5.4500(B)

67269

~~5(4), 21(8)~~

SOV/20-129-4-40/68

AUTHORS: Tal'roze, V. L., Frankevich, Ye. L.

TITLE: A Comparative Investigation of the Induced Electrical Conductivity and the Free Radicals in Solid Paraffins Subjected to Radiolysis

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 858-861 (USSR)

ABSTRACT: After a survey of the different courses taken by processes caused in the gaseous or in the condensed phase by radiolysis, the authors speak about the attempt at covering the processes in the radiolysis in the condensed phase by means of an experiment. They used solid paraffin with the melting point at 52-55°. Irradiation was carried out by means of fast electrons in a nitrogen atmosphere at the boiling temperature of liquid nitrogen by means of the 1.6 Mev cascade generator of the Institute mentioned under Association. At the same time, the electrical conductivity of paraffin in the case of a potential difference of 1000 v was measured by means of an EMU-2-type electromagnetic amplifier and a potentiometer of the type EPP-09, and also the electron paramagnetic resonance spectrum was mea-

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SOV/20-129-4-40/68

A Comparative Investigation of the Induced Electrical Conductivity and the Free Radicals in Solid Paraffins Subjected to Radiolysis

sured. After switching off of the electron beam, conductivity began to decrease in the temperature range of between 77 and 250°K within an interval of time that was shorter than the electrometer circuit constant (0.5 sec). At higher temperatures the switching off of the electron beam was also followed by a rapid decrease of conductivity, which decrease was reduced with rising temperature and was followed by a slow decrease (Fig 1). If the paraffin was irradiated at 77°K and was subsequently heated (temperature increase 22 degrees/min), electrical conductivity was observed to increase; this increase occurred some dozens of degrees sooner and was greater than the conductivity observed in the heating of non-irradiated paraffin. With further heating, conductivity approached that of non-irradiated paraffin (Fig 3). This phenomenon of electrical conductivity "conflagration" is not repeated if the paraffin is again cooled and again heated. It occurs in that temperature interval and at that instant of time at which the intensity of the electron paramagnetic resonance spectrum begins to fall. Such a spectrum is shown in figure 2; it corresponds to the alkyl radical of the

SOV/20-129-4-40/68

A Comparative Investigation of the Induced Electrical Conductivity and the Free Radicals in Solid Paraffins Subjected to Radiolysis

form ~~C-C-C~~. In figure 3 the course of electrical conductivity is compared with the variation of the concentration of the free radicals in paraffin. The inaccuracies of temperature determinations observed on this occasion are not due to errors of measurement, but are caused by the temperature drop in the sample as a consequence of rapid heating. The authors mention two possible causes for the rapid increase of conductivity during heating of the irradiated paraffin: 1) Thermal ionization of the radicals. 2) Energy liberated in the recombination of radicals, the order of magnitude of which (3 - 4 ev) suffices for the formation of ions. The experimental data do not render it possible to come to a decision in favor of either of the two explanations. The authors, however, draw the conclusion that the formation of ions in radiolyzed solid and liquid substances occurs by way of the stage of free radicals. This would mean that in the gaseous phase the free radicals are in the first line transformation products of ions, whereas in the condensed phase they are ion transformation products of the

SOV/20-129-4-40/68

A Comparative Investigation of the Induced Electrical Conductivity and the Free Radicals in Solid Paraffins Subjected to Radiolysis

free radicals. It is further said that the authors thank Academician V. N. Kondrat'yev for valuable discussions, G. I. Krivonosov and V. N. Shamshev for taking part in plotting the spectra, and the team of the high-voltage department for carrying out irradiations. The authors finally mention N. V. Ril' (Ref 8). There are 3 figures and 12 references, 5 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: July 10, 1959, by V. N. Kondrat'yev, Academician

SUBMITTED: July 1, 1959

Card 4/4

FRANKEVICH, Ye. L.

BALABANOV, Ye.I.; BERLIN, A.A.; PARINI, V.P.; TAL'ROZE, V.L.; FRANKEVICH, Ye.L.; CHERKASHIN, M.L.

Electric conductivity of polymers with conjugated bonds. Dokl. AN SSSR 134 no.5:1123-1126 O '60. (MIRA 13:10)

1. Institut khimicheskoy fiziki Akademii nauk SSSR. Predstavleno akademikom V.N.Kondrat'yevym.
(Polymers—Electric properties)

8 ...NKEVICH, Ye. L.

9,6150
5.5900 (1043, 1228, 1273)
26.2312
11.1330

86766

S/120/60/000/006/021/045
E032/E514

AUTHORS: Tal'roze, V.L., Dekabrun, L.L., Tantsyrev, G.D., Frankevich, Ye.L., Vetrov, O.D., Lyubimova, A.K., Lavrovskaya, G.K., Yarofeyev, V.I., Grishin, V.D., Skurat, V.Ye. and Yukhvidin, A.Ya.

TITLE: The PMC-2 (RMS-2) Mass Spectrometer Designed for Studying Chemical Reactions and the Determination of Free Radicals

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.6, pp.78-84

TEXT: A double magnetic mass-spectrometer designed for studying reactions in the gaseous phase and, in particular, for the determination of free radicals is described. Two methods are used to produce the ions. In the first method the mixture to be analysed is ionized by charge transfer to specially produced ions. The latter are formed in a separate ion gun by means of electron bombardment and are mass-analysed in a small magnetic analyser. In the second method the mixture under consideration is ionized directly by electron bombardment. Quasi-monochromatization is achieved by a method based on that reported by Fox et al. (Ref.11). The gas from the "reactor" is introduced into the ion source in the

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The PMC-2 (RMS-2) Mass Spectrometer Designed for Studying Chemical Reactions and the Determination of Free Radicals

form of a molecular beam which is mechanically interrupted at a known frequency. In distinction to the method described by Foner and Hudson (Ref.2), in which the molecular and ion beams are perpendicular, in the present system the two beams are coaxial, which means that smaller voltages are necessary for the "extraction" of the ions from the ionization region and it is possible to reduce the intensity of the background mass-spectrum. A particular feature of the present instrument is the use (in the measuring part of the spectrometer) of K-stabilization of parameters such as the accelerating voltage, the voltage supplying the detector, the emission current of the ion gun cathode, and the supply voltage for the ion source cathode. This was described by the second of the present authors in Ref.10. The mass numbers are determined from a knowledge of the magnetic field which in turn is measured with the aid of a Hall probe (germanium crystal). The basic mass spectrometric arrangement employed is shown in Fig.2. Products of chemical reactions taking place in the "reactor" I enter the region II through a small aperture in the thin glass diaphragm 8

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in the form of a molecular beam. This molecular beam is collimated further by the diaphragm 6 which separates the volume II from the region in which ionization takes place. A moveable screen 7 is placed in front of the diaphragm 6 and interrupts the molecular beam 33 times per sec. In the case of ionization by charge transfer, the primary ions are produced in the ion gun III. The ion beam formed there is mass analysed in the 60° magnetic analyser IV which has a working radius of 100 mm. The primary ion beam, consisting of ions of the required mass, intersects the molecular beam and charge transfer takes place. In the case of ionization by electron impact, the source becomes analogous to that described by the first and fourth of the present authors in Ref.9. In the case of ionization by a monochromatized electron beam, the modulation of the molecular beam by the chopper 7 is not employed. The ion current in the mass-spectrometer is measured either by a d.c. amplifier or by an electron multiplier. The vacuum chamber of the mass-spectrometer is an all-metal system and all the sections are out-gassed at 300 to 350°C before the operation is begun. As an illustration of

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86746

S/120/60/000/006/021/045
E032/E514

The PMC-2 (RMS-2) Mass Spectrometer Designed for Studying Chemical Reactions and the Determination of Free Radicals

the possible applications of the instrument, data are quoted on the formation of free radicals in the pyrolysis of hydrazine. In these experiments the hydrazine entered from a glass container into a quartz capillary through a control valve. The capillary was heated to a known temperature, as a result of which the hydrazine decomposed into nitrogen, hydrogen, ammonia and some unstable products (Foner and Hudson, Ref.18). Fig.7 shows the distribution of line intensities in the mass-spectrum of hydrazine obtained by the charge transfer method using NH_2^+ ions formed from ammonia. The pressure in the source was 5×10^{-5} mm Hg and the pressure in the chamber of the small analyser was 4×10^{-3} mm Hg. For comparison, the dotted line shows the mass-spectrum obtained on bombarding hydrazine with 50 eV electrons. Fig.8 shows the intensity distribution obtained under similar conditions at 1000°C (dotted line) and 25°C (continuous line). Acknowledgments are expressed to Ye. K. Bazilyan, B. T. Verob'yev, B. G. Belov, M. B. Neiman and M. I. Markin for assistance in this work. There are 8 figures and 20 references: 11 Soviet and 9 non-Soviet.

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The PMC-2 (RMS-2) Mass Spectrometer Designed for Studying Chemical Reactions and the Determination of Free Radicals

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AS, USSR)

SUBMITTED: October 15, 1959.

Fig.2

I - reactor, II - ion gun, IV - small magnetic analyser,
V - large magnetic analyser

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The PMC-2 (RMS-2) Mass Spectrometer Designed for Studying Chemical Reactions and the Determination of Free Radicals

E032/E514

Fig.8

Charge transfer mass spectra of hydrazine and its decomposition products at 1000°C (dotted) and 25°C (full line).

Fig.7

Comparison of mass-spectra of hydrazine obtained on electron bombardment (dotted) and charge transfer from NH_2 ions (full lines).
Key: 1 - relative intensity.
2 - mass number.

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5.4500 (B)

S/076/60/034/012/008/027
B020/B067

AUTHORS: Tal'roze, V. L., Frankevich, Ye. L.

TITLE: Pulse Method for Determining the Rate Constants of Elementary Ion - Molecule Processes

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 12, pp. 2709-2718

TEXT: The reactions between ions and molecules which were first observed in the ionization chamber of the mass spectrometer have become of great concern. They are an important stage in the chain of conversions which proceed in the material under the action of ionizing radiation. Fig. 1 shows the scheme of the ionization chamber of a mass spectrometer. The present paper was presented at the VIII Mendeleyevskiy s"yezd po obshchey i prikladnoy khimii (VIII Mendeleyev Congress on General and Applied Chemistry). It describes a new mass-spectrometric method for determining the rate constants of ion - molecule reactions, which is based on the direct measurement of the kinetics of the ion - molecule reaction in the ionization chamber without electric field. The periodic ionization of the

gas in the ionization chamber is made by means of short electron pulses. The primary ions which are formed after ionization and the secondary ions which are formed in the collision of molecules are conducted into the analyzer by means of short voltage pulses. The authors thoroughly describe ion formation during pulse ionization. In the experimental part they demonstrate that the differences in the distribution of the concentration of primary and secondary ions are only unimportant and that they do almost not influence the rate constants. The ion - molecule reactions were studied by a mass spectrometer with magnetic sector field which had been used already earlier (Ref. 13) for determining the potentials in the occurrence of primary and secondary ions. The scheme of the ion source is shown in Fig. 2. Fig. 3 shows the scheme of the vacuum system of a mass spectrometer. The pressure in the ionization chamber was measured by an ionization manometer which was directly connected with the chamber. The temperatures of the chamber walls, the velocity of the ionic motion were measured by a nichrome - constantan thermocouple. The duration of the extraction of the impulses t_e was so chosen that all ions could be extracted from the chamber. Fig. 4 shows a typical dependence of the ion

current on the duration of the extraction impulse. It indicates that at $t_e = 5\ \mu$sec practically all ions are extracted which is in good agreement with the calculations. The authors measured the rate constants of the formation of the methonium ion in the reaction $CH_4 + CH_4^+ \longrightarrow CH_5^+ + CH_3$.

