MIRA 17:6)

PRONINA, I.A.; SPIRIN, Yu.L.; BLAGONRAVOVA, A.A.; AREF'YEVA, S.M.; GANTMAKHER, A.R.; MEDVEDEV, S.S., akademik

Mechanism underlying the catalytic action of Co^{2+} compounds in the urethane-forming reaction. Dokl. AN SSSR 161 no.2:362-365 Mr '65. (MIRA 18:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut lakokrasochnoy promyshlennosti i Fiziko-khimicheskiy institut im. L.Ya.Karpova.

SPIRINA, A.A.

PA 246T23

USSR/Medicine - Infectious Diseases Feb 53

"Types of Hemolytic Streptococci Prevalent at Kursk and Their Connection With Scarlet Fever," A.A. Spirina, N.B. Kazakevich, M.I. Kmit, Kursk Inst of Epidemiol and Microbiol

"Zhur Mikrobiol, Epidemiol, i Immunobiol" No 2, p88

During 1947-50, incidences of scarlet fever were accompanied by the prevalence of Strept. hemolyticus Type I. In 1947, Type III was also present; in 1948, Type II; and in 1949-50, Type IV. The prevalent type was present both in scarlet fever and angina patients. Hemolytic streptococcus was carried by 2 1/2 times more children than adults.

246T23

VOZNESENKIY, D.N.; SPIRINA, A.M.

Significance of sanitary control in plants where workers are exposed to mercury. Gig. sanit., Moskva no.4:48 Apr 1953. (CLML 24:4)

1. Of Sverdlovsk Municipal for the Protection of Labor and of Sverdlovsk Municipal Governmental Sanitary Inspectorate.

SPIRINA, A.M.

MALYKH, A.A.; SPIRINA, A.M.

Artificial cooling in the repair of open-hearth furnaces. Ozdor.usl. trud. na zav. no.5:94-99 '53. (MIRA 8:8)
(Open-hearth furnaces--Maintenance and repair)

SPIRINA, A.M.

81. A protective roof screen.—A. M. SPIRINA (*Ogneupory*, 20, 175, 1955). In Russian. Successful trials are described with a screen, consisting of a metal framework and a textile material or asbestos, to protect the men during the setting and drawing of ring kilns. The screen, weighing about 100 lb., shields them from radiation both from the roof and walls; it is moved by 2 men 3–5 times per shift. (2 figs.)

Matls

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Spirina, A.M.

82. **Artificial cooling in the drawing chambers of annular kilns.**—A. A. MALY̆KH and A. M. SPIRINA (*Ogneupory*, 20, 204, 1955). In Russian. Heavy equipment for air and water cooling of the drawing chambers and the favourable results obtained are described. (5 figs., 4 tables.) ①

SPIRINA, A.M.

Improving the microclimatic conditions while unloading refractory articles from annular kilns. Ozdor.usl.trud. na zav. no.6: 17-33 '56. (MLRA 9:11)

(Kilns) (Air conditioning)

PHASE I BOOK EXPLOITATION 766

Malykh, Aleksandr Aleksandrovich, Spirina, Anna Maksimovna, and Smol'nikov, Nikolay Ivanovich

Okhrana truda v martenovskikh tsekhakh (Safety Measures in Open-hearth Furnace Shops) Moscow, Metallurgizdat, 1957. 196 p. 3,100 copies printed.

Ed.: Raylo, P. I.; Ed. of Publishing House: Khutorskaya, Ye. S.; Tech. Ed.: Mikhaylova, V.V.

PURPOSE: This book is intended for engineers and technicians in metallurgical plants who are interested in, or deal with industrial safety problems. The book may also be used by students in higher institutions of learning and in tekhnikums.

COVERAGE: The authors describe various hygienic and sanitary measures adopted by Soviet industry to improve working conditions and to reduce the accident rate in open-hearth furnace shops. The most frequent causes of accidents are analyzed and the proper preventive measures are explained. Special emphasis is laid on hazardous operations around the open hearth furnace.

