

KORITSKIY, A.A., inzh.

Representation of tectonic faulting on geological survey maps  
of stratified deposits. [Trudy]VNIMI no.50:329-335 '63.  
(MIRA 17:10)

5(4)

AUTHORS: Molin, Yu. N., ~~Koritskiy, A. T.~~ SOV/20-123-5-31/50  
Buben, H. Ya., Voyevodskiy, V.V.,  
Corresponding Member, Academy of Sciences, USSR

TITLE: The Investigation of Free Radicals Formed in Solid Bodies in the Process of Irradiation by Fast Electrons (Issledovaniye svobodnykh radikalov, obrazuyushchikhsya v tverdykh telakh v protsesse oblucheniya bystryimi elektronami)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 882-883 (USSR)

ABSTRACT: The authors endeavored to detect radicals of short life-times in solid bodies formed by fast electrons. The present paper gives data concerning radicals of life-times of some minutes. The authors constructed an apparatus for the immediate recording of the spectrum of the paramagnetic electron resonance during the irradiation of the investigated specimen. Preparation of the samples is discussed in short. The experiments were carried out at room temperature. The authors observed a signal of paramagnetic electron resonance during the irradiation of the specimen and after the interruption of the irradiation. More than 20 various substances were investigated, namely polymers (polyethylene, nylon, caprone, polymethyl

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CIA-RDP86-00513R000824620020-

SOV/20-123-5-31/50

The Investigation of Free Radicals Formed in Solid Bodies in the Process of Irradiation by Fast Electrons

metacrylate, teflon, and various specimens of rubber), solid organic acids and their salts (oxalic acid and their salts, succinic acid and their sodium salt, stearic acid and citric acid), aromatic compounds (naphthalene,  $\alpha$ -naphthol,  $\beta$ -naphthol, benzoyl peroxide, metol). In all the investigated samples, the concentration of the radicals reached saturation at doses of some dozens of megarad. In the case of the majority of the investigated substances, the produced radicals were rather stable, their life-time amounted to some hours (in some cases also to longer periods). Some details are given in short. During the irradiation of polyethylene, the authors could record the radical  $-\text{CH}_2-\dot{\text{C}}\text{H}-\text{CH}_2-$  which is not stable at room temperature. The spectrum of this radical is shown in a figure. According to measurements at temperatures below room temperature, the rate of conversion of the primary radical into the second one decreases with a decrease of temperature. There are 1 figure and 1 Soviet reference.

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The Investigation of Free Radicals Formed in Solid Bodies in the Process  
of Irradiation by Fast Electrons

SOV/20-123-5-31/50

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

SUBMITTED: August 11, 1958

Card 3/3

KORITSKIY, A.T.; MOLIN, Yu.N.; SHAMSHEV, V.N.; BUBEN, N.Ya.;  
VOYEVODSKIY, V.V.

Study of radicals by means of electronic paramagnetic resonance during the irradiation of polyethylene by fast electrons. *Vysokom.sped.* 1 no.8:1182-1193 Ag '59.  
(MIRA 13:2)

1. Institut khimicheskoy fiziki AN SSSR.  
(Polyethylene) (Radicals(Chemistry))

24(7), 5(3)

AUTHORS: Buben, N.Ya., Voyevodskiy, V.V., Koritskiy, A.T., Molin, Yu.N.,  
Chkheidze, I.I. and Shamshev, V.N. SOV/51-6-6-18/34

TITLE: Electron Paramagnetic Resonance Studies of Free Radicals Formed by  
Irradiation with Fast Electrons (Issledovaniye metodom elektronogo  
paramagnitnogo rezonansa svedodnykh radikalov, obrazuyushchikhya v  
protsesse oblucheniya bystryimi elektronami)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 6, Nr 6, pp 806-807 (USSR)

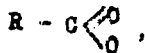
ABSTRACT: An electron paramagnetic resonance (e.p.r.) spectrometer with high-  
frequency modulation of magnetic field working at 9400 Mc/s was used  
to measure the effects of fast-electron irradiation in situ. The  
samples irradiated were kept at temperatures from -180 to +150°C and  
the radiation dose reached  $10^6$ - $10^7$  rad/sec. At room temperature  
radicals produced in various polymers, solid organic acids and their  
salts and in some aromatic compounds were found to be stable (their  
lifetime was of the order of several hours and sometimes longer). At  
low temperatures e.p.r. resonance showed the presence of atomic hydrogen  
in irradiated aqueous solutions of sulphuric acids and some of its salts.  
Irradiation at low temperatures and subsequent warming up produced changes  
in the e.p.r. spectra which could be either reversible (caprone) or