Yu. A. Andreyev, student of the LPI (Leningradskiy politekhnicheskiy institut = Leningrad Polytechnic Institute) also took part in the experiments which were made at different pressures of the ion source; the results are given in Table 1. Table 2 gives the measurements of the reaction rates in the formation of CH_5^+ with different duration of the extraction impulses. The measured rate constants of the reaction $H_2O + H_2O^+ \longrightarrow H_3O^+ + OH$ are given in Table 3. There are 6 figures, 3 tables, and 15 references: 7 Soviet and 8 US.

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki (Academy of Sciences USSR, Institute of Chemical Physics)

SUBMITTED: March 13, 1959

TAL'ROZE, V.L.; DEKABRUN, L.L.; TANTSYREV, G.D.; FRANKEVICH, Ye.L.; VETROV, O.D.; LYUBIMOVA, A.K.; LAVROVSKAYA, G.K.; YEROFEYEV, V.I.; GRISHIN, V.D.; SKURAT, V.Ye.; YUKHVIDIN, A.Ya.

Mass spectrometer RMS-2 for investigating chemical reactions and identifying free radicals. Prib. i tekh. eksp. no.6:78-84 N-D '60. (MIRA 13:12)

1. Institut khimicheskoy fiziki AN SSSR.
(Mass spectrometry) (Radicals (Chemistry))
(Chemical reactions)

S/181/61/003/001/023/042
B006/B056

AUTHORS: Frankevich, Ye. L. and Tal'roze, V. L.

TITLE: Thermostimulated emf occurring in irradiated solid hydrocarbons in the presence of a temperature gradient

PERIODICAL: Fizika tverdogo tela, v. 3, no. 1, 1961, 180-181

TEXT: The phenomenon of the "ignition" of electrical conductivity has been discovered by the authors in paraffin irradiated with electrons at low temperatures (Ref. 1); a similar effect was found in the case of polyethylene. Now, the emf occurring during irradiation at low temperatures on the faces of paraffin and polyethylene specimens was studied, and a brief report is presented. The specimens (1 × 3 × 5 mm) were placed between two electrodes in a vacuum chamber, one of which served as a cooler, while the other was connected with the electrometer; electron bombardment (1.6 Mev) was carried out at 200°K; the dose could be varied between 1 and 100 mrad. When heating the specimens and, at the same time, measuring the emf, peaks of the latter were discovered in the presence of a temperature gradient; this was the case in such temperature ranges, within which an intensive

Thermostimulated emf occurring in...

recombination of radicals and an "ignition" of electrical conductivity occurred: for paraffin between 250 and 280°K, for polyethylene between 260 and 300 and 340 and 380°K. During measurement, the temperature drop on the specimen did not exceed 20°. The total amount of the emf between the outer surfaces depended on the radiation dose, as well as on the temperature drop. Its maximum was 50-1000 v. In the absence of a temperature gradient, the emf was equal to zero. The occurrence of emf is related to that of volume carriers, which are trapped during irradiation in some "shallow traps" (e.g., radicals). The reason for the occurrence of the emf is thus a volume inhomogeneity of the carrier density. It may be assumed that during the irradiation of frozen solid dielectrics, regions near the surface show impoverishment in secondary electrons, which had been knocked out of the substance by primary electrons or γ-quanta; a volume charge is formed, which is conserved also after irradiation ceases; by non-uniform heating, the carriers are partly liberated from the traps. The effect was simulated by means of the equivalent circuit diagram shown in a figure. It could be shown that, also if no inhomogeneity of the frozen charge carriers exists, the temperature gradient caused a density gradient of the charge carriers, but the emf occurring in this case was

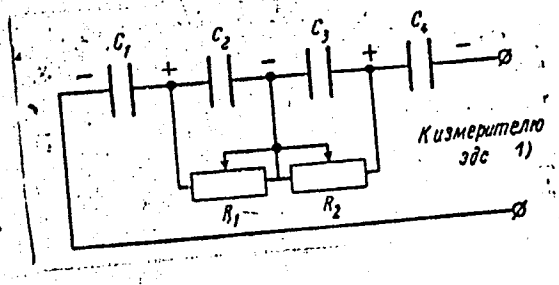
S/181/61/003/001/023/042
B006/B056

Thermostimulated emf occurring in...

lower than in the former case. There are 1 figure and 3 Soviet-bloc references.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR Moskva (Institute of Chemical Physics, AS USSR, Moscow)

SUBMITTED: June 15, 1960



Card 3/3

3961

S/020/62/144/005/007/017
B106/B138

15.8050

AUTHORS: Berlin, A. A., Aseyeva, R. M., Kalyayev, G. I., and Frankevich, Ye. L.

TITLE: Oxidation products of high-molecular conjugate polyenes

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 5, 1962, 1042-1045

TEXT: The authors studied the mechanism of mild oxidation (20°C) of high-molecular acyclic polyenes with oxygen, and the reactivity and dehydrogenating effect of oxidation products. Polyenes were prepared by dehydrochlorinating polyvinyl chloride (PVC; molecular weight: 650000) and perchlorovinyl (CPVC; molecular weight: 105000) with a sodium amylate excess in an argon atmosphere. With PVC, alkoxylation occurs as a side reaction disturbing the continuous conjugation of double bonds in the chain. The CPVC dehydrochlorination is incomplete and yields polyenes containing up to 20% bound chlorine. Dehydrochlorinated polymers are black, insoluble, brittle, and do not soften below the temperature of destruction (400-500°C). According to their e.p.r. spectra they contain 10^{18} paramagnetic particles per g. Under oxidation at 20°C, which is

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Oxidation products of high- ...

considerably accelerated exposure to light, the dehydrochlorinated PVC and CPVC samples turn light yellow and the e.p.r. signals disappear. Dehydrochlorinated PVC oxidizes more rapidly and absorbs more O_2 than the CPVC. The loss of conjugation in the system owing to O_2 addition reduces the electrical conductivity of the polymer considerably, and more rapidly with the PVC than the CPVC. Dehydrochlorinated PVC completely oxidized under the conditions chosen, contains approximately 32.5% bound oxygen mainly in the peroxy groups. The oxidation seems to be:

$-CH=CH-CH=CH- \xrightarrow[\Delta,\ h\nu]{O_2} -CH(-O-O-)-CH=CH-CH-$. When heated at $\geqslant$150-200°C without air, these peroxides turn dark and change into new polymers containing only $\leqslant$15% bound O_2. Mass spectrometric analyses of gaseous products forming during this conversion suggest that thermal treatment decomposes the peroxide with ring formation of acyclic into aromatic structures. Heating in air causes, not progressive destruction, but some increase in thermostability with continued thermal treatment. Absence of continuous conjugation in the peroxides makes the macromolecules very flexible and reduces their ability to form intermolecular π-complexes. Above 70°C, the oxidized polymer is highly elastic. At elevated temperatures three

dimensional structures form. Samples pressed at 150°C are no longer highly elastic. Compression of oxidized polyvinylene at 150-250°C and a pressure of 300-500 kgf/cm^2 yields stable plastics of great thermostability. The use of the peroxides of high-molecular polyenes as binding agent, frequently improves the electrical properties of the material concerned, apparently owing to oxidative dehydrogenation of the saturated groups disturbing continuous conjugation in the polymer components. There are 4 figures and 1 table. The English-language reference is: M. Hatano, S. Kambara, S. Okamoto, J. Polym. Sci., 51, no. 156, 526 (1961).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: February 28, 1962, by V. N. Kondrat'yev, Academician

SUBMITTED: January 15, 1962

S/844/62/000/000/112/129
D207/D307

AUTHORS: Frankevich, Ye. L. and Tal'roze, V. L.

TITLE: Free radicals and electrical phenomena in irradiated solids

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 651-655

TEXT: Paraffin wax and polyethylene were irradiated with 1.6 Mev electrons (about 10 megarads in the case of polyethylene) below 180°K. On subsequent heating the electrical conductivity σ peaked at the same temperatures (300°K for paraffin wax and 360°K for polyethylene) at which the concentration of free radicals, produced by electron bombardment, fell to nearly zero. It is suggested that electrons and holes, initially trapped by free radicals, are liberated at the temperatures of the conductivity peaks (in the case of polyethylene there were two peaks corresponding to the two-stage radical annihilation: first the alkyl radicals partly recombined

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and were partly converted into allyl radicals, next the allyl radicals disappeared). The trap depth was estimated from the slope of the log $\sigma = f(1/T)$ curve to be 0.6 ev in the case of paraffin wax. Nonuniform heating of paraffin wax and polyethylene irradiated (0.1 - 100 megards) at low temperatures produced transient inhomogeneities of space charge due to local carrier liberation. These inhomogeneities appeared as voltages up to 100 v across the samples. There are 4 figures.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Chemical Physics, AS USSR)

VEDENEYEV, Vladimir Ivanovich; GURVICH, Lev Veniaminovich; KONDRAT'YEV, Viktor Nikolayevich, akademik; MEDVEDEV, Vadim Andreyevich; FRANKEVICH, Yevgeniy Leonidovich; DRAGUNOV, E.S., red.; RYLINA, Yu.V., tekhn. red.

[Energies of chemical bond breaking. Ionization potentials and electron affinity]Energii razryva khimicheskikh sviazei. Potentsialy ionizatsii i sredstvo k elektronu; spravochnik. [By]V.I. Vedeneyev i dr. Moskva, Izd-vo Akad. nauk SSSR, 1962. 215 p. (MIRA 16:2)

(Chemical bonds) (Ionization) (Chemical affinity)

FRANKEVICH, Ye.L.; YAKOVLEV, B.S.