Card 1/4

Safety Measures in Open-hearth Furnace Shops 766

Various measures and administrative regulations are discussed which can be used to reduce the number of accidents. There are 61 references of which 60 are Soviet and 1 is English.

TABLE OF CONTENTS:

Card 2/4

SPIRINA, A.M.

136-8-11/21

AUTHORS: Sobolev, P.A. and Spirina, A.M.

TITLE: Labour Safety in the Fluidized-Bed Roasting of Zinc Concentrates (Okhrana truda pri obzhige tsinkovykh kontsentratov v kipyashchem sloye)

PERIODICAL: Tsvetnye Metally, 1957, Nr 8, pp.57-62 (USSR)

ABSTRACT: In April 1956 the Sverdlovsk Institute of Labour Safety of VTsSPS carried out an investigation of working conditions at the KC-2 plant in the "Elektrotsink" works roasting zinc concentrates. In addition an examination was made of data at design and research institutes (Gintsvetmet, Giprotsvetmet and Unipromed'). The authors describe the plant and points of measurement and give results of measurements of meteorological conditions, sulphurous-gas concentrations, dustiness and heat radiation at various points at the plant (Tables 1 and 2). They discuss these and other data in terms of working conditions for the plant operators and suggest that a standardised design of fluidized-bed roasting plant should be produced in which adequate provision is

Card 1/2

SPIRINA, A.M. (Sverdlovsk)

Providing steel casting pits with water-cooled walls improves temperature and humidity in the shop. Gig.truda i prof. zav. 2 no.4:17-22 Jl-Ag '58 (MIRA 11:9)

1. Institut okhrany truda
(FOUNDING--HYGIENIC ASPECTS)
(STEEL--METALURGY)

SPIRINA, A.M.

Role of lightweight fireproof material in the improvement of meteorological conditions in work with kilns. Gig. i san. 23 no.2:74-77 F '58. (MIRA 11:4)

1. Iz Sverdlovskogo instituta okhrany truda Vsesoyuznogo tsentral'nogo soveta profsoyuzov.

(INDUSTRIAL HYGIENE,
control of temperature around furnaces (Rus))
(HEAT,
control around furnaces in indust. (Rus))

MALYKH, Aleksandr Aleksandrovich; SPIRINA, Anna Maksimovna; NOVOSPASSKIY,
V.V., red.; MALEK, Z.N., tekhn. red.

[Protection of workers from heat radiation] Zashchita rabochikh ot luchistogo tepla. Moskva, Izd-vo VTsSPS Profizdat, 1961. 197 p. (MIRA 14:10)

(INDUSTRIAL HYGIENE)

SPIRINA, A.M.

