SOV/137-58-7-15764

Metal for Locomotive Tires

dissimilarity of wear was shown by tires used in different regions of the country which is attributable to climatic conditions. It is established that in the near future tires should be manufactured of steel with [C] $\leq$0.65%. It is also necessary to ensure $\sigma_b \geq 90$ kg/mm^2. Furthermore, it is necessary to base tire production on the use of low-alloy steel. Bibliography: 7 references.

1. Vehicle wheels--Materials 2. Steel--Mechanical properties P. V.
3. Carbon--Metallurgical effects

Card 2/2

LARIN, T.V.

137-58-5-10647

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 254 (USSR)

AUTHORS: Kazarinov, V.M., Larin, T.V., Vukolov, L.A., Devyatkin, V.P., Tarasenko, A.Ya., Shchetinin, V.K.

TITLE: An Investigation of Materials for Brake Shoes of Improved Frictional Properties (Issledovaniye materialov dlya tormoznykh kolodok s povyshennymi fritktsionnymi svoystvami)

PERIODICAL: Vestn. Vses. n.-i. in-ta zh.-d. transp., 1957, Nr 7, pp 11-17

ABSTRACT: The increase in train speeds poses the problem of finding new materials for brake shoes (B) having high friction properties and resistance to wear. A test was run on B made at 3 plants from cast irons having various (up to 1.2%) P contents (with additions of Fe-P). The coefficient of friction and wear resistance were determined by weight loss at different speeds. The results were analyzed by the correlation process. These laboratory experiments are used to arrive at an iron of optimum composition, subject to verification by extensive service tests. In %, this composition is 2.8-3.2 C, 0.7-1 $C_{combined}$, 0.7-1 Si, not over 1.2 Mn, 0.7-1 P, and $\leq$0.15 S. An important element of its

Card 1/2

137-58-5-10647

An Investigation of (cont.)

composition is P, which markedly increases the coefficient of friction. C and Si act in the opposite sense, and therefore they are held low. The iron must have a pearlite base. Also presented are data of laboratory and service tests of B made of various compositions (consisting of mineral fillers, powdered metals, and organic binders based on synthetic resins or rubbers).

S. O.

1. Materials--Production 2. Metals--Applications 3. Friction--Determination

Card 2/2

LARIN, T. V.

LARIN, T.V., kand.tekhn.nauk; DEVYATKIN, V.P., kand.tekhn.nauk; KRIVOSHEYEV, V.N., kand.tekhn.nauk.

Raising the quality of seamless rolled wheels. Zhel.dor.transp. 39 no.9:69-71 S '57. (MIRA 10:10)

(Car wheels)

LARIN, T.U.

LARIN, T. U., Doc Tech Sci -- (diss) "Problem of increasing the service life of tires and seamless rolled wheels of the rolling stock of railroads." Mos, 1958. 19 pp. (Min of Railways USSR, All-Union Sci Res Inst of Rail road Transport), 120 copies.

List of author's works, pp 18-19 (19 titles). (KL, 9-58, 116)

LARIN, Timofey Vasil'yevich; ZADNEPROVSKIY, A.Ya., kand.tekhn.nauk, red.; VERINA, G.P., tekhn.red.

[Wear and methods of prolonging the life of railroad car wheel rims] Iznos i puti prodleniia sroka sluzhby bandazhei zheleznodorozhnykh koles. Moskva, Gos.transp.zhel-dor.izd-vo. 1958. 165 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut zheleznodorozhnogo transporta. Trudy, no 165) (MIRA 12:1)
(Mechanical wear) (Car wheels)

KAZARINOV, V.M., doktor tekhn.nauk; VUKOLOV, L.A., kand.tekhn.nauk; LARIN, T.V., kand.tekhn.nauk; DEVYATKIN, V.P., kand.tekhn.nauk; TARASENKO, A.Ya., kand.tekhn.nauk; SHCHETININ, V.K., inzh.

Investigating brake shoes made of asbestos friction materials. Trudy TSNII MPS no.163:5-37 '58. (MIRA 12:2)
(Railroads--Brakes--Testing)

LARIN, T.V., doktor tekhn. nauk; DEVYATKIN, V.P., kand. tekhn. nauk; KRIVOSHEYEV, V.P., kand. tekhn. nauk

Using alloyed steel for seamless rolled wheels. Vest. TSNII MPS 18 no.5:32-35 Ag '59. (MIRA 13:1)
(Car wheels)

IARIN, T.V., doktor tekhn.nauk, ASTASHKEVICH, B.M., inzh.