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Electron Paramagnetic Resonance Studies of Free Radicals Formed by Irradiation with  
Fast Electrons

SOV/51-6-6-18/34

irreversible (dicarboxylic acids, polyformaldehyde). Such studies were made on radicals produced by electron irradiation in oxalic acid, polyethylene and paraffin. In oxalic acid the e.p.r. signal is a single line whose width is due to interaction between an unpaired electron and magnetic moments of protons. The observed e.p.r. spectrum of oxalic acid is not related to the presence of water of crystallization but it is due to radicals of the type



formed by removal of the hydrogen atom from the carboxyl group. E.p.r. studies showed that radicals formed by electron irradiation of oxalic acid had disappeared at the rate given by  $dn/dt = -Kn^2$  (at 25°C  $K = 10^{-21} \text{ cm}^3/\text{sec}$ ). The presence of water of crystallization affects strongly the rate of disappearance of these radicals: the value of  $K$  in anhydrous acid is higher than in the hydrated compound. Irradiation of polyethylene at room temperature produces  $\text{CH}_2\text{--}\dot{\text{C}}\text{H--CH}_2$  radicals which are stable at low temperatures. Changes in the e.p.r. spectrum of

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Electron Paramagnetic Resonance Studies of Free Radicals Formed by Irradiation with  
Fast Electrons

CIA-RDP86-00513R000824620020-

SOV/51-6-6-18/34

irradiated polyethylene show that the initially produced radical transforms into a secondary radical which is more stable; the rate of this conversion decreases with decrease of temperature. The e.p.r. spectrum of paraffin showed that the original radical is the same as that in polyethylene, i.e. it is due to removal of the hydrogen atom from one of the methylene groups, but the lifetimes of the original radicals in polyethylene and in paraffin are different. There are 3 Soviet references.

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5(4)

AUTHORS:

Molin, Yu. N., Koritskiy, A. T., SOV/20-124-1-35/69  
Buben, N. Ya., Voyevodskiy, V. V., Corresponding Member, AS USSR

TITLE:

Investigation by the Method of Paramagnetic Electron Resonance of Free Radicals Formed During Irradiation of Oxalic Acid (Issledovaniye metodom elektronnoy paramagnitnoy rezonansy svobodnykh radikalov, obrazuyushchikhsya pri obluchenii shchhavelevoy kisloty)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 127-128 (USSR)

ABSTRACT:

The procedure developed by the authors for the purpose of observing free radicals by the method of paramagnetic electron resonance in connection with the action of fast electrons on matter also permits the investigation of the creation and annihilation of radicals in solids. The present paper contains preliminary data concerning the properties of radicals formed by the irradiation of oxalic acid with 1.6 Mev electrons. The signal of paramagnetic absorption in oxalic acid consists of a single line having a width of about 4.5 Oe. The corresponding g-factor is similar to that of diphenyl-picryl hydrazyl (2.0036).

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Investigation by the Method of Paramagnetic Electron Resonance of Free Radicals Formed During Irradiation of Oxalic Acid SOV/20-124-1-35/69

After irradiation has been discontinued, signal intensity decreases at a rate that depends on temperature. A diagram shows one of the curves for the variation of radical concentration, which was plotted at room temperature. In the temperature interval of  $+10^{\circ}$  to  $+40^{\circ}$  the recombination of radicals is described by the equation  $dn/dt = -kn^2$ , where  $n$  denotes the concentration of the radical and  $k$  a temperature-dependent constant. At  $+25^{\circ}$  the value  $k \approx 9 \cdot 10^{-22}$  cm<sup>3</sup>/sec was found by employing the usual methods. According to the quadratic law of recombination it would be expected that, at constant temperature, the steady concentration of radicals after saturation is proportional to the square root of the efficiency per dose of irradiation. A table contains data on the dependence of the steady concentration of the radical on the density of the electron flux. Accumulation of radicals is, however, not described by a simple kinetic equation  $dn/dt = w_0 - kn^2$ , but it is of complicated character. For the purpose of determining the nature of the radical in oxalic

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Investigation by the Method of Paramagnetic Electron Resonance of Free Radicals Formed During Irradiation of Oxalic Acid SOV/20-124-1..35/69

acid, the authors compared the spectra of the paramagnetic resonance of irradiated oxalic acid, succinic acid, and stearic acid as well as of some of their salts. The following was found: also in the rather complicated spectra of succinic acid and stearic acid signals of paramagnetic resonance occur which are analogous to the signal in oxalic acid. In the spectra of the salts, such signals are either of only weak intensity or they lack entirely. The experimentally determined law of quadratic recombination is indicative of the fact that the radicals are destroyed by the interaction of two radicals. Either the diffusion of a radical in matter by the transition of a hydrogen atom from the neighboring molecule to the radical, or dislocation of a free electron according to the system of conjugate hydrogen bonds may be considered as possible mechanisms. Further investigations are necessary for the purpose of determining the true mechanism. There are 2 figures, 1 table, and 2 Soviet references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute  
Card 3/4 for Chemical Physics of the Academy of Sciences, USSR)  
3

68173

5.4500(B)

5(4)

AUTHORS:

Slovokhotova, N. A., Koritskiy, A. T., Buben, N. Ya.