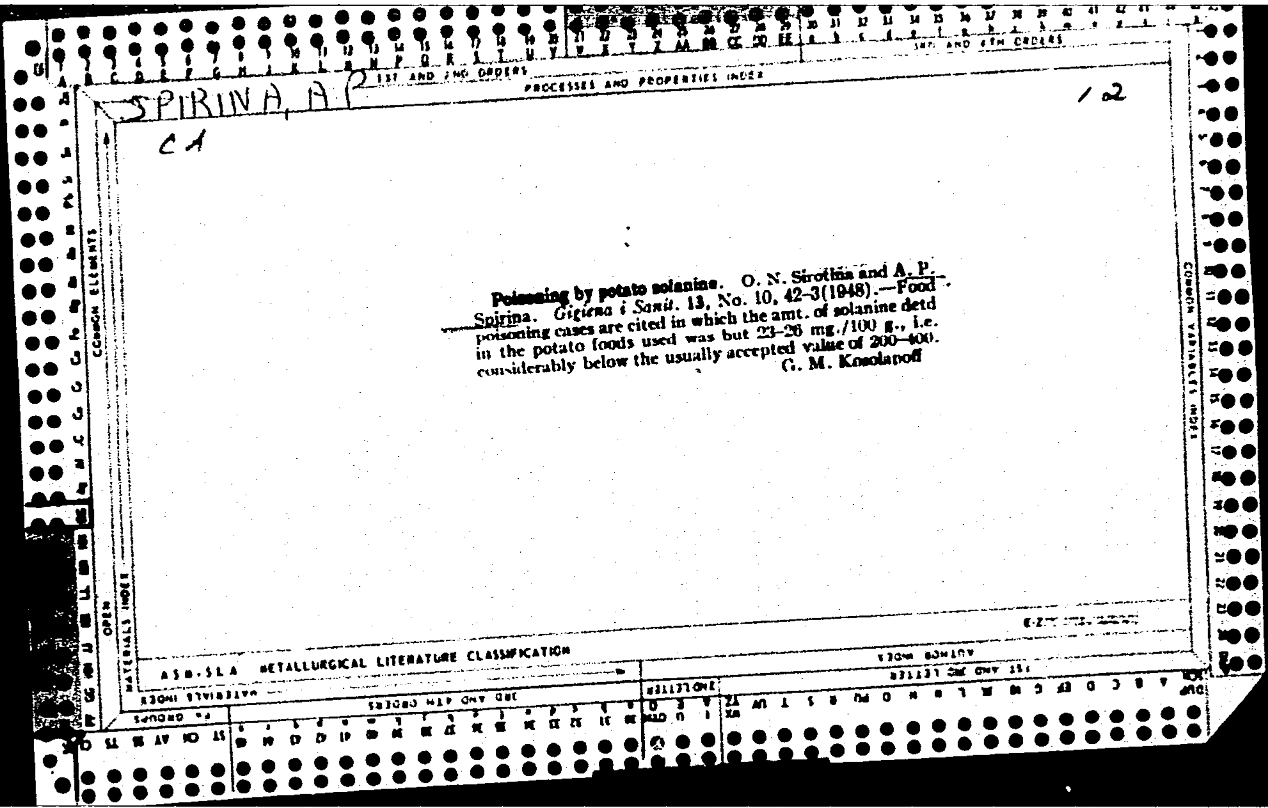
Efficient means of improving working conditions. Metallurg 6 no.12:40-41 D '61. (MIRA 14:11)

1. Sverdlovskiy institut okhrany truda.
(Open-hearth furnaces--Maintenance and repair)

SPIRINA, Antonina Petrovna

Medical Significance Revealing the Flow in Food Products

Dissertation for candidate of a Medical Science degree. Saratov Medical Hygiene Institute, 1948



SPIRINA, A.P.

CA

1 2

Poisoning by potato solanine. O. N. Sirotina and A. P. Spirina. *Gigiena i Sanit.* 13, No. 10, 42-3(1948).—Food poisoning cases are cited in which the amt. of solanine detd in the potato foods used was but 23-26 mg./100 g., i.e. considerably below the usually accepted value of 200-400.
G. M. Kosolapoff

COUNTRY : USSR
CATEGORY : Microbiology. Sanitary Microbiology.

ABS. JOUR. : Ref Zhur-Biologiya, No.4, 1959, No. 14835

AUTHOR : Sirotinina, O.N.; Spirina, A.P.; Popova, A.I.
INST. : Moscow Sci.Res.Inst.of Sanitation and Hygiene
TITLE : Methods of Direct Detection of Bacterial Toxins in Food Products.

ORIG. PUB. : Inform. byul. Mosk. n.-i. in-ta sanitarii i gigiyeny, 1957, No.9, 47-49

ABSTRACT : The precipitation reaction was used for the direct isolation of bacterial toxins in products contaminated by agents of watermelon toxins or proteus. Antitoxin sera were obtained by immunizing rabbits with exo- and endotoxins of different strains of both organisms. The test fluid was superimposed on 0.3 ml of undiluted serum in narrow precipitation tubes. In positive cases the ring or sediment was obtained after 15 - 30 minutes

CARD: 1/2

CATEGORY
ABS. JOUR. No. 14835

AUTHOR
INST.
TITLE

ORIG. PUB.