Concentration of ions accumulated in saturated hydrocarbons irradiated at low temperature. Izv.AN SSSR.Otd.khim.nauk no.9:1699 S '62. (MIRA 15:10)

1. Institut khimicheskoy fiziki AN SSSR.
(Hydrocarbons) (Ions) (Radiation)

EWP(t)/EPF(c)/EWT(m)/BDS AFFTC/ASD/ESD-3 Pc-4/Pr-4/Pi-4
RM/WW/RH/JFW/JT

L 15671-63
ACCESSION NR: AP3004311 S/0030/63/000/007/0113/0114

AUTHORS: Tal'roze, V.L. (Doctor of chemical sciences); Frankevich, Ye.L. (Candidate of physical and mathematical sciences)

TITLE: Elementary processes of high energy chemistry /Symposium held in Moscow from 18 to 22 March 1963/

SOURCE: AN SSSR Vestnik, no. 7, 1963, 113-114

TOPIC TAGS: elementary process , gas , fluid , solid , high energy chemistry, state of excitation, free radical , ion , quantum generator , negative temperature

ABSTRACT: The symposium was held March 18-22 in Moscow at the Institute of Physical Chemistry of the Academy of Sciences, SSSR. The following general problems were discussed: elementary processes in gases, elementary processes in fluids and solids, including states of excitation, free radicals and ions, and elementary processes in quantum generators. Most of the papers on gases dealt with the problem of ionization and transformation of ions. The formation of ions from collision of neutral particles was also discussed. Three new methods for measuring the life span of excited ions were submitted. The reaction of ions with molecules in gases was discussed, as was the transmission of energy by

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L 15671-63
ACCESSION NR: AP3004311

6

various mechanisms. The latter problem brought about a difference of opinions, and a special committee was named to prepare concrete conclusions and recommendations for future work. The adjacent fields of low-temperature and photochemical reactions, as well as of solid phase polymerization by radiation, also received attention. Two papers were devoted to the reactions of radicals with oxygen. It was also reported that a substantial concentration of charged particles is being stabilized in saturated hydrocarbons. Theoretical requirements for the creation of a "negative temperature" were outlined. It is stated, in conclusion, that while the scientists were all working in the same theoretical field of chemical kinetics, they were actually covering a variety of domains, such as radiation, photochemistry, chemistry of plasma, high temperature, ionosphere, and cosmic chemistry.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: CH NO REF SOV: 000 OTHER: 000

Card 2/2

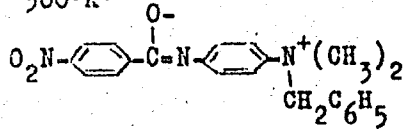
S/062/63/000/003/002/018
B101/B186

AUTHORS: Parini, V. P., Simonov, A. M., Frankevich, Ye. L., and Chub, N. K.

TITLE: Electrophysical properties of some aromatic betaines

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 3, 1963, 446 - 450

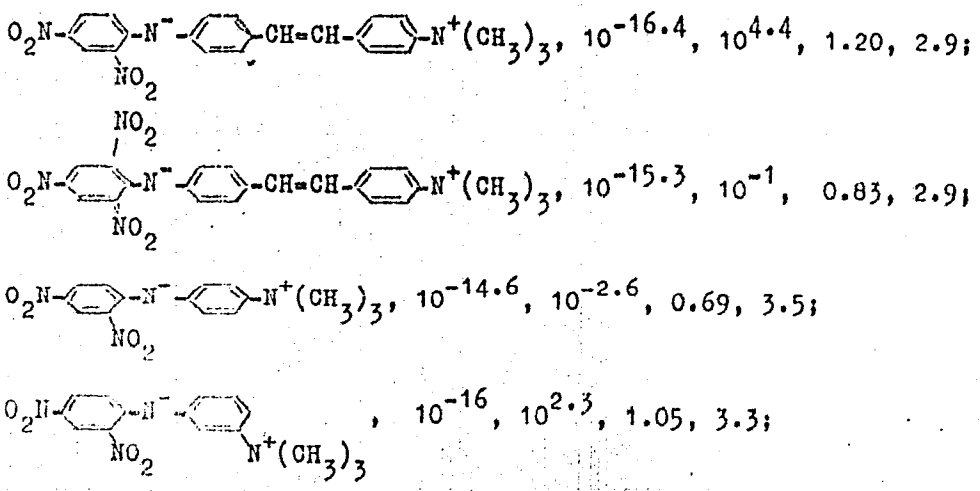
TEXT: Considering a possible use as organic semiconductors, the electrical conductivity of fine-cristalline betaines which had been pressed to tablets at 10,000 kg/cm^2, was measured between 20 and 160°C, the potential difference being 500 v. The temperature dependence of the conductivity obeyed the law $\sigma = \sigma_0 \exp(-E/kT)$. The following are formulas of the compounds $\sigma_{300°K}$, (mho/cm) with their respective σ_0(mho/cm), E (ev) and ε :



, $10^{-13.6}$, $10^{20.5}$, 1.97, 3.6;

Card 1/4

Electrophysical properties of ...



$10^{-16.4}$, $10^{4.4}$, 1.20, 2.9;

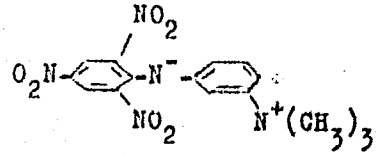
$10^{-15.3}$, 10^{-1}, 0.83, 2.9;

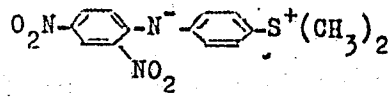
$10^{-14.6}$, $10^{-2.6}$, 0.69, 3.5;

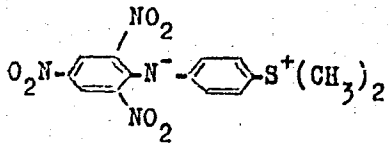
10^{-16}, $10^{2.3}$, 1.05, 3.3;

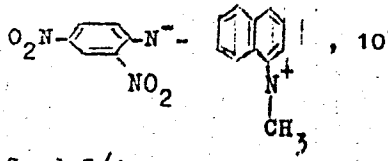
Card 2/4

Electrophysical properties of ...


, $10^{-15.2}$, $10^{-1.1}$, 0.82, 3.4;


, $10^{-15.3}$; 10^{13}, 1.63, 3.0;


, $10^{-15.2}$, $10^{2.7}$, 1.00, not measured;


, $10^{-15.8}$, $10^{-0.3}$, 0.90, 3.9.

Card 3/4

Electrophysical properties of ...

S/062/63/000/003/002/018
B101/B186

Owing to the charge localized in the molecules, which is provisionally given in the formulas, it is higher than in other organic compounds. It may be expected that the electrophysical properties of the betaines will be considerably changed by conjugation between the atoms carrying the charge. There is 1 table.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR); Rostovskiy-na-Donu gos. universitet (Rostov-na-Donu State University)

SUBMITTED: June 8, 1962

Card 4/4

BALABANOV, Ye.I.; FRANKEVICH, Ye.L.; CHERKASHINA, L.G.

Electrophysical properties of polymeric phthalocyanins. Vysokom.soed. 5 no.11:1684-1690 N '63. (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR.

L-9902-63 EPF(c)/EWP(j)/EWT(m)/BDS--Pr-4/Pc-4--RM/MAY/WW/JFW

ACCESSION NR: AP3000420 S/0076/63/037/005/1106/1112

68
65

AUTHOR: Frankevich, Ye. L.; Yakovlev, B. S.

TITLE: Relaxation polarization in saturated hydrocarbons irradiated at low temperatures.

SOURCE: AN SSSR. Zhurnal fizicheskoy khimii, v. 37, no. 5, 1963, 1106-1112

TOPIC TAGS: high voltage polarization, radiolysis, free radicals, saturated hydrocarbons

1

ABSTRACT: The irradiation of saturated hydrocarbons such as hexane, heptane, nonane, decane, undecane and tetradecane with 50 Mrads at liquid nitrogen temperature has revealed relaxation electrical processes or high voltage polarization. A mechanism has been proposed for the explanation of the observed relaxation processes which consists of a charge redistribution in certain types of ions. This movement of charges in such ions may be due to H sup + or H sup - migration. Migration of H sup + and H sup - between neighboring molecules is hindered. The activation energy of H sup + or H sup - migration in hexane has

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L 9902-63
ACCESSION NR: AP3000420

3

been calculated to be 0.06 + or - 0.02 ev under the effect of 50 Mrad doses. The ion concentration shows that the contribution of the reactions of charged particles in radiolysis processes of saturated hydrocarbons can be attributed to the participation of free radicals. The high voltage polarization effect consists of a slow drop of current when the voltage is applied to the electrodes of the irradiated products. When the voltage is switched off, a slowly-diminishing reverse current is observed. The rise and fall of current is characterized by a time constant T sub m, of several tens of seconds which increases with the increasing chain length. "The authors are grateful to V. L. Tal'roze for the interest in this work and for valuable consultations." Orig. art. has: 7 figures.

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki (Academy of Sciences SSSR, Institute of Chemical Physics)

SUBMITTED: 04Jul62 DATE ACQ: 19Jun63 ENCL: 00

SUB CODE: 00 NR REF SOV: 020 OTHER: 006

Card 2/2

ACCESSION NR: AP4025015 S/0062/64/000/003/0576/0578

AUTHOR: Parini, V. P.; Frankevich, Ye. L.; Deychmeyster, M. V.

TITLE: Electrophysical properties of hemioxanines

SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 3, 1964, 576-578

TOPIC TAGS: hemioxanine, electrical conductivity, conjugated compound, organic semiconductor

ABSTRACT: The electrical conductivity at 20—100C and dielectric constant of the so-called hemioxanine conjugated compounds have been determined (see Table 1 of Enclosure). For all compounds except No. 6, the temperature dependence of electrical conductivity obeyed an exponential law. None of the compounds showed electron paramagnetic absorption. Compound No. 6, after heating to 120C, gave a narrow EPR singlet with 10^{15} spin/g. As the table indicates, electrical conductivity at room temperature rises and E drops as the polymethine chain length increases (in the order 1, 2, 3 and 4, 5, 6), i.e., as excitation of the electronic system is more readily attained.

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ACCESSION NR: AP4025015

The compensation effect is observed: as E changes by a factor of 3 and σ_0 by a factor of 10^{11}, σ_{300K} changes by only a factor of 10^6. It is concluded that the dependence of the electrical properties of these compounds on structure, like that of the betaines investigated earlier (V. P. Parini, A. M. Simonov, Ya. L. Frankevich and N. K. Chub. Izv. AN SSSR. Otd. khim. n. 1963, 446), is governed by the same laws as in other conjugated compounds. The possibility of internal ionization or the presence of a fixed internal "ionoid" structure do not lend these compounds any specific electrical properties. The authors thank I. I. Levkoyev for his interest in the study and his participation in a discussion of the results. Orig. art. has: 1 table.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 12Sep63 DATE ACQ: 17Apr64 ENCL: 02

SUB CODE: CH, PH NO REF SOV: 005 OTHER: 002

Card 2/6

ACCESSION NR: AP4037280 S/0190/64/006/005/0832/0837

AUTHOR: Berlin, A. A.; Cherkashina, L. G.; Frankevich, Ye. L.; Balabanov, Ye. M.; Aseyev, Yu. G.