Lengthening the life of diesel locomotive aluminum pistons. Vest.TSNII MPS 19 no. 53-56 '60. (MIRA 13:6)
(Diesel locomotives) (Pis 18)

LARIN, T.V., doktor tekhn.nauk; NAUMOV, I.V., kand.tekhn.nauk

Light duty seamless rolled wheels. Vest.TSNII MPS 19 no.4:54-55 '60. (MIRA 13:7)
(Car wheels)

LARIN, T.V., doktor tekhn.nauk

Interaction between wheels and brake shoes made of composition. (MIRA 13:7)
Zhel.dor.transp. 42 no.6:44-46 Je '60.
(Railroads--Brakes) (Plastics)

Larin, T. V., Devyatkin, V. P., and Tarasenko, A. Ya.

Means for increasing the Friction Properties and the Wear Resistance of the Cast Iron in the Brake Shoes of Railroad Rolling Stock

Sukhoye i granichnoye treniye. Friktsionnyye materialy (Dry and Boundary Friction. Friction Materials) Moscow, Izd-vo AN SSSR, 1960. 302 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 2)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: K. I. Grigorash; Tech. Ed.: S. G. Tikhomirova.

The collection published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines, April 9-15, 1958.

LARIN, T.V.; ASTASHKEVICH, B.M.

Evaluating the wear resistance of materials on a friction testing machine with reciprocating motion. Tren.i izn.mash. no.15:114-130 '62. (MIRA 15:4)

(Mechanical wear--Testing)

LARIN, T.V., doktor tekhn.nauk; ASTASHKEVICH, B.M., kand.tekhn.nauk

Reinforcing the wear resistance of diesel locomotive bushings.
Vest.TSNII MPS 21 no.8:24-28 '62. (MIRA 16:1)
(Diesel locomotives--Design and construction)

LARIN, T.V., doktor tekhn.nauk, prof.; DEVYATKIN, V.P., kand.tekhn.nauk

Reducing the expenditure of cast iron for brake shoes. Vest. TSNII MPS 22 no.8:36-40 '63. (MIRA 17:2)

L 65042-65 EWT(1)/EPF(c)/EWA(d)/EWP(t)/EWP(z)/EWP(b)/ETC(m) IJP(c) JD/WW/DJ

ACCESSION NR: AP5023447 UR/0286/64/000/021/0106/0106

AUTHOR: Shpagin, A. I.; Bushe, N. A.; Abramov, P. G.; Larin, T. V.

TITLE: Bearing alloy. Class 40, No. 87135

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 21, 1964, 106

TOPIC TAGS: antifriction bearing, lead base alloy, sodium containing alloy, magnesium containing alloy, tin containing alloy, antimony alloy, calcium alloy

ABSTRACT: A bearing alloy, consisting of lead with added sodium (0.2-0.6%), calcium (0.2-0.7%) and magnesium (0.1% max), is distinguished in that 1.5-2.5% Sn and 0.5% (max) Sb is added to the initial composition.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, IE

NR REF SOV: 000 OTHER: 000 JPRS

1/1

USOV, A.M.; LARIN, T.V.

Method of detecting the effect of local defects in steel on its mechanical properties. Zav. lab. 30 no.6:743-744 '64 (MIRA 17:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta.

STARODUBOV, K.F., akademik; LARIN, T.V., doktor tekhn.nauk, prof.; UZLOV, I.G., kand. tekhn.nauk; PRIKHOD'KO, E.V., inzh.

Effect of residual stresses on the deformation of seamless rolled wheels. Vest. TSNII MPS 24 no.1:35-37 '65.

(MIRA 18:6)

1. Institut chernoy metallurgii AN UkrSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta Ministerstva putey soobshcheniya.

LARIN, T.V., prof., doktor tekhn.nauk; DEVYATKIN, V.P., kand.tekhn.nauk

Causes of the nonuniform wear of wheels in braking with composition brake shoes. Zhel.dor.transp. 47 no.4:61-64 Ap '65. (MIRA 18:6)

LARIN, T.V., doktor tekhn.nauk, prof.