SOV/20-129-6-41/69

TITLE:

Double Bonds in Polyethylene Irradiated by Fast Electrons

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 6, pp 1347-1348  
(USSR)

ABSTRACT:

Polyethylene was irradiated in liquid nitrogen with 23-300 Mrad and the infrared spectrum was recorded at various temperatures (Fig 1). Immediately after irradiation, an absorption band at  $966\text{ cm}^{-1}$  may be observed, which confirms that the double bonds of the transvinylene type are formed at the instant of irradiation by stripping off H-atoms in two adjacent methylene groups. The intensity of the band  $909\text{ cm}^{-1}$  corresponding to the intensity of the vinyl group depends in a high degree on temperature and on the intensity of irradiation. This is explained by reaction of the vinyl group with free radicals formed by irradiation. Irradiation at temperatures below  $-100^{\circ}$  with 206 Mrad causes the bands  $985\text{ cm}^{-1}$  and  $944\text{ cm}^{-1}$  to occur in the spectrum (Fig 2). The band  $944\text{ cm}^{-1}$  vanishes again with a temperature rise and is probably caused by short-lived radicals.

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KORITSKIY, A.T.

~~LATYSHEV, G.D.~~

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PHASE I BOOK EXPLOITATION SOV/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii, Tashkent, 1959.

Trudy (Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 449 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsov, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. M. Abdurasulov, Doctor of Medical Sciences; U. A. Arifov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. N. Ivashev; G. S. Ikramova; A. Ye. Kiv; Ye. M. Lobanov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Nishanov, Candidate of Chemical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences USSR, Academician, Academy of Sciences Uzbek SSR; Yu. N. Talanin,

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Transactions of the Tashkent (Cont.)

SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE : The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

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Transactions of the Tashkent (Cont.)

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instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

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SOV/5410

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Transactions of the Tashkent (Cont.)

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Ethylene Irradiated by High-Speed Electrons

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Markevich, S. V., and A. A. Ivko [Institute of Physical Organic Chemistry AS BelSSR]. Deuterium Exchange on Solid Surfaces in the Gas Phase. Deuterium Exchange in Ethylene on an Industrial Aluminosilicate Catalyst

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AVAILABLE: Library of Congress

Card 20/20

JA/rsm/jw  
11-3-61

86745

5.5800(1043, 1229, 1273) S/120/60/000/006/020/045  
EO32/E314

AUTHORS: Molin, Yu.N., Koritskiy, A.T., Semenov, A.G.,  
Buben, N.Ya. and Shamshev, V.N.

TITLE: Apparatus for the Observation of E.P.R. Spectra of  
Solids During Their Irradiation by Fast Electrons

PERIODICAL: Pribery i tekhnika eksperimenta, 1960, No. 6,  
pp. 73 - 77

TEXT: The electron paramagnetic resonance method (E.P.R.)  
is being widely used to study the properties of radicals in  
materials subject to ionising radiation. Usually, such  
studies are carried out in two stages. In the first stage,  
the sample is irradiated and in the second the E.P.R. spectrum  
is recorded. This method is not always convenient because it  
cannot be used to determine short-period processes taking place  
in the specimen. In order to remove this disadvantage the  
present authors have designed an apparatus in which the specimen  
can be irradiated in situ in the E.P.R. spectrometer. The  
E.P.R. spectrometer, employing a high-frequency modulation of  
the magnetic field and working on a wavelength of about 3.2 cm,  
was described in detail by Semenov and Bubnov in Ref. 5. The  
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E032/E314

Apparatus for the Observation of E.P.R. Spectra of Solids  
During Their Irradiation by Fast Electrons

absorbing cell in the spectrometer is in the form of an  $H_{012}$  rectangular resonator with a Q-factor of about 1 000. The source of the ionising radiation was the electron accelerator of the Institute of Chemical Physics of the AS USSR, which gives electrons of up to 2 MeV in energy. Fig. 1 shows the method of introducing the electron beam into the resonator of the spectrometer. The electrons are introduced through a cylindrical channel in one of the pole pieces of the magnet so that they enter along the lines of force. The presence of the channel, whose diameter on the pole-piece face is 6 mm, leads to a deterioration in the uniformity of the magnetic field. The nonuniformity at the specimen was found to be 0.8 Oe/cm in the direction of the axis of the channel but very small in the perpendicular direction. Since usually the E.P.R. line width in solids is of the order of 10 Oe, such a nonuniformity does not reduce the resolution of the spectrometer when the thickness of the specimen is of the