TITLE: Polymers with a conjugated system. I. Synthesis and investigation of the electrophysical properties of polymeric phthalocyanines

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 5, 1964, 832-837

TOPIC TAGS: organic semiconductor, semiconductor polymer, phthalocyanine polymer

ABSTRACT: The effect of oxygen-containing groups and the effect of branching on the electrical properties of phthalocyanine polymers have been studied. This was considered of interest because previously prepared phthalocyanines based on aromatic tetracarboxylic acids

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ACCESSION NR: AP4037280

showed semiconducting and catalytic properties. The polymers in this study were synthesized by reacting 1,2,4,5-tetracyanobenzene (TCB) or TCB and phthalonitrile (PN) with copper powder or Cu_2Cl_2 in the presence of urea at 300C. PN was added to control both the degree of branching and the content of nitrile end groups, which were subsequently converted to oxygen-containing groups by hydrolysis with H_2SO_4. The electrical conductivity at 300K for the TCB polymers was 10^{-5} to 10^{-2} ohm^{-1} cm^{-1} and the activation energy was 6—2 kcal/mol. These figures for phthalocyanine polymers prepared earlier from pyromelitic acid were 10^{-4} ohm^{-1} cm^{-1} and 4.2 kcal/mol. For the polymers from TCB and PN which contain oxygen groups, the conductivity was 10^{-5} ohm^{-1} cm^{-1} and $10^{-2.6}$ ohm^{-1} cm^{-1} for reprecipitated and nonreprecipitated samples, respectively. The thermal stability of the phthalocyanine polymers with oxygen-containing groups was higher than that of the nitrile-group-containing analogs (300—350 C versus 250 C). This research was done at the Institute of Chemical Physics, Academy of Sciences SSSR. Orig. art. has: 3 figures, 2 tables, and 2 formulas.

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ACCESSION NR: AP4037280

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 03Jun63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: OC NO REF SOV: 004 OTHER: 003

Card 3/3

ACCESSION NR: AP4040482 S/0190/64/006/006/1028/1034

AUTHOR: Frankevich, Ye. L.; Busheva, L. I.; Balabanov, Ye. I.; Cherkashina, L. G.

TITLE: Study of the semiconducting properties of polymeric copper phthalocyanine

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 6, 1964, 1028-1034

TOPIC TAGS: copper phthalocyanine, copper phthalocyanine polymer, organic semiconductor, semiconducting polymer, mobility determination

ABSTRACT: A study has been made of the semiconducting properties of copper phthalocyanine polymers with no oxygen-containing side groups synthesized earlier from aromatic nitriles (A. A. Berlin, L. G. Cherkashina, Ye. L. Frankevich, Ye. I. Balabanov, and Yu. G. Aseyev, Vysokomolek. soyed., 6, 832, 1964). The temperature dependence of electrical conductivity and thermoelectric power were determined in special equipment (described in the article): 1) in vacuum ($5 \cdot 10^{-6}$ mm Hg) for pellet samples degassed by vacuum heat

Card 1/3

ACCESSION NR: AP4040482

treatment and 2) in oxygen (100 mm Hg) for samples heat treated in oxygen. The temperature dependence of conductivity obeyed the exponential law

$$\delta = \delta_0 \exp(-E/kT),$$

where E = 0.1 ev; in vacuum

$$\delta_{22} = (1—2)\ 10^{-2}\ \text{ohm}^{-1}\ \text{cm}^{-1}.$$

The thermoelectric power was low (150μv/C max) and increased slowly with temperature; its sign indicated n-type conductivity. Oxygen lowered conductivity, indicating conduction electron trapping by O_2 molecules. This conductivity drop could not be reversed by removal of "weakly bound" oxygen under mild conditions (40—90C), but only by prolonged heating under severe conditions (2—3 days at 300C) which removed "strongly bound" oxygen. A new technique for determining carrier mobility in polymers is proposed which is based on the simultaneous measurement of the amount of polymer conductivity and

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ACCESSION NR: AP4040482

of desorbed acceptor molecules by mass spectroscopy. The mobility thus measured was of the order of 10^{-2} $cm^2/v \cdot sec$ and carrier concentration of the order of 10^{18}—10^{19} cm^{-3}. "The authors express their appreciation to A. A. Berlin and V. L. Tal'roze for their interest in this work and discussion of the results." The work was done at the Institute of Chemical Physics, Academy of Sciences USSR. Orig. art. has: 6 figures, 1 table, and 2 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 27Jun63 DATE ACQ: 06Jul64 ENCL: 00

SUB CODE: OC, SS NO REF SOV: 006 OTHER: 005

Card 3/3

ACCESSION NR: AP4041172 S/0062/64/000/006/1132/1132

AUTHOR: Sherle, A. I.; Aseyev, Yu. G.; Frankevich, Ye. L.; Berlin, A. A.; Kasatochkin, V. I.

TITLE: Formation of a tetracyanoethylene chelate polymer

SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 6, 1964, 1132

TOPIC TAGS: tetracyanoethylene, organic semiconductor, semiconducting polymer, chelate polymer, copper tetraacetylenide

ABSTRACT: Copper tetraacetylenide (I) has been prepared, identified, and its semiconducting properties studied. Salt I was obtained in acetonitrile and with lower yield in nitrobenzene. Identification was made by elemental analysis and UV and IR spectroscopy. At below 100C, electrical conductivity (δ) in vacuum was described by

$$\delta = 10^{-0.6} \exp(-5670/RT), \quad \delta_{300k} = 10^{-4.7} \text{ ohm}^{-1} \text{ cm}^{-1}.$$

At higher temperatures δ drops irreversibly and after heating to 150C becomes $\delta = 10^{0.8} \exp(11900/RT)$, $\delta_{300k} = 10^{-7.8}$ ohm^{-1} cm^{-1}.

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ACCESSION NR: AP4041172

If I is heated in the presence of tetracyanoethylene a new compound (II) is formed which unlike I is insoluble in acetonitrile and tetrahydrofuron. Compound II is highly soluble in H_2SO_4 and can be precipitated from it with water. IR spectroscopy suggests that II is a chelate polymer. The work was carried out at the Institute of Chemical Physics of the Academy of Sciences USSR.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
(Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 24Mar64 ENCL: 00

SUB CODE: OC, SS NO REF SOV: 001 OTHER: 001

ATD PRESS: 3043

Card 2/2

L 18587-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/EWA(h) Pc-4/Pr-4/Peb/Pu-4
ACCESSION NR: AP4042883 S/0062/64/000/007/1357/1358

AUTHOR: Frankevich, Ye. L.; Yakovlev, B. S.

TITLE: Intrinsic photoeffect in solid pentane irradiated with fast electrons

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 7, 1964, 1357-1358

TOPIC TAGS: fast electron, fast electron irradiation, pentane, irradiation, photoeffect, electric conductivity, radiation chemical process

ABSTRACT: The electric conductivity brought about by irradiation of pentane at 80 K with electrons of 1.6 Mev energy was measured in this study of charged particle formation in organic materials by irradiation and its role in radiation chemical processes. The magnitude of σ depended on the dose rate I according to the relation $\sigma = kI^{\Delta}$, where Δ increased from 0.55 to 0.98 as I increased from 6×10^{-3} to 4 Mrad/min. Such a relationship is described by a model in which the capture and recombination of current carriers excited by fast electrons takes place by means of traps of one sort which are available in the materials before

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L 18587-65
ACCESSION NR: AP4042883

irradiation. Illuminating the sample during or immediately after irradiation increased the electric conductivity. The observed change in the photosensitivity spectrum of the sample with increasing irradiation dosage (to 100 Mrad) is apparently associated with the appearance of traps formed in the course of irradiating the organic materials. Orig. art. has: 1 figure.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics Academy of Sciences SSSR)

SUBMITTED: 22Apr64 ENCL: 00

SUB CODE: NP, OC NO REF SOV: 000 OTHER: 000

Card 2/2

STRUNIN, V.P.; FRANKEVICH, Ye.L.

Method for producting glass and quartz diaphragms for flow type systems of mass spectrometers. Prib. i tekh. eksp. 9 no.2:175-176 Mr-Ap'64. (MIRA 17:5)

1. Institut khimicheskoy fiziki AN SSSR.

BERLIN, A.A.; PARINI, V.P.; FRANKEVICH, Ye.L.; CHERKASHINA, L.G.

Local activation effect during the reaction between tetracyanobenzene and some aromatic hydrocarbons. Izv. AN SSSR Ser. khim. no.11:2108-2110 N '64 (MIRA 18:1)

1. Institut khimicheskoy fiziki AN SSSR.

L 01004-66 EWT(l)/EPA(s)-2/EWT(m)/EWP(j)/T/EWA(h) IJP(c) AT/RM

ACCESSION NR: AP5019594 UR/0386/65/001/006/0033/0037

AUTHOR: Frankevich, Ye. L.; Balabanov, Ye. I.

TITLE: New effect of the rise in photoconductivity of organic semiconductors in a weak magnetic field

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 1, no. 6, 1965, 33-37

TOPIC TAGS: organic semiconductor, polynuclear aromatic hydrocarbon, photoconductivity, magnetic field

ABSTRACT: Application of a stationary magnetic field across samples of polynuclear aromatic hydrocarbons during photoconductivity measurements was found to cause a rise (Δi) in the photocurrent (i_{ph}). D-c photoconductivity was measured for thin films (3—20 μ) of anthracene or tetracene with illumination in air or vacuum at magnetic field intensities (H) of 17—3200 oersted. Δi increased with i_{ph} in such a way that at constant H, the ratio $\Delta i/i_{ph}$ remained constant at different light intensities. With increasing H, $\Delta i/i_{ph}$ increased rapidly at first, then reached saturation (Δi = 4% max). $\Delta i/i_{ph}$ was independent of sample orientation with respect to the magnetic field (illumination being perpendicular to the film surface). This

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ACCESSION NR: AP5019594

was interpreted as indicating that the photocurrent rise is not associated with a specific motion of carriers through the sample but with the effect of the magnetic field on carrier generation and/or annihilation. A probable cause of the photocurrent rise was thought to be the effect of the magnetic field on exciton lifetime prior to annihilation without current carrier formation. The authors thank professors V. L. Tal'roze and L. A. Blyumenfel'd for their comments. Orig. art. has: 1 figure and 1 table. [SM]

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 10May65 ENCL: 00 SUB CODE: SS, EM

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4069

Card 2/2

Balabanov, Ye. I.

...stigation of carrier motion in organic substances

...ika tverdogo tela, v. 7, no. 3, 1965, 710-71...

TOPIC TAGS: carrier motion, carrier mobility, carrier lifetime, organic semiconductor, m-terphenyl, drift mobility

... of the lack of direct experiment...

L -1--65

ACCESSION NR: AP5006871

as the carriers continue to move, and can be measured by determining the charge it ... capacitor. A block diagram of the setup ... have shown that holes have a ... are estimated ...

[illegible]

... Institut khimicheskoy fiziki AN SSSR, ...

..., 4

L 1603-66 EWT(1)/EPA(w)-2/EWA(m)-2 IJP(c) AT
ACCESSION NR: AP5014562 UR/0181/65/007/006/1667/1672

AUTHORS: Frankevich, Ye. L.; Balabanov, Ye. I

TITLE: Investigation of the motion of carriers in organic substances

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1667-1672

TOPIC TAGS: paraffin, organic conductor, electron bombardment, electric conductivity, carrier motion, recombination, depolarization, electron capture

ABSTRACT: The authors investigated the conductivity of thin films of paraffin bombarded by pulses of electrons of energy 3 -- 8 keV. The paraffin layers were produced by sublimation on glass substrates coated beforehand with metal electrodes. The apparatus used for the bombardment was described by the authors earlier (FTT v. 7, 710, 1965). The pulse width was usually 4 μsec, and the measuring circuit made it possible to measure directly the current pulse through the sample. The results showed that the amplitude of the conduction current pulses,

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registered when the paraffin is bombarded with a series of pulses, decreases in time, reaching a stationary value. The time necessary for the establishment of the stationary amplitude depends on the ionizing-pulse repetition frequency. The decrease in the conduction-pulse amplitude is due to polarization of the sample, brought about by dilution of the charges produced during ionization, by the external electric field. The frequency dependence of this time is determined by the depolarization of the sample during the interval between bombarding pulses. It is shown that the electrons produced upon ionization do not leave the effective radius of the Coulomb field of the positive ions. The capture of these electrons by the traps present in the paraffin competes with the return of the electrons to their own positive ion. Other topics discussed are the separation of the charges in the electric field, the depolarization due to the dark conductivity of the sample, the recombination of the carriers producing the polarization. Orig. art. has: 5 figures and 1 formula.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR Moscow (Institute of Chemical Physics, AN SSSR).