Optimum hardness of the elements of the friction pair "wheel-rail."
Vest.TSNII MPS 24 no.3:5-9 '65.
(MIRA 18:8)

LARIN, T.V., doktor tekhn. nauk, prof.; ASTASHKEVICH, B.M., kand. tekhn. nauk

Potentials for reducing material consumption for brake shoes. (MIRA 19:1)
Vest. TSNII MPS 24 no.8:11-14 '65.

LARIN, V.; KRYLOV, S.B., professor, doktor yuridicheskikh nauk, otvetstvennyy redaktor; AVILIN, V.N., redaktor; SHCHEDRINA, N.L., tekhnicheskiy redaktor

[International Atomic Energy Agency] Mezhdunarodnoe agenstvo po atomnoi energii. Moskva, Gos.izd-vo iurid.lit-ry, 1957. 97 p. (Atomic power--International control) (MLRA 10:9)

LARIN, V., vetvrach

Superfluous control. Miss.ind.SSSR 30 no.1:23 '59.
(MIRA 12:4)

1. Krasnoyarskiy sovnarkhoz.
(Meat inspection)

LARYN, V.

TSURKO, V.P.; LARYN, V., redaktor; RABINOVICH, A., redaktor; STSEPAN VA, N., tekhnicheskiy redaktor

[Cultivation of fiber flax on peat bog soils] Vyroshchvanne il'nu-dauhuntsu na tarfiana-balotnykh hlebakh. Minsk, Dziarzh. vyd-va BSSR, 1956. 64 p. (MLRA 10:9)
(Flax) (Peat soils)

LARIN, V.

KRECHKO, A.Yu.; LARIN, V., redaktor; STEPANOVA, N., tekhnicheskiy redaktor

[Mechanization of potato cultivation in White Russia] Mekhanizatsiia vozdelyvaniia kartofelia v BSSR. Minsk, Gos. izd-vo BSSR, 1956. 118 p. (White Russia--Potatoes) (MLRA 10:3)

LUPINOVICH, I.S., akademik, redaktor; SKOROPANOV, S.G., redaktor; LARIN, V., redaktor; KARPINOVICH, Ya., tekhnicheskiy redaktor

[Meadows and pastures of White Russia and their improvement] Kormovye ugod'ia BSSR i ikh uluchshenie. Pod red. I.S.Lupinovicha i S.G. Skoropanova. Minsk, Gos. izd-vo BSSR, 1956. 403 p. (MLRA 9:12)

1. Akademiya navuk BSSR, Minsk. Instytut meliyaratsyi, vodnai i balotnai haspadarki. 2. Chlen-korrespondent AN BSSR (for Skoropanov) (White Russia--Pastures and meadows)

LARIN, V.

PUSHKAREV, I.I., prof., doktor sel'skokhozyaystvennykh nauk, red.; AMBROSOV, A.L.; STEPANISHIN, S.Ye.; ROVDO, A.I.; ALEKSEYCHIK, N.A.; AL'SMIK, P.I.; OGNEV, I.M.; ADAMOV, I.I.; BUTYLIN, G., red.; LARIN, V., red.; STEPANOVA, N., tekhn. red.

[Potato growing in White Russia] Kul'tura kartofelia v Belorusskoi SSR. Pod red. I.I. Pushkareva. Izd.2., ispr. i dop. Minsk, Gos. izd-vo BSSR, 1958. 356 p. (MIRA 11:7)
(White Russia--Potatoes)

LARIN, V., red.

[Soil research and the use of fertilizers] Issledovanie pochv i primenenie udobrenii. Minsk, Izd-vo "Urozhai," 1964. 186 p. (MIRA 17:7)

1. Gorki. Belaruskaya akademiya sel'skaye haspadarki.

DIREKTORENKO, Mikhail Andrianovich; LARIN, V.D., red.

[Materialistic content of M.V.Rytov's agrobiological views] Materialisticheskoe soderzhanie agrobiologicheskikh vzgliadov M.V.Rytova. Minsk, Izd-vo "Urozhai," 1964. 209 p. (MIRA 17:7)

LARIN, V. A., Assistant Prof.

"On the Chemistry of Coal Found in Siberia," Irkutsh, 14 Oct. 45/
Abstracted in USAF "Treasure Island" Report No. 12832, on file in
Library of Congress, Air Information Division.

76-32-5-43/47

AUTHORS: Vereshchinskiy, I. V., Larin, V. A.