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Apparatus for the Observation of E.P.R. Spectra of Solids  
During Their Irradiation by Fast Electrons

order of 1 or 2 mm. The entire apparatus is placed in a special enclosure which screens it from X-rays. In the region in which the radiation strikes the specimen, there is only the magnet, the resonator and the high-frequency field modulator. The constant magnetic field and the modulation fields are adjusted by remote control. The power is introduced into the resonator through rectangular waveguides having a total length of about 25 m. These had practically no effect on the sensitivity and stability of the spectrometer. The electron-beam current was monitored by an ionisation chamber (5 in Fig. 1) which was placed above the specimen 8. Additional magnets were provided for controlling the beam. The ionisation chamber was in the form of two foils, each 5  $\mu$  thick, and separated by a gap of 5 mm. Ions produced in the gap between the foils are extracted by an electric field derived from a storage battery of 160 V. The dose delivered to the specimen was determined from the formula:

$$D = AIt$$

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Apparatus for the Observation of E.P.R. Spectra of Solids  
During Their Irradiation by Fast Electrons

where  $I$  is the electron current in  $\mu\text{A}$  at the beam shutter  
4 (Fig. 1),

$t$  is the time of irradiation and

$A$  is a constant for the given substance.

The latter constant is given by:

$$A = \frac{dE}{d\xi} n \frac{j}{I}$$

where  $dE/d\xi$  is the rate of loss of energy in the

irradiated specimen in  $\text{eV/g/cm}^2$ ,

$n$  is the number of electrons in  $1 \mu\text{A}$  of beam  
current,

$j/I$  is the ratio of current densities at the beam  
shutter and at the specimen.

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S/120/60/000/006/020/045  
E032/E314

**Apparatus for the Observation of E.P.R. Spectra of Solids  
During Their Irradiation by Fast Electrons**

The constant  $A$  was determined in special experiments in which the specimen was replaced by special probes having the same dimensions as the specimen. In the measurements reported in the present paper the dose rate was varied between

$3 \times 10^6$  and  $3 \times 10^3$  rad/sec. The temperature of the specimen was varied by blowing a stream of nitrogen from a dewar filled with liquid nitrogen. In this way, any temperature between  $-150$  and  $+150$  °C can be obtained to within  $\pm 1$  °C. The specimens were in the form of discs 3 or 5 mm in diameter and 2 mm thick. The discs were placed in the resonator at the end of a thermocouple. Acknowledgments are expressed to V.V. Voyevodskiy for his interest in the present work. There are 7 figures and 7 references: 6 Soviet and 1 English.

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

SUBMITTED: November 12, 1959

Card 5/5

54300 1273

33104  
S/638/61/001/000/029/056  
B116/B102

AUTHORS: Buben, N. Ya., Koritskiy, A. T., Shamshev, V. N.  
TITLE: Effect of additions on the formation of free radicals during  
paraffin radiolysis  
SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu  
atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent,  
1961, 192-195

TEXT: One and a half years ago, at the IKhF AN SSSR, direct measurements were started of the concentration and the radiative yield in free radicals in the solid phase at different temperatures by means of electron paramagnetic resonance. V. L. Tal'roze, Yu. N. Molin, V. V. Voyevodskiy and the authors have found already that at low temperatures the dependence of the free radical concentration in the frozen hydrocarbons and in polymers is non-linear already at low doses. If the doses are several hundred mrad the curve practically does not rise on further irradiation, although the forming radicals are stable. Later, the authors found that the conditions under which the radicals are formed vary considerably if a  
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33104

S/638/61/001/000/029/056  
B116/B102

Effect of additions on the ...