44,55

L 1603-66

ACCESSION NR: AP5014562

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SUBMITTED: 23Nov64 ENCL: 00 SUB CODE: SS

NR REF SOV: 001 OTHER: 003

Card 3/3 DP

AP5018443

1269

Cherkashina, L. G.; Frenkevich, Ye. L.; Yeremina, I. V.; Balabanov, Ye. I.; Berlin, A. A.

Synthesis and study of the electrophysical properties of polymeric phthalocyanines

Vysokomolekulyarnyye soyedineniya, v. 7, no. 2, 1965, [illegible]

organic semiconductor, semiconducting polymer, polymeric copper phyhalocyanine, electrical property

ABSTRACT: This work was done because polymeric copper phthalocyanines from 1, 2, 4, 5-tetracyanobenzene are of interest as organic semiconductors that are both readily molded and highly conductive. The optimum preparative [illegible] have been determined (given in the original article) and [illegible] properties of the [illegible] temperature, pressure, and [illegible]. The [illegible] prepared had electrical conductivities [illegible] 2.7 ohm^{-1}.cm^{-1} and activation energies [illegible] to

Card [illegible]

A formula was derived which describes well the relation [illegible] the [illegible]alinity and the activation energy [illegible] has: [illegible] formulas.

[illegible] Institut khimicheskoy fiziki AN SSSR [illegible]

TAL'ROZE, V.L., doktor khim. nauk, otv. red.; BAGDASAR'YAN, Kh.S., doktor khim. nauk, red.; FRANKEVICH, Ye.L., kand. fiz.-matem. nauk, red.; SKURAT, V.Ye., kand. khim. nauk, red.

[Elementary processes of the chemistry of high energies; transactions] Elementarnye protsessy khimii vysokikh energii; trudy. Moskva, nauka, 1965. 317 p. (MIRA 18:5)

1. Simpozium po elementarnym protsessam khimii vysokikh energii, Moscow, 1963.

L 25467-66 EWP(j)/EWT(l)/EWT(m)/T/EWP(t) IJP(c) AT/RM/JD

ACC NR: AP6009673 SOURCE CODE: UR/0181/66/008/003/0855/0857

AUTHOR: Frankevich, Ye. L.; Balabanov, Ye. I. 57

ORG: Institute of Chemical Physics AN SSSR, Moscow (Institut khimicheskoy fiziki AN SSSR) B

TITLE: Change in photoconductivity of anthracene single crystal in a magnetic field

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 855-857

TOPIC TAGS: anthracene, single crystal, photoconductivity, organic semiconductor

ABSTRACT: The authors investigated the change of photoconductivity of a single crystal of anthracene on which a magnetic field was applied. This effect was previously observed by the authors (ZhETF Pis'ma v redaktsiyu v. 1, 33, 1965) in sublimated organic-semiconductor films. The conductivity was investigated with direct current in samples of the sandwich type, with electrodes parallel to the cleavage plane (volume conductivity) and under conditions when two electrodes were deposited on the cleavage plane of the single crystal (surface conductivity). The volume photoconductivity decreased if the illuminated electrode was at negative potential and increased if the potential was positive. A positive change of the surface conductivity was observed in relatively weak magnetic fields and a negative change in strong fields (stronger than about 700 oe). Both the positive and negative changes of the photoconductivity with increasing magnetic field tended to limiting values of the order of 1--4%. Neither the negative nor the positive effect can be completely ex-

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L 25467-66

ACC NR: AP6009673

plained within the framework of the usual theory of magnetic effects in semiconductors, although the anisotropy of the negative effect can be ascribed to peculiarities in the motion of holes in organic crystals, and the positive effect may similarly be connected with electron motion. Differences between single crystals and sublimated films are ascribed to lack of long-range order in the latter. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 02Aug65/ ORIG REF: 001/ OTH REF: 001

Card 2/2

L 26544-66 EPF(n)-2/EWA(h)/EWP(j)/EWT(m)/EWA(1) GG/RM

ACC NR: AP6017358 SOURCE CODE: UR/0062/66/000/003/0402/0407

AUTHOR: Yakovlev, B. S.; Frankevich, Ye. L.

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: Investigation of the ionized states in irradiated saturated solid hydrocarbons

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1966, 402-407

TOPIC TAGS: hydrocarbon, photoconductivity, electron trap, alkyl radical, radiation chemistry

ABSTRACT: Photoconductivity in saturated hydrocarbons irradiated at low temperatures is associated with the freeing of electrons stabilized in traps, under the effect of light. Electron traps which apparently are alkyl radicals emerge in the radiolytic process in the substances studied. The spectral form of photoconductivity after irradiation with a dose of 0.3 megarads is determined by the electrons stabilized in the radicals. Thermostimulated conductivity of the irradiated saturated hydrocarbons is principally caused by the movement of the positive charges. Orig. art. has: 6 figures and 1 formula. [JPRS]

SUB CODE: 07, 20 / SUBM DATE: 01Oct65 / ORIG REF: 008

Card 1/1

UDC: 537.57 + 547.21

L 29341-66 EWP(j)/EWT(l)/EWT(m)/T IJP(c) AT/RM

ACC NR: AP6018583 SOURCE CODE: UR/0181/66/008/006/1970/1972

AUTHOR: Frankevich, Ye. L.; Balabanov, Ye. I.; Vselyubskaya, G. V. 56 B

ORG: Institute of Chemical Physics, AN SSSR, Moscow (Institut khimicheskoy fiziki AN SSSR) 15

TITLE: Study of the effect of photoconductivity change in organic semiconductors in a magnetic field

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1970-1972

TOPIC TAGS: organic semiconductor, organic photoconductor, tetracene, magnetic field, photoconductivity

ABSTRACT: The nature of the effect of a magnetic field on the photocurrent, previously discovered by the authors, has been studied. A number of experiments were carried out to screen out various possible mechanisms for this effect. The material used was tetracene. The effect of the magnetic field on the dark current due to electron injection from an Al electrode, and on the photocurrent with or without the limitation imposed by a space charge was determined. It was shown that the magnetic field has no effect on charge-carrier motion. Other experiments showed that the magnetic field has no effect on the absorption of monochromatic light at 5500 Å. It was concluded that the magnetic field which changes photoconductivity affects states which are formed after light is absorbed but before free carriers are generated. Orig. art. has: 1 figure. [SM]

Card 1/1 SUB CODE: 20/ SUBM DATE: 13Jan66/ ORIG REF: 002/ ATD PRESS: 5009

EWP(j)/EWT(l)/EWT(m) IJP(c) AT/RM

ACC NR: AP6029213 SOURCE CODE: UR/0076/66/040/006/1327/1332

AUTHOR: Yakovlev, B. S.; Frankevich, Ye. L.

ORG: none

66
05
13

TITLE: Electric conductivity and photoconductivity induced by electron irradiation in frozen heptane

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 6, 1966, 1327-1332

TOPIC TAGS: heptane, photoconductivity, electric conduction, electron trapping, irradiation effect, electron radiation, electron recombination

ABSTRACT: Measurements of the electric and photoconductivity induced by 1.6 MeV electrons in frozen heptane were carried out at a temperature close to 77°K. From the kinetic standpoint, the close-to-linear dependence of the electric conductivity on the dose rate indicates that the removal of current carriers is a first-order process; this is possible only when the carrier recombination proceeds via traps. During the radiolysis, new traps accumulate which apparently are free radicals. Photoconductivity was manifested in heptane following the irradiation. The photoelectric effect is due to the liberation of carriers from the traps by the light. The dependence of the photocurrent on the irradiation dose made it possible to follow the kinetics of accumulation of electrons in traps present in heptane before the irradiation. When the concentration of deep traps in the solid phase is high, the electric conductivity may

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UDC: 541.15

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ACC NR: AP6029213

involve electrons seized by a trap in the field of "their own" positive ion. Recombination of electrons with "foreign" ions is possible. In addition to heptane, photoconductivity was also observed in hexane, octane, paraffin and ethyl alcohol. It is concluded that the study of photoconductivity may be used to study the processes of formation and accumulation of ions during radiolysis of organic compounds. Orig. art. has: 5 figures and 4 formulas.

SUB CODE: 07,20/ SUBM DATE: 23Nov64/ ORIG REF: 005/ OTH REF: 010

Card 2/2

L 34815-66 EWT(m)/EWP(j)/T IJP(c) AT/RM
ACC NR: AP6018801 SOURCE CODE: UR/0056/66/050/005/1226/1234

AUTHOR: Frankevich, Ye. L.

ORG: none

TITLE: On the nature of the new effect of change in photoconductivity of organic semiconductors in a magnetic field

SOURCE: Zh. eksper. i teor. fiz., v. 50, no. 5, 1966, 1226-1234

TOPIC TAGS: organic semiconductor, photoconductivity, semiconductor carrier, magnetic field intensity, light absorption, exciton

ABSTRACT: The author uses his earlier experimental data (with Ye. I. Balabanov, ZhETF Pis'ma v redaktsiyu v. 1, no. 6, 33, 1966 and FTT v. 8, 855, 1966) on the influence of a magnetic field on the photoconductivity, as well as new results, to propose and discuss a model affording an explanation of this new effect. The new experiments consisted of measuring the change of photocurrent in single-crystal anthracene following application of a 3000 Oe magnetic field, as a function of the light intensity. Application of the field either increased or decreased the photoconductivity, depending on the polarity of the illuminated electrode. A model of the production of free carriers in the molecular crystal, which leads to a dependence of the stationary photoconductivity on the magnetic field intensity, is then proposed. This model makes it possible to interpret all the experimental data. The main feature of the model are "positronium-like" transport electrons which are produced when light is

Card 1/2

ACC NR: AR6029498 SOURCE CODE: UR/0137/66/000/006/I006/I006

AUTHOR: Kryp'yakevych, P. I.; Frankevych, D. P.; Zarechnyuk, O. S.