ABSTRACT : or after 1 - 2 hours (but not more than 4 hours). The experiments showed that the recovered sera were specific for toxins (reaction with heated extracts), whereas sera prepared for the toxin to one strain gave a positive reaction with toxins of other strains, but for proteus -- with toxins of other species of the latter (B. proteus vulgaris and B. proteus ammoniac). -- M.A. Gruzman

CARD: 1/1

5.3610

77397
SOV/79-30-1-58/78

AUTHORS: Bogdanov, M. N., Kudryavtseva, G. I., Spirina, I. A.

TITLE: Synthesis and Polycondensation of p(Aminoethyl)phenylalkanecarboxylic Acids

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 263-267 (USSR)

ABSTRACT: A series of new p-aminoethylphenylalkanecarboxylic acids was prepared and condensed to polyamides. This is a continuation of the authors' previously reported work (ZhOKh, 29, 986, 1959). The synthesis was made according to the following scheme:

$$C_6H_5(CH_2)_nCOOH \longrightarrow ClCH_2C_6H_4(CH_2)_nCOOH \longrightarrow CNCH_2C_6H_4(CH_2)_nCOOH \longrightarrow$$
$$\longrightarrow HCl \cdot NH_2(CH_2)_2C_6H_4(CH_2)_nCOOR \longrightarrow NH_2(CH_2)_2C_6H_4(CH_2)_nCOOH.$$

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Synthesis and Polycondensation of p(Aminothyl) 77397
phenylalkanecarboxylic Acids SOV/79-30-1-58/78

Chloromethylation of the phenylalkanecarboxylic acids was made according to previously described procedure (M. N. Bogdanov, ZhOKh, 28, 1621, 1958). Hydrogenation of the p-cyanomethylphenylalkanecarboxylic acids was conducted according to the procedure described in: P. Ruggli, A. Businger, Helv. Chim. Acta, 25, 39 (1942). The following four acids were prepared for the first time: p-aminoethylphenylacetic acid (I), p-aminoethylphenylpropionic acid (II), p-aminoethylphenylbutyric acid (III), and p-aminoethylphenylvaleric acid (IV). The yields, compositions, and properties of the acids obtained are listed in Table 3. Some conditions of the polycondensation of the aminoacids and the properties of the polyamides are given in Table 4. There are 4 tables; and 4 references, 3 Soviet, 1 Swiss.

ASSOCIATION: All-Union Scientific Research Institute of Synthetic Fibers (Vsesoyuznyy nauchno issledovatel'skiy institut iskusstvennogo volokna)

SUBMITTED: January 2, 1959 Card 2/5

Synthesis and Polycondensation of p(Aminothyl) phenylalkanecarboxylic Acids

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SOV/79-30-1-58/78

Table 3. p-Aminoethylphenylalkanecarboxylic acids $NH_2(CH_2)_2C_6H_4(CH_2)_nCOOH$

Compound	n	Yield (%)	mp	Content (in %)					
				found			calculated		
				C	H	N	C	H	N
(I)	1	53	—	67.29, 67.24	7.17, 7.21	7.96, 7.68	67.02	7.37	7.82
(II)	2	68***	—	68.44, 68.06	8.12, 7.84	7.24, 7.18	68.37	7.82	7.24
(III)	3	50	—	69.56, 69.70	8.32, 8.15	6.95, 7.00	69.62	8.20	6.75
(IV)	4	53	199.0–199.5°	70.72, 70.49	8.47, 8.30	6.32, 6.27	70.60	8.59	6.33

** Since the temperature, at which polycondensation of (I), (II), and (III) in the solid phase begins is lower than their mp the latter cannot be determined.