TITLE: The Action of γ-Radiation on Aqueous Solutions of Sodium Diethyldithiocarbamate (Deystviye γ-izlucheniya na vodnyye rastvory dietilditiokarbamata natriya)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp.1180-1181 (USSR)

ABSTRACT: In the present work the action of γ-radiations of Co^{60} was investigated, using the formation of colored complex salts of the substance mentioned in the title. The trihydrate $(C_2H_5)_2 NCS_2Na.3H_2O$ was used as analytical reagent with a spectrophotometer of the type SF -2M as well as the apparatus GUP -Co-5 and G OP-400 being used. From the obtained experimental data it could not be found which molecule particles of the Na-diethyldithiocarbamate attack free radicals forming in the radiolysis in water. In the hydrogen atmosphere only H-atoms can react with the molecules of the complex former, while the loss of complex forming properties can be explained by a deposition of H-atoms to the C=S binding,

Card 1/2

The Action of γ-Radiation on Aqueous Solutions of Sodium Diethyldithiocarbamate

forming -SH groups. The OH-radicals react with the molecules in nitrogen and oxygen atmosphere. Different from the radiolysis of thiourea it was observed that in the present case the radiolysis does not depend on the quantity of the dosage, but that there is present a noticeable dependence on the concentration, which fact is explained by the rather great efficiency of the chain cleavage of the molecules. The observation of the green thiuram coloring points at secondary reactions taking place. Finally the authors thank Professor N. A. Bakh for his interest in this work. There are 1 figure, 1 table, and 8 references, 1 of which is Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut fizicheskoy khimii, Moskva (Moscow, Institute of Physics and Chemistry, AS USSR)

SUBMITTED: October 9, 1957

1. Sodium carbonates solutions--Effects of radiation
2. Cobalt isotopes (Radioactive)--Applications

BAKH, N.A.; BABICHEVA, G.G.; LARIN, V.A.

Radiation oxidation of leuco bases in ketones in the absence of oxygen. Dokl. AN SSSR 134 no.5:1079-1082 O '60. (MIRA 13:10)

1. Institut elektrokhimii Akademii nauk SSSR. Predstavleno akademikom A.N.Frumkinym.

(Dyes and dyeing) (Oxidation)

25785
S/020/61/139/002/015/017
B103/B220

5.4130
5.4600 2209 1304

AUTHORS: Larin, V. A., and Bakh, N. A.

TITLE: Oxidation and reduction of organic compounds by radical products of radiolysis

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 2, 1961, 406-409

TEXT: The authors continue their studies of oxidation and reduction of organic dyes by radiolytic products of organic solvents (N. A. Bakh et al., Ref. 1: DAN, 134, 1079 (1960); A. I. Chernova et al., Ref. 2: ZhFKh, 30, 1343 (1956)). They made again use of the reversible redox pair methylene blue (MB) - Leucobasis (LMB) as indicator of the redox processes. It is proved that - dependent on the nature of the organic solvent - radiation may effect oxidation of LMB as well as reduction of MB. Solutions of LMB and MB (10^{-6}-10^{-1} M) in (1) acetone, (2) nitro-methane, (3) methanol, (4) ethanol, (5) n-propanol, (6) n-butanol, (7) formamide, (8) pyridine, (9) N-methyl formamide, and (10) N,N-dimethyl formamide were irradiated with X rays and gamma rays (intensity of dose $2.8 \cdot 10^{12}$ to $5 \cdot 10^{15}$ ev/cm^2 per sec). The

Card 1/8

Oxidation and reduction of organic ...

solvents were purified carefully, MB was recrystallized repeatedly from water and from ethanol. The colorless solutions of LMB were prepared by reducing MB by hydrogen in the presence of platinum black and the absence of air. The solutions were sealed in ampules in nitrogen atmosphere and irradiated and spectrophotometered in these ampules. MB is reduced reversibly to LBM under these conditions in all solvents (1)-(10). (A) Reduction of LMB: in (1), (2), and (3), the colorless solutions of LMB become colored. Comparison of the absorption spectra shows that LMB is oxidized to MB on irradiation. Fig. 1 shows the yield in radiative oxidation of LMB to MB as function of the concentration. (B) Reduction of MB: The solutions of MB saturated with nitrogen of (1)-(10) are decolorized with more or less yield on irradiation, the decolorization is, however, not in all cases due to the reduction of MB to LMB. The criterion of this reduction is the complete reestablishment of the initial color intensity on introduction of oxygen into the solution. The curves of Fig. 2 correspond to irradiation in nitrogen atmosphere and to conservation without irradiation after the introduction of oxygen. They show 3 possible cases: (a) a completely reversible reduction to LMG in (7); (b) a partial reduction to LMB and an irreversible decolorization in (9), and (c) a completely