TITLE: Iron-rich compounds in rare earth metal-iron systems and their crystallographic structure 27

SOURCE: Ref. zh. Metallurgiya, Abs. 6I40

REF SOURCE: Visnyk L'vivs'k. un-tu. Ser. khim., vyp, 8, 1965, 61-74

TOPIC TAGS: rare earth metal, iron containing alloy

TRANSLATION: Alloys of rare earth metals with iron, containing 75-92.3% Fe, were studied by means of x-rays. It was shown that compounds enriched by Fe had a Th_2Zn_{17} or a Th_2Ni_{17} type structure (not a $CaCu_5$ type) which approached the composition of R_2Fe_{17} (not RFe_5 in systems with Ce, Pr, Nd, Sm, Gd, Tb and Y being compounds of the Th_2Zn_{17} ϕ_2-phase type), while in systems with Gd, Tb, Dy, Ho, Er, Tu, Lu and Y they were of the Th_2Ni_{17} type (ϕ_1-phase). The lattice periods of the ϕ_1- and ϕ_2-phases were determined; the ϕ-phases in systems of Gd-Fe, Tb-Fe and Y-Fe contained higher amounts of Fe than did the ϕ_2-phases. (From a resumé).

SUB CODE: 11,13

UDC: 669.05/06'1:548.7

Card 1/1

FRANKEWICZ, Bogumil; SIKORA, Antoni

Methods and results of psychological studies on the selection of candidates for positions particularly connected with industrial safety in the mining industry. Wiadom gorn 12 no. 11:387-391 N '61.

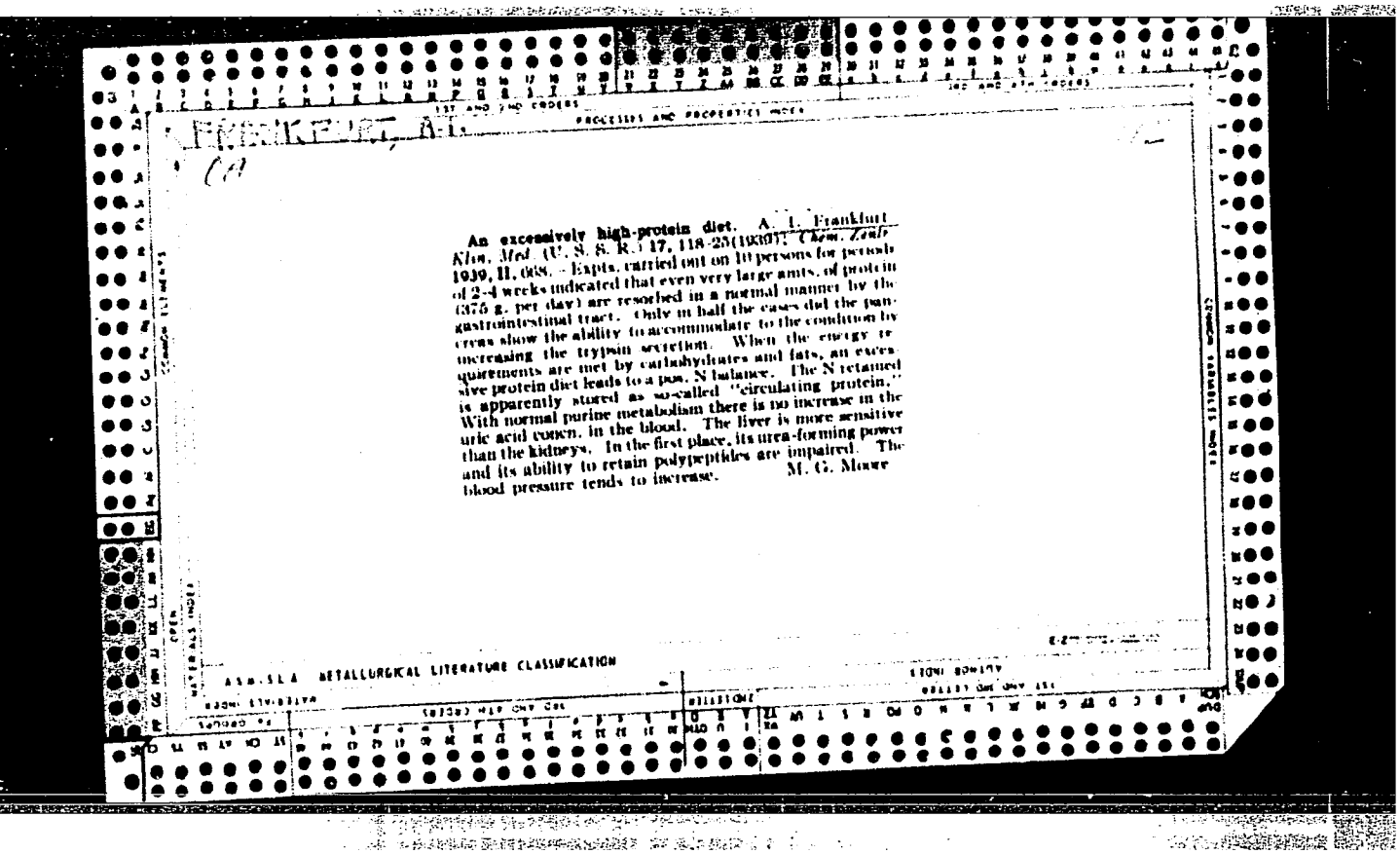
FRANKIEWICZ, Bogumil, mgr

Labor psychology in the German Democratic Republic.
Hutnik P 30 no. 11:351-354 N '63.

1. Pracownia Psychologiczna, Instytut Medycyny Pracy w Przemysle Weglowym i Hutniczym, Katowice.

FRANKIEWICZ, Bogumil, mgr.

Ergonomics, that is, labor psychology. Wiad hut 19 no.9: 246-250 S'63.



FRANKFURT, A. I.

CA

An excessively high-protein diet. A. I. Frankfurt *Klin. Med.* (U. S. S. R.) 17, 118-25(1939); *Chem. Zentr.* 1939, II, 668. — Expts. carried out on 10 persons for periods of 2-4 weeks indicated that even very large amts. of protein (375 g. per day) are resorbed in a normal manner by the gastrointestinal tract. Only in half the cases did the pancreas show the ability to accommodate to the condition by increasing the trypsin secretion. When the energy requirements are met by carbohydrates and fats, an excessive protein diet leads to a pos. N balance. The N retained is apparently stored as so-called "circulating protein." With normal purine metabolism there is no increase in the uric acid concn. in the blood. The liver is more sensitive than the kidneys. In the first place, its urea-forming power and its ability to retain polypeptides are impaired. The blood pressure tends to increase.

M. G. Mause

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

FRANKFURT, A. I.

"The Clinical Aspects of Nephritis," Klin Med., 27, No. 11, 1949.

Propaedeutic Therapeutic Clinic, Kiev OIRB Med. Inst. im A. A. Bogomolets.

1. FRANKFURT O.I.

2. USSR (600)

4. Sodium Benzoate

7. Effedt of renal function upon the results of the sodium benzoate test. Medich.zhur 21 no.2, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, unclass.

1. FRANKFURT, Ø. I. Docent; MERZON, M. H.

2. USSR (600)

4. Influenza

7. Functional state of kidneys in grippe, Medych. zhur., 22, no. 1, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

FRANKFURT, A. I. Docent

"Hepatic Hydrocarbons in Renal Diseases," Klin. med., 30, No.5, 1952

FRANKFURT, Aleksandr Izrailevich

Academic degree of Doctor of Medical Sciences, based on his defense, 22 June 1954, in the Council of the Saratov State Medical Inst, of his dissertation entitled: "Condition of the liver in kidney diseases."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 21, 22 Oct 55, Byulleten' MVO SSSR, No. 19, Oct 56, Moscow, pp. 13-24, Uncl. JPRS/NY-536

USSR

Serum cholesterol fractions in renal disorders

Country : USSR
Category : General Problems of Pathology. Tumors. Comparative Oncology. Human Tumors
Abs. Jour. : Ref Zhur-Biol, 1959, No 4, 19419

Author : Frankfurt, A. I.
Institut. :
Title : On Pheochromocytoma

Orig. Pub. : Probl. endokrinol. i gormonoterapii, 1957, 3, No 5, 121-123

Abstract : This is a description of a case of pheochromocytoma of the right adrenal gland in a 35-year-old male patient. The course of the disease was that of malignant hypertension. This case has its peculiarities: the absence of paroxysmal increase of arterial blood pressure, a parallel increase of both systolic and diastolic blood pressures which continued to rise, the absence of glycosuria, the presence of generalized arteriosclerosis, and a markedly depressed reactivity of the patient.

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28

FRANKFURT, A.I., prof.; TOROSOV, T.M., kand.med.nauk; VASILYANSKAYA, A.D. (Saratov)

Liver and kidneys in burns. Klin.med. 35 no.11:75-81 N '57. (MIRA 11:2)

1. Iz kafedry voyenno-polevoy terapii (nach. - prof. A.I.Frankfurt) voyenno-meditsinskogo fakul'teta pri Saratovskom meditsinskom institute.

(LIVER FUNCTION TESTS, in various dis.
burns)
(KIDNEY FUNCTION TESTS, in various dis.
burns)
(BURNS, metab.
kidney & liver funct. tests)

17(10) SOV/177-58-2-11/21

AUTHORS: Frankfurt, A.I., Colonel in the Medical Service, Professor; Lin'kova, Z.D., Okonishnikova, O.A., Major in the Medical Service, and Protyanova, K.D.,

TITLE: The Condition of the Liver, Pancreas, and Kidney in Cases of Chronic Gastritis

PERIODICAL: Voyenno-meditsinskiy zhurnal, 1958, Nr 2, pp 66-69 (USSR)

ABSTRACT: The article deals with the results of observation of 115 patients, similar in age, working conditions and eating habits, with chronic gastritis, showing no indications in anamnesis of any effects on the liver, pancreas, or kidneys. The subjects were all men 20 - 25 years old, of which 20 had been ill up to 6 months, 27 from 7 - 12 months, 50 from 1 - 3 years, and 18 for more than 3 years. 76% showed objective signs of chronic gastritis, while the others showed fewer symptoms. 50 showed an increase in the acidity of stomach secretions, 31 were normal in this respect, 17 showed a decrease in acidity, and in 17 free hydrochloric acid was absent. The

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The Condition of the Liver, Pancreas, and Kidney in Cases of Chronic Gastritis

authors describe the method for determining the condition of the liver, pancreas and kidneys, performed at registration and discharge from the hospital. The results are described in the text. Some disturbance of the normal functioning of these organs often accompanies chronic gastritis. The liver is particularly affected, and is the slowest to return to normal, while the kidneys are least affected and return to normal more quickly. The authors suggest that in view of the frequency of disturbance of the liver accompanying chronic gastritis, complex treatment be used.

FRANKFURT, A.I., professor

Chronic pancreatitis. Zdrav.Belor. 6 no.2:57-59 F '60.
(MIRA 13:6)
1. Kafedra propedevtiki vnutrennikh bolezney (zaveduyushchiy - prof. A.I. Frankfurt) Vitebskogo meditsinskogo instituta.
(PANCREAS--DISEASES)

FRANKFURT, A.I., prof.; KAKHTSAZOVA, I.A.

Condition of the kidneys in rheumatic fever. Vrach.delo no.10:130-131 O '60. (MIRA 13:11)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof. A.I. Franfurt) Vitebskogo meditsinskogo instituta.
(RHEUMATIC FEVER)
(KIDNEYS)

BOREVSKAYA, B.D.; GUBERGRITS, A.Ya.; ZAKRZHEVSKIY, Ye.B.; FRANKFURT, A.I.