small amount of additions is introduced into the irradiated body. E.g., paraffin was irradiated with 1.6-Mev electrons at  $-100^{\circ}\text{C}$ . The spherical (diameter: 4-5 mm) specimens were fixed to a thermocouple and inserted into the resonator of the apparatus. The paraffin temperature was kept constant with cold nitrogen. The radical concentration in the paraffin was determined by comparing the signal intensity of the specimen with that of the calibration substance ( $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ ). Already a small amount of  $\text{CCl}_4$  additions reduces the radical concentration. The same effect is produced by an addition of hexachloro benzene and a somewhat weaker effect is produced by a benzene addition, while heptylene, octylene, and ionyl alcohol additions produced no effect. In all experiments the total concentration of the radicals decreased. At the beginning of irradiation (up to 20-30 mrad), if  $\text{CCl}_4$  additions were present, an additional narrow line was observed besides the ordinary spectrum of the alkyl radical. The intensity of this line rapidly increased up to a certain value. This is explained as follows: Electron excitation in paraffin can be transferred relatively easily. Very probably the hydrogen atom is detached under formation of an alkyl radical where the C-H bonds (e.g. near the molecules of the additions) are weakened. This causes an irregular distribution of the radicals which

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32820

S/O20/62/142/001/019/021  
B145/B101

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AUTHORS: Koritskiy, A. T., Shamshev, V. N., and Buben, N. Ya.

TITLE: Energy transfer in radiolysis of toluene with admixtures

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 1, 1962, 120-122

TEXT: The effect of small admixtures of  $\text{CCl}_4$ , benzoyl peroxide, and  $\text{CS}_2$  on radiation yields of radicals obtained when irradiating frozen toluene, and on the epr spectrum was studied by measuring the electron paramagnetic resonance (epr). When toluene containing the dissolved admixtures was cooled rapidly, it was obtained in an amorphous form. The arrangement of the apparatus and the method of determining the yields of free radicals had been described before (Yu. M. Molin, A. T. Koritskiy, A. D. Semenov et al., Pribory i tekhn. eksperim., no. 6 (1960); A. T. Koritskiy, Yu. N. Molin et al., Vysokomolek. soyed., 1, 1182 (1959)). An increase of the initial yield, G, of radicals by 4 to 5 times was observed with a  $\text{CCl}_4$  molar part of  $5 \cdot 10^{-4}$  at  $-160^\circ\text{C}$ . The shape of the epr spectrum corresponds to a superposition of spectra of the  $\text{CCl}_3$  and  $\text{C}_6\text{H}_4\text{-CH}_3$  radicals. With a

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37433

S/190/62/004/005/009/026  
B110/B144

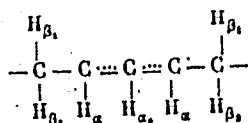
5.4600

AUTHORS: Molin, Yu. N., Koritskiy, A. T., Shamshev, V. N., Buben, N. Ya.

TITLE: Temperature changes in the epr spectra of allyl and other radicals in irradiated polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 5, 1962,  
- 690-695

TEXT: Oriented samples obtained by fourfold stretching of isotropic polyethylene were irradiated with fast electrons (1.6 Mev, 200 Mrad) and kept at 80°C in an N<sub>2</sub> stream until complete recombination of alkyl radicals was reached. The basic structure of the epr spectra of the allyl radical



of irradiated isotropic low-pressure polyethylene is explained by

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S/190/62/004/005/009/026  
B110/B144

Temperature changes in the epr spectra ...

interaction of the unpaired electron with  $\beta$ -protons, and the temperature change of the spectrum is explained by a change of the interaction constant. The five separate components of the spectrum at high temperature correspond to the interaction of the unpaired electron with four  $\beta$ -protons. At low temperature, the  $\beta_1$ - and  $\beta_2$ -protons of spectra with seven components are not equivalent, and  $\Delta H_{\beta_2} = 2\Delta H_{\beta_1}$ . A reversible change

of the spectrum with temperature was found.  $\beta$ -protons are equivalent at 80°C, and at 35°C  $\Delta H_{\beta_2} = 2\Delta H_{\beta_1}$ . The components of the two spectra

show doublet separation owing to interaction with the  $\alpha_0$ -proton. For isotropic polyethylene at 95 and -90°C and for oriented polyethylene at

80 and -110°C the authors obtained  $\Delta H_{\beta_1} = 19; 13; 18.5; 13.5;$

$\Delta H_{\beta_2} = 19; 26; 18.5; 27; \Delta H_{\alpha} = -; -; 20.5; 19; \Delta H_{\alpha_0} = -; -;$

5.5; 5.5, respectively. The different values of  $\beta$ -hydrogen at low temperatures are caused by a distorted geometrical structure of the radical, which is due to the influence of the crystal lattice of the polymer. Tensions thus occur in the allyl radical at low temperatures.

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Temperature changes in the epr spectra ...