Card 2/8

Oxidation and reduction of organic ...

irreversible decolorization in (10). The slope of the linear initial sections of the curves corresponds to the radiative yield of the reaction and is dependent on the initial concentration of the dye. Fig. 2 represents the yield of the reversible reduction as function of the concentration of MB in several solvents. The function is analogous to that in case (A). Figs. 1 and 3 show the effect of functional groups in the molecules of organic solvents on reactions (A) and (B): in (2), were oxidation of LMB is effected, in (3) oxidation of LMB is accompanied by simultaneous reduction of MB, whereas in aliphatic normal alcohols (from ethanol onwards) in (7) and (8) merely a reversible reduction of MB to LMB occurs. The direct radiative effect up to concentrations of $\sim 10^{-2}$ M on the substance dissolved is neglected, since here all processes are determined by the interaction between the acceptor and the radiolytic products of the solvent. Although the molecular products (HNO_2, HCHO, CH_3CHO, etc.) which are formed by radiation act sometimes on the acceptors as oxidizers or reducing agents, their effect during radiation was negligible and the processes take place merely due to the effect of the short-lived radiolytic products. The horizontal part of the curves in Figs. 1 and 3 in the concentration range of $\sim 10^{-4}$ to 10^{-2} M corresponds to a complete capture

of the radicals susceptible to this reaction by the acceptor. The further increase of the yield corresponds to a new process. The authors tend to the hypothesis that oxidation as well as reduction are effected in diluted sclutions (in organic solvents) by the primary radicals of the radiolytic products of the solvent. Direction and efficiency of the process depend on the nature of the radicals and their yield. The redox pair MB - LMB corresponds to a two-stage transition. The authors suggest that in the said system merely a one-stage transition from LMB or MB to the intermediary semiquinone is effected by primary radicals. The final products, however, are formed due to disproportioning according to scheme:
$A\sim\!\!\!\rightarrow \dot{R}$, $\dot{R}$ + (L or M) $\longrightarrow \ddot{S}$ or $2\ddot{S} \longrightarrow$ M + L, where A is the solvent, $\ddot{S}$ semiquinone, M dye, and L the leucoform as in the non-radiation oxidation and reduction reactions of this type. The authors estimate the yield in primary radicals showing oxidizing or reducing effect on MB and LMB, based on the yields of MB and LMB formation in the range of independence of the concentration of the acceptor.

Card 4/8

Oxidation and reduction of organic ...

Table 1

Solvent	$G(\dot{R}_{ox})$	$G(\dot{R}_{red})$	Solvent	$G(\dot{R}_{ox})$	$G(\dot{R}_{red})$
2	4.0 ± 0.3	0	6	0	4.4 ± 0.2
3	3.6 ± 0.2	2.8 ± 0.2	7	0	6.0 ± 0.4
4	0	7.0 ± 0.2	9	0	4.8 ± 0.2
5	0	6.4 ± 0.4	8	0	1.2 ± 0.2

For (1), the radical oxidation mechanism is improbable. A reaction by partly stimulated acetone molecules is possible, further investigations are necessary, however. In all cases, the yields remain within limits which may be expected for radicals based on ionization. The functions exerted by the radicals on the acceptors may vary with the latter (methanol). The study of the reactions between free radicals and various acceptors is a source of knowledge with regard to their tendency to absorb or emit electrons under various conditions. For this purpose, the radicals effective in the individual case have to be identified. This may be achieved by comparing the conclusions drawn from kinetic studies with those

Card 5/8

25785 S/020/61/139/002/015/017
B103/B220

Oxidation and reduction of organic ...

regarding electron paramagnetic resonance. There are 3 figures, 1 table, and 6 references: 2 Soviet-bloc and 4 non-Soviet-bloc. The three references to English-language publications read as follows: E. Hayon et al. (Ref. 5: J. Chem. Soc., 1957, 30), M. J. Day, G. Stein (Ref. 4: Radiation Res., 6, 666 (1957); L. Michaelis (Ref. 5: Ann. N. Y. Ac. Sci., 40 (2), 399 (1940)).