*** The acid is readily soluble in aqueous alcohols; therefore, aqueous acetone was used for its crystallization.

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Synthesis and Polycondensation of p(Aminothyl) phenylalkanecarboxylic Acids

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SOV/79-30-1-58/78

Table 4. Properties of polyamides prepared from p-aminoalkylphenylalkanecarboxylic acids

		(c)		(f)				
(a)	(b)	(d)	(e)	(g)	(h)	(i)	(j)	(k)
(I)	$NH_2(CH_2)_2C_6H_4CH_2COOH$	$\frac{290°}{305}$	$\frac{90}{30}$	(l)	279—283°	$\frac{0.60}{0.45}$	(p)	(r)
(II)	$NH_2(CH_2)_2C_6H_4(CH_2)_2COOH$	$\frac{310}{320}$	$\frac{120}{60+60^{**}}$	(m)	375—382 (разл.)	$\frac{2.42}{3.17}$	(q)	(s)
(III)	$NH_2(CH_2)_2C_6H_4(CH_2)_3COOH$	$\frac{200}{300}$	$\frac{1020}{60}$	(m)	222—324	$\frac{1.16}{0.56}$	(p)	(r)
(IV)	$NH_2(CH_2)_2C_6H_4(CH_2)_4COOH$	$\frac{265}{290}$	$\frac{120}{60}$	(o)	273—275	$\frac{2.10}{0.92}$	(p)	(r)

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Synthesis and Polycondensation of p(Aminoethyl) 77597
phenylalkanecarboxylic Acids SOV/79-30-1-58/78

Key to Table 4: (a) Compound; (b) Formula of aminoacid; (c) Conditions of polycondensation; (d) Temperature; (e) Time (in minutes); (f) Properties of polyamides; (g) Character of the product; (h) Melting point; (i) Viscosity of the solution; (j) Solubility in aromatic alcohols; (k) Ability to form fibers from melt; (l) White, horny, stable; (m) White fused grains; (n) White powder/White, horny, strong; (o) White fused grains/ White, horny, strong; (p) Soluble; (q) Soluble only in concentrated sulfuric acid; (r) Strong fibers; (s) weak fibers; * for the polyamides of (I), (III), and (IV) the specific viscosity was determined for its 0.5% solution in tricresol; for (II) the relative viscosity was determined for a 1% solution of the polymer in concentrated sulfuric acid; ** heated under vacuum (2 mm).

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27569
S/190/61/003/009/004/016
B110/B101

15.8080

AUTHORS: Bogdanov, M. N., Kudryavtsev, G. I., Mandrosova, F. M., Spirina, I. A., Ostromogol'skiy, D. Ye.

TITLE: Synthesis of some polyamides on the basis of α,ω-aminocarboxylic acids with benzene or cyclohexane rings in methylene chains

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 9, 1961, 1326-1331

X

TEXT: Polyamides from α,ω-aminocarboxylic acids with aromatic rings in the chain (p-aminomethyl-phenyl-alkane carboxylic (p-AMPA) and p-aminoethyl-phenyl-alkane carboxylic acids) are important for the production of thermostable fibers (400-500°C). The spinnability of polyamides (PA) and copolyamides (with ε-caprolactam (ε-CL)) based on p-aminomethylbenzoic acid (p-AMBA) and m-aminomethylbenzoic acid (m-AMBA) was tested. The following compounds were synthesized: 4-aminomethyl-cyclohexyl carboxylic acid (4-AMCA); 3-aminomethyl-cyclohexyl carboxylic acid (3-AMCA); 4-aminoethyl-cyclohexyl propionic acid (4-AECA); cis-4-aminocyclohexyl butyric acid

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S/190/61/003/009/004/016
B110/B101

Synthesis of some polyamides ...