S/190/62/004/005/009/026  
B110/B144

They may distort the valency angles and disturb the  $sp^3$  hybridization of the bonds in carbon atoms carrying  $\beta$ -hydrogen atoms. This may lead to an unsymmetrical arrangement of these hydrogen atoms with respect to the plane of the C-C bonds. A temperature rise reduces the influence of the crystal lattice. A four-component spectrum ( $\sim 25$  oersteds; 1 : 3 : 3 : 1)

of the radical  $\begin{array}{c} H_1 \quad H \\ | \quad | \\ -C-C-C-N- \\ | \quad || \\ H_2 H_3 O \end{array}$  was observed at  $36^\circ C$ . The unpaired electron

reacts with one  $\alpha$ - and two  $\beta$ -protons. As with the allyl radical, a drop in temperature changes the number of components. There are 4 figures and 1 table. 4

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR); Institut khimicheskoy kinetiki i goreniya Sibirskogo otdeleniya AN SSSR (Institute of Chemical Kinetics and Combustion of the Siberian Department AS USSR)

SUBMITTED: March 27, 1961

Card 3/3

36525

S/081/62/000/006/023/117  
B171/B101

54600

AUTHORS: Buben, N. Ya., Koritskiy, A. T., Shamshev, V. N.

TITLE: Effects of additives on the formation of free radicals in the radiolysis of paraffin.

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 65, abstract 6B453 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn energii, 1959. v. 1. Tashkent, AN UzSSR, 1961, 192-195)

TEXT: The authors report some facts showing the importance of the electronic excitation energy transfer processes in radiolysis of some solid organic substances and indicate some singularities in the formation of free radicals (FR) in these substances. The conditions of accumulation of FR in a solid organic substance sample change considerably when small amounts of additives are introduced in a system exposed to radiations. The alkyl FR are formed by the separation of H atom from a CH<sub>2</sub> group through the bombardment of paraffin with fast electrons at a temperature of about -100°C. In order to investigate the kinetics of alkyl FR

Card 1/2

Effects of additives on the...

S/081/62/000/006/023/117  
B171/B101

accumulation, a paraffin sample containing additive and having the shape of a small ball, 4 to 5 cm in diameter, fitted on a thin thermocouple, was placed in the resonator of an electronic paramagnetic resonance device. The sample was then irradiated with a 1.6 Mev electron beam, and its temperature was regulated by a cold nitrogen jet. The FR concentration has been determined by the comparison of the intensity of signals emitted by the sample with those emitted by a standard source containing a known number of paramagnetic particles ( $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ ). Small amounts of  $\text{CCl}_4$  and hexachlorobenzene additives contributed to lower considerably the alkyl FR concentration. Such effects were not observed with heptene, octene, and amyl alcohol additives. An explanation of discovered effects has been attempted. [Abstracter's note: Complete translation.]

Card 2/2

X

KORITSKIY, A.T.; SHAMSHEV, V.N.; BUBEN, N.Ya.

Energy transfer in the radiolysis of toluene with addition  
agents. Dokl. AN SSSR 142 no.1:120-122 Ja '62. (MIRA 14:12)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom  
V.N. Kondrat'yevym. (Toluene) (Radiochemistry)

13242  
S/844/62/000/000/091/129  
D204/D307

15.2000  
AUTHORS: Slovkhotova, N. A., Koritskiy, A. T., Buben, N. Ya.,  
Bibikov, V. V. and Rudnaya, G. V.

TITLE: The action of fast electrons on polyethylene at low tem-  
peratures

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khi-  
mii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962,  
531-535

TEXT: The aim of this work was to determine whether the double  
bonds found in irradiated polyethylene (PE) form directly during  
irradiation, or whether they arise from secondary radical inter-  
actions. Low- and high-pressure PE was irradiated with 1.6 Mev  
electrons, in liquid or gaseous N<sub>2</sub>, and the specimens were examined  
by ir spectroscopy. Trans-vinylene-type bonds formed when high-  
pressure PE was irradiated with a dose of 206 Mrad (966 cm<sup>-1</sup> band),  
both at -196 and +50°C, with similar energy yields, showing that.

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S/844/62/000/000/091/129  
D204/D307

The action of fast ...

such double bonds form by direct interaction of PE with the elec-  
trons. In liquid N<sub>2</sub> irradiation of the same PE with 200 Mrad also  
increased the proportion of vinyl-type bonds (909 cm<sup>-1</sup> band), by a  
factor of 6 in relation to unirradiated PE. The proportion of vi-  
nyl bonds in low-pressure PE decreased for doses up to 25 Mrad,  
and then increased; the development of unsaturation was less pro-  
nounced at higher temperatures. Such bonds are both formed (direct-  
ly) and destroyed in irradiated PE. The destructive process pre-  
dominates at higher temperatures owing partly to the increased mo-  
bility of polymeric chains, but it is also connected with energy  
transfer processes during irradiation. Both types of PE exhibited  
a 985 cm<sup>-1</sup> band when irradiated with doses of 300 Mrad, in liquid  
N<sub>2</sub>, and after warming up to 26, 50 and 120°C over a period of 5  
minutes. This band indicates the appearance of conjugated double  
bonds. The 944 cm<sup>-1</sup> band, corresponding to allyl radicals, was also  
observed. This band was only stable below -100°C in high pressure  
PE and disappeared rapidly on warming to 50°C; in low-pressure PE