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry, Academy of Sciences USSR)

PRESENTED: March 10, 1961 by A. N. Frumkin, Academician

SUBMITTED: March 10, 1961

Card 6/8

11.1510
11.1360

34479
S/020/62/142/004/016/022
B101/B110

AUTHORS: Larin, V. A., Grishina, A. D., and Bakh, N. A.

TITLE: Investigation of the mechanism of radiation oxidation and reduction by electron paramagnetic resonance

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 4, 1962, 847 - 850

TEXT: The redox conversions of the pair methylene blue (MB) - leuco base of methylene blue (LMB) under the action of ionizing radiation was investigated by determining type and concentration of the free radicals by means of epr. The preparation of solutions of MB and LMB in methanol, acetone, and nitro-methane had been described earlier (DAN, 139, 406 (1961)). Gamma radiation was supplied by Co^{60} (1.25 Mev), Cs^{137} (0.60 Mev), or X-rays (0.08 Mev). The intensity was $3.2 \cdot 10^{14}$ - $5.5 \cdot 10^{15}$ ev/g·sec, the total dose 10^{17} - 10^{19} ev/g. The color change was measured with an СФ4 (SF4) or СФ2М(SF2M) spectrophotometer adapted for measurements in the range of 77 - 293°K. The epr spectra were recorded by means of an ЭПР-2 (EPR-2) radiospectrometer of the IKhF. Irradiation of samples and measurement of epr were conducted at 77 - 153°K. In 10^{-6} - 10^{-2}M oxygen-

Card 1/2

S/020/62/142/004/016/022
B101/B110

Investigation of the...

free solution of LMB, irradiation (at temperatures >77°K) led to formation of MB, the concentration of which increased linearly up to $\sim 10^{19}$ ev. The yield of MB increased with increasing concentration of LMB and increasing temperature. The life of the free radicals was shorter in methanol solution of LMB than in pure methanol. 10^{-6} - 10^{-4}M oxygen-free solutions of MB were discolored by irradiation. The reduction is reversible by supply of O_2 at room temperature. The radiation yield of the MB reduction is independent of temperature. The following conclusions are drawn from epr spectra and radical yields: (1) The epr spectrum of CH_3OH is a superimposition of $\dot{C}H_2OH$ and $CH_3\dot{O}$ spectra with the ratio 2 : 1. (2) LMB oxidation takes place through radiolysis products of the solvent in the presence of CH_3OH, predominantly through $CH_3\dot{O}$. (3) The experimental data are insufficient for interpreting the MB reduction. There is no dependence between concentration of radicals and oxidation. The temperature independence of this reaction suggests participation of hot H atoms and thermal electrons. (4) The radiation yields of radicals, determined by means

Card 2/4

S/020/62/142/004/016/022
B101/B110

Investigation of the...

of epr at 77°K, and the yields calculated on the basis of the redox reaction show $G(R)_{epr} \geqslant G(R)_{react}$ for the various solvents except for acetone for which $G(R)_{epr} = 1.4$ and $G(R)_{react} = 26$, which means that processes other than radical ones participate. Yu. B. Yakovlev and G. A. Semenova are thanked for taking the spectra. There are 4 figures, 1 table, and 11 references: 4 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: R. Smaller, M. S. Matheson, J. Chem. Phys., 28, 1169 (1958); R. S. Alger, T. H. Anderson, L. A. Webb, J. Chem. Phys., 30, 695 (1959); G. E. Adams, J. H. Baxendale, J. Am. Chem. Soc., 80, 4215 (1958); G. Meshitsuka, M. Burton, Radiation Res., 8, 285 (1958).

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry of the Academy of Sciences USSR)

PRESENTED: September 27, 1961, by A. N. Frumkin, Academician

SUBMITTED: September 23, 1961

Card 3/4

LARIN, V.A.

SESSION E—5—3: Radiation Chemistry of Organic Compounds II.