(cis-4-ACBA); trans-4-aminocyclohexyl butyric acid (trans-4-ACBA); and their polyamides. Pure p- and m-AMBA were prepared from the corresponding cyanobenzoic acids via the ethyl ester which can easily be purified by crystallization:
$p\text{-}CNC_6H_4COOH \rightarrow HCl\cdot NH_2CH_2CH_2C_6H_4COOC_2H_5 \rightarrow NH_2CH_2C_6H_4COOC_2H_5 \rightarrow p\text{-AMBA}$.
4-AMCA, 3-AMCA, and 4-AECA were obtained by hydrogenation of the corresponding aromatic acids. Instead of Pt catalyst, rhodium black on Al_2O_3 which is more effective for the hydrogenation of aromatic was used according to A. A. Balandin, M. L. Khidekel' (Ref. 12: Dokl. AN SSSR, 123, 84, 1958). Cis- and trans-4-ACBA which were separated by means of hot acetone were synthesized as follows: $p\text{-}NH_2C_6H_4(CH_2)_3COOH$ $\rightarrow p\text{-}CH_3CONHC_6H_4(CH_2)_3COOH \rightarrow (\text{cis + trans})\text{-}4\text{-}CH_3CONHC_6H_{10}(CH_2)_3COOH$ $\rightarrow$ cis-4-ACBA + trans-4-ACBA. The following substances were synthesized for the first time: 4-AECA; cis- and trans-4-ACBA; the lactam of 3-AMCA; the hydrochlorides of the ethyl esters of p- and m-AMBA; cis- and trans-N-acetyl-4-ACBA and N-acetyl-p-aminophenyl butyric acid. The polymers of p- and m-AMBA are only slightly viscous, do not form fibers, and melt under decomposition above 300°C, as their "aromatic" carboxyl groups

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S/190/61/003/009/004/016
B110/B101

Synthesis of some polyamides ...

undergo side reactions. p-AMPA and 4-AMCA in which benzene ring and COOH groups are separated by $-CH_2$-groups form polymers with higher molecular weight. The copolymers of p-AMBA with ε-CL, on the other hand, form strong fibers from the melt which can be cold-drawn. The p-AMBA carboxyl groups are assumed to form more heat-resistant amide groups with the amino groups of the ε-aminocaproic acid radicals. The copolycondensation products of m-AMBA with ε-CL and ω-aminoenanthic acid are little more viscous than m-AMBA homopolymers. Polycondensation is rendered difficult because of the instability of the carboxyl groups, and because of chain cleavage owing to cyclization of the end group as a result of a favorable mutual position of the amino groups and CO groups of the amide bonds. The high-molecular PA of 4-AMCA and trans-4-ACBA cannot be spun from the melt owing to decomposition. The PA of cis-4-ACBA was not pure, bubbly, colored and low-viscous. The high-molecular PA of 4-AECA which is stable even at 340°C forms strong fibers from the melt which can be cold-drawn. 3-AMCA forms, when heated, a non-polymerizable lactam. p-cyanobenzoic acid dissolved in 15% NH_3 was hydrogenated at room temperature and 15 atm pressure of H_2. The reaction product was dried, suspended in ethanol, and the

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B110/B101

Synthesis of some polyamides ...