Ukrainian Academician M.M. Gubergrits; on the 75th anniversary of his birth and the 10th anniversary of his death. Terap.arkh. 33 no.1:112-116 '61. (MIRA 14:3)
(GUBERGRITS, MAKS MOISEEVICH, 1885-1951)

FRANKFURT, A. I., prof.

Mechanism of the disorder of liver function in a series of diseases of the organs of the abdominal cavity. Vrach. delo no.3: 72-76 Mr '62. (MIRA 15:7)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof. A. I. Frankfurt) Vitebskogo meditsinskogo instituta.

(LIVER) (ABDOMEN—DISEASES)

FRANKFURT, G.M., inzh.

Designing economical electric networks by using steel and aluminum conductors jointly. Izv. vys. ucheb. zav.; energ. no.7:19-25 Jl '58. (MIRA 11:10)

1. Trest Azelektromontazh Ministerstva stroitel'stva Azerbaydzhanskoy SSR.

(Electric networks)

FRANKFURT, L.A. (Saratov)

Compensation of digestion after gastrectomy. Klin.med. 36 no.11: 61-66 N '58 (MIRA 11:12)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (dir. - prof. I.M. Popov'yan) Saratovskogo instituta (dir. - dots. B.A. Nikitin).
(GASTRECTOMY,
total, postop. digestion compensation (Rus))

FRANKFURT, L. A.

Exocrine function of the pancreas and food assimilation after total gastrectomy. Vop. onk. 7 no.9:58-62 '61. (MIRA 14:12)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. I. M. Popov'yan) Saratovskogo meditsinskogo instituta (dir. - dots. N. R. Ivanov).

(PANCREAS--SECRETIONS) (DIGESTION)
(STOMACH--SURGERY)

POPOV'YAN, I.M., professor; FRANKFURT, L.A.

Gastrectomy in cancer of the stomach. Vest.khir. no.7:54-60 '61. (MIRA 15:1)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (dir. - prof. I.M. Popov'yan) Saratovskogo meditsinskogo instituta. Adres I.M. Popov'yana: Saratov, ul. 20 let, Vsesoyuznyy Leninskiy kommunisticheskiy soyuz molodezhi.
(STOMACH--SURGERY) (STOMACH--CANCER)

FRANKFURT, L.A. (Saratov, Ul. 20-let. VLKSM, d.43, kv.19)

Changes in carbohydrate metabolism following gastrectomy.
Vop. onk. 9 no.11:51-57 '63. (MIRA 18:2)

1. Iz kafedry fakul'tetskoy khirurgii (zav.- prof. I.M. Popov'yan) Saratovskogo meditsinskogo instituta (rektor - dotsent N.R. Ivanov).

ACC NR: AP5020261 UR/0367/65/002/001/0117/0118

AUTHOR: Frankfurt, L. L.

TITLE: Calculation of the $\nu + p \rightarrow n + \mu^+ + \gamma$ cross section

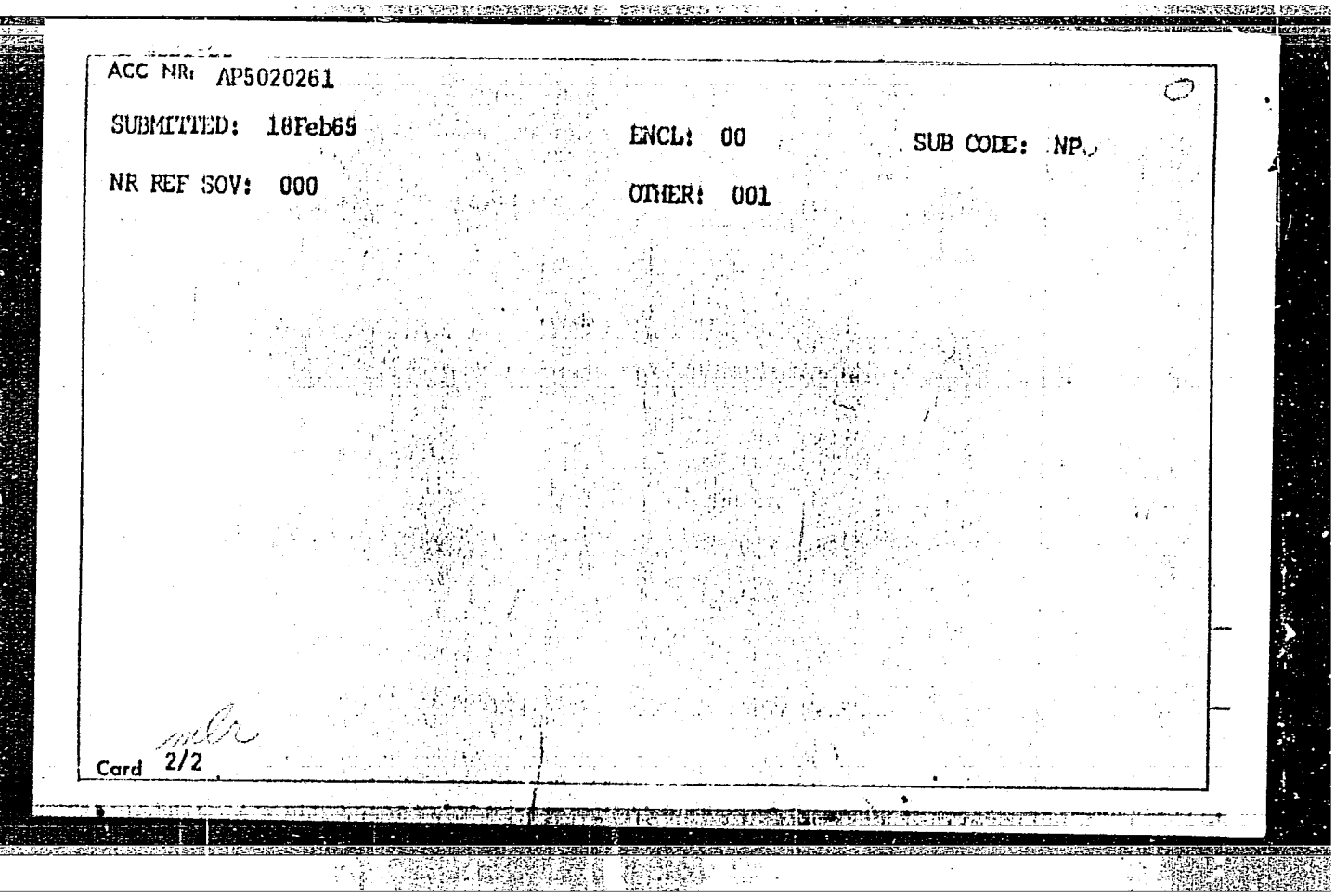
SOURCE: Yadernaya fizika, v. 2, no. 1, 1965, 117-118

TOPIC TAGS: antineutrino, scattering cross section, proton scattering, muon, weak nuclear interaction, gamma quantum, neutron scattering

ABSTRACT: The possibility of detecting very small cross section, such as of the process $\nu + p \rightarrow n + \mu^+ + \gamma$, is considered in the first approximation in the electron charge and in the weak interaction constant. It is shown that only one of the three Feynman diagrams determining the cross section, namely the pole diagram, contributes significantly to the cross section in an approximation in which almost all of the antineutrino energy is transferred to the muon and to the gamma quantum. The cross section corresponding to the total phase volume is then estimated and found to be 0.4×10^{-41}, which lies just at the limit of present experimental detection capabilities. The analysis applies equally well to neutrino-neutron scattering. "The author thanks V. M. Shekhter for suggesting the topic and for help." Orig. art. has: 2 figures and 3 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences, SSSR)

Card 1/2



ACC NR: AP5020261

SUBMITTED: 18Feb65 ENCL: 00 SUB CODE: NP

NR REF SOV: 000 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610007-9"

LEVIN, Ya.M.; FRANKFURT, L.L.

The quartet hypothesis and the relations between cross sections at high energies. Pis'. v red. Zhur. eksper. i teoret.fiz. 2 no.3:105-109 Ag '65. (MIRA 18:12)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR. Submitted June 2, 1965.

L 22761-66 EWT(m)/T

ACC NR: AP6008738 SOURCE CODE: UR/0386/66/003/003/0125/0129

AUTHOR: Levin, Ye. M.; Frankfurt, L. L.

ORG: Physicotechnical Institute im. A. F. Ioffe, Academy of Sciences SSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR)

TITLE: Mass formulas in weakly broken SU(3) symmetry

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 3, 1966, 125-129

TOPIC TAGS: strong nuclear interaction, elementary particle, nuclear spin, boson, baryon, mass spectrum, quantum number

ABSTRACT: The authors propose a new derivation of the relation between the masses of arbitrary-spin particles belonging to different SU(3) multiplets, starting from the following assumptions: I. The three-dimensional integrals of the time-dependent components of the vector current ($Q_\alpha^V(t) = \int d^3x\, I_0^\alpha(x,t)$) are generators of the SU(3) algebra and transform single-particle states into single-particle states that are nearest in energy. This approximation corresponds to the premise that definite multiplets of SU(3) exist in spite of the inequality of the corresponding particle masses. II. There exists a 4-vector $I_\mu^\alpha(x,t)$, which transforms in accordance with the octet representation of SU(3) and whose divergence satis-

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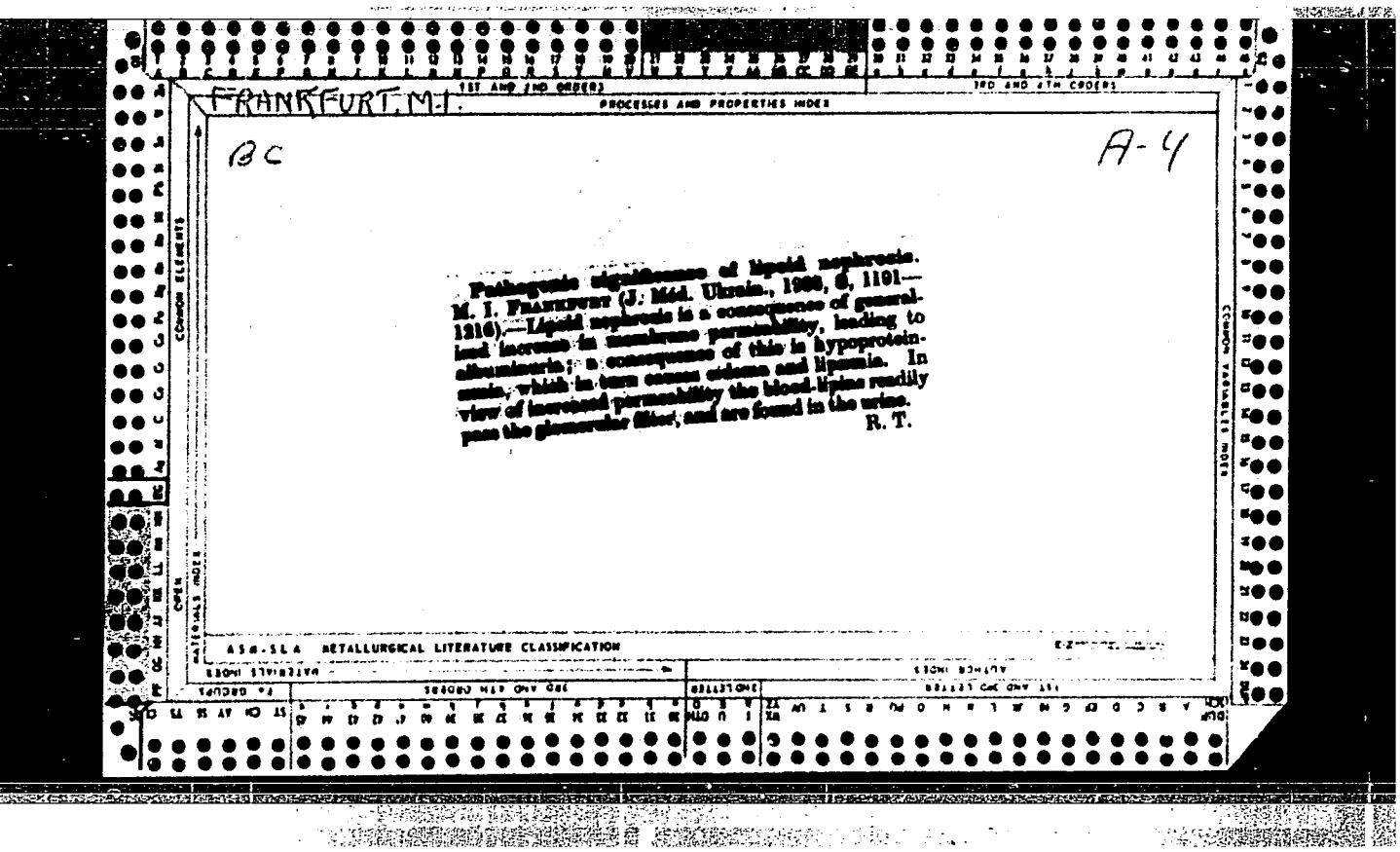
fies a commutation relation