(a)

Radiation Induced Oxidation and Reduction of Acceptors in Organic Solutions

N. Bach, V. Larin and M. Roder

Oxidation and reduction of solutes by the primary radiolysis products of solvents occurs not only in aqueous solutions but also in organic liquids. It is concluded from the dependence of yield on concentration of the acceptor, and from ESR data, that in a number of solvents such as alcohols, nitromethane, formamide, methylformamide, etc., the reactions are effected just as in aqueous solutions by free radicals. However, in other solvents the experimental data are not consistent with this viewpoint, as shown by the behaviour under irradiation of dilute oxygen-free solutions in acetone of Fe^{III}, Fe^{II}, Cu^{II}, Cu^{I}, Cr^{VI}, Cr^{III}, Mn^{VII}, I^-, I_3^- and also methylene blue and its leuco form. The reactions are mostly reductions, but in some instances oxidation is observed. The wide variety of yields, ranging from G = 0.8 to G = 26 equiv. per 100 eV, excludes mechanisms based only on free radicals, and requires an important interaction of the acceptor with non-radical short-lived primary products of the radiolysis of acetone. A kinetic scheme is considered which enables the yield of primary products effecting different reactions to be estimated.

Institute of Electrochemistry, Academy of Sciences, Moscow, USSR

report presented at the 2nd Intl. Congress of Radiation Research, Harrogate/Yorkshire, Gt. Brit. 5-11 Aug 1962

LARIN, V.A.; GRISHINA, A.D.; BAKH, N.A.

Electron paramagnetic resonance method used in studying the mechanism of radiation oxidation and reduction. Dokl. AN SSSR 142 no.4:847-850 F '62. (MIRA 15:2)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N.Frumkinym.

(Oxidation-reduction reaction)
(Radiochemistry)
(Radicals(Chemistry)--Spectra)

S/844/62/000/000/063/129
D204/D307

AUTHORS: Larin, V. A. and Bakh, N. A.

TITLE: Reactions of oxidation-reduction acceptors with the products of the radiolysis of organic solvents

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 374-377

TEXT: A discussion of earlier work (DAN SSSR, 134, 1074, 1079 (1960)) in which oxidation reactions induced in various solvents by irradiation in the absence of oxygen were followed using the conjugate pair methylene blue-methylene blue leucobase (MB-LMB) as an indicator of dye-radical interactions. With increasing concentration of the acceptor, the radiation yield, G, increased to a constant value (full utilization of available radicals by the dye) and then increased again, showing the existence of a different mechanism. MB solutions are always bleached on irradiation under N_2, the criterion of MB $\rightarrow$ LMB reduction alone being full recovery of color

Card 1/2

Reactions of oxidation- ...

(as e.g. in MeOH), when O_2 is admitted to the system. Some irradiated solutions of MB, particularly in aldehydes and esters, did not regain their color; the graphs of G against log C_{MB} (where C_{MB} = acceptor concentration), plotted for such solvents, showed that G increased with increasing log C_{M}, up to constant values different for each solvent. The plots of $\frac{1}{G}/\frac{1}{C_{MB}}$ were linear, confirming that these reactions also involve the free-radical radiolysis products of each solvent. The bleaching of MB in acetone was only 85% irreversible. The decolorization is fully irreversible in N-dimethylformamide and reversible in formamide. The mechanism of irreversible destruction of the dye on irradiation is not as yet completely understood and may be different in various types of solvents. There are 3 figures and 1 table.

ASSOCIATION: Institut elektrokhimii AN SSSR (Institute of Electrochemistry AS USSR)

Card 2/2

S/844/62/000/000/127/129
D444/D307

AUTHORS: Bakh, N. A., Babicheva, G. G. and Larin, V. A.

TITLE: Dose-measuring system for small quantities of absorbed energy

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 738-740

TEXT: The authors' laboratory has previously studied the effect of radiation on the colorless leucobases of triphenylmethane dyes in the presence of molecular oxygen; their disadvantage is a tendency for coloration to be produced by autoxidation with molecular oxygen in the absence of radiation. The high molar coefficient of extinction, however, makes these dyes very suitable for dose measurement and the authors now report a study on the formation of the dye crystal violet by irradiation of its leucobase in acetone and methylethyl ketone in the absence of molecular oxygen. The radiations studied were x rays, γ rays, and alpha particles at tem-

Card 1/2

S/844/62/000/009/127/129
D444/D307

Dose-measuring system ...

peratures from -85 to +50°C. The methylethyl ketone solution is convenient for measuring doses up to about 1500 rads. There are 4 figures.

ASSOCIATION: Institut elektrokhimii AN SSSR (Institute of Electrochemistry, AS USSR)

Card 2/2