suspension was saturated with HCl. The hydrochloride of the ethyl ester of p-AMBA (melting point = 237-238°C) was obtained, which yielded p-AMBA after treatment with 28% NH_3. The hydrochloride of the ethyl ester of m-AMBA (melting point = 151-152.5°C) resulted from the hydrochloride of m-AMBA by treating it with ethanol and HCl. In the same way as with the p-compound, m-AMBA was obtained therefrom (melting point = 265-266°C). 4-AMCA was prepared from p-AMBA by means of hydrogenation in a sealed capillary (melting point = 239.5-240°C). The following data are given: 3-AMCA: melting point = 191.5-192.5°C; 4-AECA: melting point = 231-232°C; N-acetyl-p-aminophenyl butyric acid: melting point = 174-175°C; trans-N-acetyl-4-amino-cyclohexyl butyric acid: melting point = 198-199.5°C; cis-N-acetyl-4-amino-cyclohexyl butyric acid: melting point = 113-114°C. Trans-4-ACBA was obtained from the trans-N-acetyl-4-amino-cyclohexyl butyric acid by sulfuric acid hydrolysis at 150-155°C and separation in a column with ЭДЭ-10П (EDE-10P) anionite. Cis-4-AMBA (melting point = 226-228°C) was prepared from cis-N-acetyl-4-AMBA. The lactam (melting point = 152-153°C, well soluble in benzene and H_2O) was obtained from 3-AMCA by elimination of water. Polycondensation of the amino acids was

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S/190/61/003/009/004/016
B110/B101

Synthesis of some polyamides ...

carried out in N_2 stream in test tubes. Copolymerization with ε-CL was first performed in a sealed ampul, then in N_2 stream. Fiber formation was examined on a special device according to M. B. Sigal et al. (Ref. 16: Khim. volokna, 1959, no. 5, 29). The authors thank B. V. Suvorov, Head of the laboratories of the Institut khimii AN KazSSR (Institute of Chemistry of the AS Kazakhskaya SSR) for providing p-cyanobenzoic acid. There are 2 tables and 16 references: 7 Soviet and 9 non-Soviet. The three most recent references to English-language publications read as follows: US Patent 2, 868, 769; M. Levine et al., J. Organ. Chem. 24, 115, 1959; US Patent 2, 910, 457.

X

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennog volokna (All-Union Scientific Research Institute of Synthetic Fibers)

SUBMITTED: October 22, 1960

Card 5/5

BOGDANOV, M.N.; SPIRINA, I.A.; ZHMAYEVA, I.V.; KALMYKOVA, V.D.

Synthesis and properties of some polyamides with reactive groups. Vysokom. soed. 5 no.12:1805-1808 D '63. (MIRA 17:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

BOGDANOV, M.N.; KHAR'KOV, S.N.; SPIRINA, I.A.; LESHCHINER, A.U.;
PLYASHKEVICH L.A.

Synthesis and properties of polyarylates with carboxyl groups.
Vysokom. soed. 7 no.4:734-736 Ap '65.
(MIRA 18:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskustvennogo volokna.

L 63036-65 EWT(m)/EWG(m) JAJ/RM/DS

ACCESSION NR: AP5013054

UR/0190/65/007/005/0813/0816
541.64+678.675
21
20

AUTHORS: Bogdanov, M. N.; Khar'kov, S. N.; Spirina, I. A.; Leshchiner, A. U.; B
Plyashkevich, L. A.

TITLE: Synthesis and properties of carboxyl-containing polyamides 15

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 5, 1965, 813-816

TOPIC TAGS: polymer, resin, polyamide, polyamide plastic, polycondensation

ABSTRACT: This report is an extension of the method for obtaining hetero-chain polymers with active groups in side chains to polyamides. The introduction of carboxyl groups was undertaken in the hope to increase the solubility and thermal stability of polyamides and to render them useful as ion exchangers. 7 The synthesis consisted of interfacial polycondensation at room temperature of halides of dicarboxylic acids with aliphatic and aromatic diamines. The monomers used were: dichloroanhydride of trimesic acid, (X_1) N-(6-aminohexyl)-ω-aminoentantic acid (A), dicylorohydrate of N,N'-di-(6 carboxyhexyl)-n-phenylenediamine (N) dichloroanhydride of terphthalic acid (X_2), dichloroanhydride of sebacic acid (X_3), dichlorohydrate of m-phenylenediamine (M), dichlorohydrate of n-phenylenediamine