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S/844/62/000/000/091/129  
D204/D307

The action of fast ...

the same band was stable up to 100°C. This difference is explained by the higher crystallinity of low-pressure PE. Additions of benzene or toluene considerably reduced the intensity of this band, owing to the participation of additive molecules in energy transfer processes; the same lowering effect was observed with respect to the conjugated double bonds. There are 4 figures.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR; Fiziko-khimicheskiy institut im. L. Ya. Karpova (Institute of Chemical Physics, AS USSR; Physico-Chemical Institute im. L. Ya. Karpov) ✓

Card 3/3

S/844/62/000/000/093/129  
D204/D307

AUTHORS: Buben, N. Ya., Koritskiy, A. T. and Shamshev, V. N.

TITLE: The effects of additives on the low-temperature radiolysis of polyethylene (PE)

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 540-546

TEXT: The kinetics of free radical formation in high-pressure PE (by itself or with additions of  $\text{CCl}_4$  or benzene) irradiated with fast electrons, were studied by EPR<sup>4</sup> spectroscopy, using methods described earlier (Pribory i tekhnika eksperimenta, no. 6, 73 (1960); Vysokomolekularnyye soyedineniya, 1, 1182 (1959)). At  $-170^\circ\text{C}$ , with 5% additions and doses of 0.25 - 7 Mrad, signals were detected from radicals forming from  $\text{CCl}_4$  molecules, which were superimposed on the usual spectrum of irradiated PE and which rapidly disappeared at  $-60^\circ\text{C}$ ; no such signals were again detected when the specimens were warmed up to  $30^\circ\text{C}$ , cooled and re-irradiated, showing that the radio-

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S/844/62/000/000/093/129  
D204/D307

The effects of ...

lysis products of  $\text{CCl}_4$  are lost to the system or combine with the PE. Similar phenomena were observed in PE containing 10% of  $\text{C}_6\text{H}_6$ . At  $-125^\circ\text{C}$ , ~10% addition of  $\text{C}_6\text{H}_6$  lowered the initial energy yield (G) by 30 - 40% (for doses up to ~30 Mrad), but lowered G only slightly at higher doses (up to ~270 Mrad). A 1.5% addition of  $\text{CCl}_4$  did not initially affect G, but led to a rapid slowing down of the rate of radiolysis at doses of 50 - 100 Mrad. This was particularly noticeable when the amount of  $\text{CCl}_4$  was raised to 9%. The rates of radical accumulation in PE (pure and with 9%  $\text{C}_6\text{H}_6$ ) become lower when the temperature was raised from  $-150$  to  $-67^\circ\text{C}$ , but only at doses exceeding 5 Mrad. The presence of  $\text{CCl}_4$  led, however, to a considerable decrease in the rate of radical accumulation when the temperature was raised. The radiolysis products of  $\text{CCl}_4$  are  $\text{CCl}_3$  and Cl (atom or ion); the quantity  $G_{\text{CCl}_3}$  is estimated to be ~100 times greater in PE/ $\text{CCl}_4$  than in pure  $\text{CCl}_4$ , at  $-150^\circ\text{C}$ . The Cl is

Card 2/3

MOLIN, Yu.N.; KORITSKIY, A.T.; SHAMSHEV, V.N.; BUBEN, N.Ya.

Temperature changes in the electron paramagnetic resonance spectra of allyl and some other radicals in irradiated polymers. Vysokom. soed. 4 no.5:690-695 My '62. (MIRA 15:7)

1. Institut khimicheskoy fiziki AN SSSR i Institut khimicheskoy kinetiki i goreniya Sibirskogo otdeleniya AN SSSR.  
(Polymers) (Radiation) (Radicals (Chemistry)--Spectra)



43823

S/020/62/147/005/026/032  
B101/B186

11.12.65  
AUTHORS:

Koritskiy, A. T., Lukovnikov, A. F.

TITLE:

Formation of diaryl nitrogen oxide radicals on reaction between amines and peroxide radicals

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 5, 1962, 1126-1129

TEXT: A study was made of the reaction of the inhibitors diphenyl amine and phenyl-β-naphthyl amine in frozen cumene irradiated with 1.6 Mev electrons either in absence of oxygen or at oxygen pressures between 5 and 10 atm. E. p. r. spectra were taken to test the formation of radicals.