$$[\frac{\partial}{\partial x_\mu} L_\mu^{K^+}(x,t),\ Q_{K^+}^V(t)] = 0 \qquad (1)$$

that follows within the framework of exact SU(3) from the fact that L_μ^α transforms in accordance with the octet representation of SU(3). An example of an operator L_μ^α satisfying assumption II in the approximate symmetry is the vector current in a model in which the breaking of SU(3) in the Hamiltonian transforms like T_3^3, or else the axial current in the quark model or in the hypothesis of partial conservation of the axial current, which has led to predictions that agree satisfactorily with experiment. It is shown that by using the technique developed by S. Futini et al. (CERN preprint 65/998/5 TH 578, 1965) together with assumption I, it is easy to prove the renormalizability of the vector constant (the Ademollo-Gatto theorem) for particles with arbitrary spin belonging to any SU(3) representation. The commutator (1), using the vector current for the operator L_μ^α, also leads to the Gell-Mann --Okubo mass formula but for particles with arbitrary spin. Further, taking the commutator (1) between different states, the authors demonstrate the following: 1. The Gell-Mann--Okubo formula within the multiplet for arbitrary choice of the operator L_μ^α satisfying condition II. 2. The universality of the mass (mass-

squared) difference of particles with quantum numbers K and π for octets of mesons with arbitrary spins. The results agree well with the relation derived by S. Coleman and S. L. Glashow (Phys. Rev. 134B, 671, 1964) for the 0^- and 1^- octets from other considerations. The foregoing implies universality of the parameters of the Okubo formula for the mass differences of bosons, in agreement with the existence of a heavier third quark. For the baryons, relations are given between the masses of the octet and decuplet with arbitrary spins and between the baryon octets. It is concluded that some observed regularities in the mass spectrum can be explained on the basis of a scheme of weakly broken symmetry, without resorting to fundamental hypothese (existence of quarks, higher symmetries). The authors thank V. M. Shekhter for stimulating discussions and useful advice, and Ya. I. Azimov, A. A. Ansel'm, V. N. Gribov, and I. T. Dyatlov for a discussion of the results. Orig. art. has: 4 formulas.

SUB CODE: 20/ SUBM DATE: 17Dec65/ ORIG REF: 001/ OTH REF: 008



FRANKFURT, M. I.

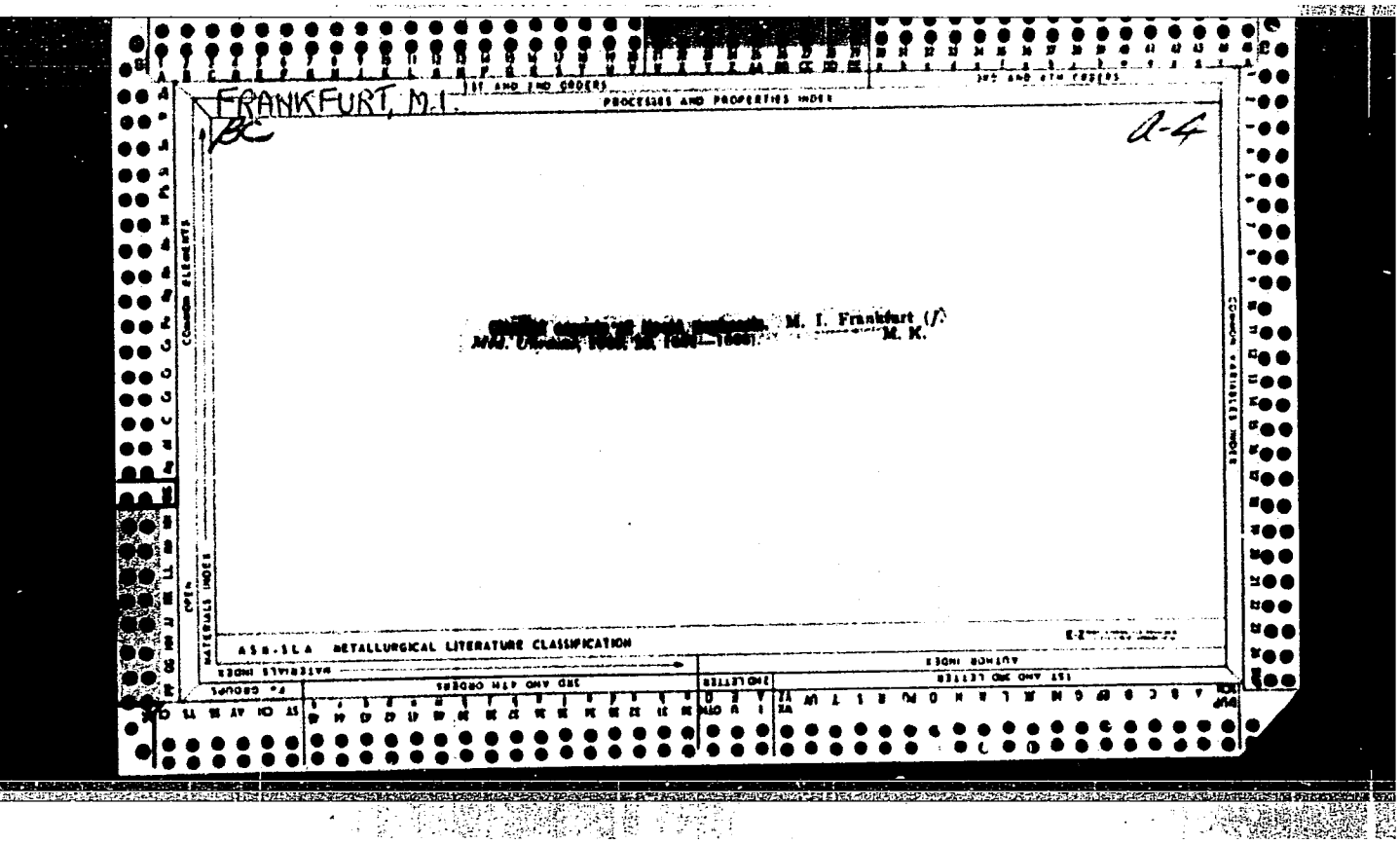
BC

A-4

Pathogenic significance of lipoid nephrosis. M. I. Frankfurt (J. Mod. Ukrain., 1930, 6, 1101–1116).—Lipoid nephrosis is a consequence of general increase in membrane permeability, leading to albuminuria; a consequence of this is hypoproteinæmia, which in turn causes œdema and lipæmia. In view of increased permeability the blood-lipins readily pass the glomerular filter, and are found in the urine.

R. T.

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION



(Lipoid nephrosis) Pod red. N. D. Strazhesko. Kiev, Gos. med. izd-vo USSR, 1947.
105 p.

DAFM

1. Kidneys - Diseases. I. Strazhesko, N.D., ed.

FRANKFURT, M.I., dots.; SHNEYDER, M.S. (Stalino)

Classification of silicosis. Vrach.delo no.2:149-153 F '58.
(LUNGS--DUST DISEASES) (MIRA 11:3)

FRANKFURT, M.I., dotsent; OBEREMCHENKO, Ya.V., kand.med.nauk

Dynamics of changes in the electrocardiogram in diffuse nephritis. Vrach.delo no.2:60-64 F '63. (MIRA 16:5)

1. Klinika propedevticheskoy terapii (zav. - dotsent M.I. Frankfurt) lechebnogo fakul'teta Donetskogo meditsinskogo instituta i oblastnaya klinicheskaya bol'nitsa imeni M.I. Kalinina.
(KIDNEYS--DISEASES) (ELECTROCARDIOGRAPHY)

FRANKFURT, M.O.

Determining rated aerodynamic loads of high-speed wind-driven wheels. Prom.zerodin. no.8:155-185 '57. (MIRA 10:12)
(Windmills) (Aerodynamics)

FRANKFURT, M.O.

8(5) PHASE I BOOK EXPLOITATION SOV/2570

Akademiya nauk SSSR. Energeticheskiy institut

Voprosy vetroenergetiki (Problems in Wind Power Engineering)
Moscow, Izd-vo AN SSSR, 1959. 135 p. Errata slip inserted.
1,700 copies printed.

Ed. of Publishing House: V. N. Golovko; Tech. Ed.: I. N. Guseva; Editorial Board: Ye. M. Fateyev, Corresponding Member, YASNII, Professor (Resp. Ed.); D. N. Fyatritskiy, K. P. Vashkevich, A. V. Kamshilin, V. R. Sektorov, V. Ye. Fedotov, M. O. Frankfurt, G. I. Sholomovich.

PURPOSE: The book is intended for power engineers, scientists, and research workers engaged in wind power engineering.

COVERAGE: These articles discuss aspects of wind power utilization. Individual papers treat the aerodynamic properties of already existing windmills, the construction of new types of windmills, wind electric power stations, and efficient wind-electric and wind-pumping units. A theory on the control of high-speed windmills is also discussed. The TsAGIiV (Central Scientific Research Laboratory for the Study of Windmills) is reported to be working on the development of a 400 kw wind - electric station in parallel operation with several stations with common buses to supply electricity to rural areas. References accompany each article.

Card 3/3

FRANKFURT, M.O.

Aerodynamic forces and moments acting on wind-wheel blades in case of a break-away flow. From. aerodin. no.13:68-90 '59.
(MIRA 13:3)

(Aerodynamics) (Windmills)