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L 63036-65

ACCESSION NR: AP5013054

1

(P), trans-n-diaminocyclohexane (T), piperazine (D), and 1,6-hexamethylenediamine (G). The polymers obtained are not thermostable and are soluble in alkalies. The polymer alkali metal salts exchange ions with a number of metal salts and mineral acids with the formation of insoluble carboxyl-containing polyamides. Orig. art. has: 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatelskiy institut iskusstvennogo volokna (All-Union Scientific Research Institute of Synthetic Fibers)

SUB CODE: MT, GC

SUBMITTED: 06Jul64

ENCL: 00

NO REF SOV: 004

OTHER: 000

Card 2/2

L 14535-66 EWT(m)/EWP(j)/T RM

ACC NR: AP6006358 (A) SOURCE CODE: UR/0413/66/000/002/0094/0094

INVENTOR: Khar'kov, S. N.; Bogdanov, M. N.; Spirina, I. A.; Leshiner, A. U.-A.; Plyashkevich, L. A.

26

ORG: none

15,44,55

15 B

TITLE: Preparative method for polyamides. Class 39, No. 178102 [announced by All-Union Scientific Research Institute of Artificial Fibers (Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1966, 94

TOPIC TAGS: polyamide, carboxyl group, interfacial polycondensation

ABSTRACT: An Author Certificate has been issued for a preparative method for carboxyl group-containing polyamides. The method involves interfacial polycondensation of diamines containing no acyclic chains with benzenetricarboxylic acid dichlorides. [BO]

SUB CODE: 11/ SUBM DATE: 28Mar63/ ATD PRESS: 4148

07/

Card 1/1 UDC: 678.675.002.2

ACC NR: AP6025616 SOURCE CODE: UR/0413/66/000/013/0075/0075

AUTHORS: Bogdanov, M. N.; Kalmykova, V. D.; Spirina, I. A.

56
B

ORG: none

15 15

TITLE: A method for improving the thermal stability of polyamides. Class 39, No. 183371 15

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 75

TOPIC TAGS: ~~polyamide,~~ thermal stability, polyamide resin
synthetic fiber

ABSTRACT: This Author Certificate presents a method for improving the thermal stability of polyamides, e.g., polyamides containing aromatic or naphthenic rings. The method provides for the use of hydroxybiphenyl as the thermal stabilizer in the production of polyamide fibers by melt spinning. [04]

15

SUB CODE: 07/ SUBM DATE: 07Aug61 / ATD PRESS: 5059

Card 1/1 UDC: 678.675'524'5.048.5

L 17529-63 EWP(j)/EPF(c)/EWT(l)/EWT(m)/BDS AFFTC/ASD/APGC/SSD
Pc-4/Pr-4 RM/WW/DJ

ACCESSION NR: AP3004535 S/0065/63/000/008/0057/0061

76

AUTHORS: Kaplan, S. Z.; Bazin, A. P.; Breydo, Ts. G.; Spirina, I. F.

TITLE: Effect of bremsstrahlung 19 from a betatron with 25 mev energy and ultraviolet rays on mineral oils

SOURCE: 21 Khimiya i tekhnologiya topliv i masel, no. 8, 1963, 57-61

TOPIC TAGS: bremsstrahlung, betatron, ultraviolet ray., lubricating oil, mineral oil, betatron irradiation.

ABSTRACT: Authors studied some physico-chemical processes which take place in
mineral lubricating and electric insulating oils under the influence of electro-
magnetic radiation. The average effective radiation of the betatron was 9.5 mev.
The effect of retardation of the betatron irradiation on turbine lubricants which
were concentrated with polymers was studied by applying a maximum energy of 25
mev of a dose of 10^5-10^9 r and ultraviolet radiation. It was found that when the
irradiation is performed in a closed system with an inadequate supply of air,
the oxidizing numbers of concentrated oils were decreased. Their viscosity did
not change however. The lowering of intensity in the absorption bands correspon-
ding to the vibrations of the groups $=CH_2$ and $-CH_3$ were observed in the infrared

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