Results: (1) An inhibitor addition of 1- 3% to cumene hardly affected the yield and character of the resulting radicals. (2) R radicals, which disappear on heating above the melting point, form in the absence of oxygen. (3) In the presence of oxygen, ROO peroxide radicals are obtained. Heating above the melting point changes the e. p. r. spectrum of these radicals. A 1:1:1 triplet occurs which corresponds to the Ar<sub>2</sub>NO

spectrum. The formation of these diaryl nitrogen oxide radicals follows the reaction:  $ROO + HNAr_2 \rightarrow ROOH + NAr_2$ ;  $ROO + NAr_2 \rightarrow RO + Ar_2NO$ .

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Formation of diaryl nitrogen oxide ...

S/020/62/147/005/026/032  
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Irradiation of the system cumene + O<sub>2</sub> + Ar<sub>2</sub>NH above the melting point yields no Ar<sub>2</sub>NO radicals. The instability of R radicals is explained by the reaction Ar<sub>2</sub>N + R → Ar<sub>2</sub>NR. (4) Experiments showed that (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>NO radicals decompose in the presence and absence of O<sub>2</sub> owing to reaction with R or ROO, yielding RON(C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>. (5) Irradiation of the system cumene + cumene hydroperoxide + amine also yields Ar<sub>2</sub>NO radicals on heating above 0°C. When irradiation begins, the Ar<sub>2</sub>NO concentration first increases, then decreases to a limit which depends on the irradiation intensity. After irradiation has been stopped an after-effect occurs - a long-lasting increase in Ar<sub>2</sub>NO concentration up to a limit which depends not so much on the hydroperoxide concentration as on the irradiation dose and irradiation temperature, and which follows a first-order reaction. The concentration of Ar<sub>2</sub>NO radicals decreases immediately when irradiation is repeated. The decrease in Ar<sub>2</sub>NO

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Formation of diaryl nitrogen oxide ... S/020/62/147/005/026/032  
B101/B186

concentration on continuous irradiation and the after-effect are insufficiently explained by the experimental results. The former may be due to any radiolysis products delaying the radical formation, the latter to incomplete oxidation of the amine (e. g. into diaryl hydroxylamine) and subsequent oxidation by ROOH into  $Ar_2NO$ . (6) The yield of paramagnetic particles remains unaffected by diphenyl amine, is increased by hydroperoxide additions, and is increased considerably by hydroperoxide + diphenyl amine. This is probably due to the excited

$[ROOH \cdot HNAr_2]^*$  complex formed by an H. bond. Conclusion: A possible interaction between amines and peroxide compounds or their conversion products must be taken into consideration. There are 3 figures. The most important English-language references are: J. R. Thomas, J. Am. Chem. Soc., 82, no. 22, 5955 (1960); D. B. Denney, D. Z. Denney, J. Am. Chem. Soc., 82, 1389, 1393 (1960).

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

Card 3/4

Formation of diaryl nitrogen oxide ... S/020/62/147/005/026/032  
B101/B186

PRESENTED: July 19, 1962, by V. N. Kondrat'yev, Academician

SUBMITTED: July 11, 1962

Card 4/4

KORITSKIY, A.T.; SHAMSHEV, V.N.

Energy transfer during radiation oxidation of aromatic hydrocarbons. Dokl. AN SSSR 153 no.1:111-113 N '63.

(MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N. Kondrat'yevym.

S/190/63/005/004/015/020  
B101/B220

AUTHORS: Slovkhotova, N. A.; Koritskiy, A. T., Kargin, V. A.,  
Buben, N. Ya.; Bibikov, V. V., Il'icheva, Z. F.,  
Rudnaya, G. V.

TITLE: Effect of fast electrons on polyethylene at low temperatures.  
I. Double bonds in irradiated polyethylene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 4, 1963, 569-574.

TEXT: High-density polyethylene (PE), low-density PE, and PE obtained by radiation polymerization, were irradiated with 1.6 Mev electrons in liquid or gaseous  $N_2$ . The dose was varied from 25 to 300 Mrad. The IR spectra were studied from  $-196$  to  $+50^\circ C$ . The intensity of the  $966\text{ cm}^{-1}$  band proved to be independent of the nature of the PE and of the temperature. Hence it is concluded that the trans-vinylene bonds form in the primary irradiation act. On the contrary, the  $909\text{ cm}^{-1}$  band characteristic of vinyl bonds was with 200 Mrad and at  $-196^\circ C$  six times as large and at  $-50^\circ C$  only 2.5 times as large as in nonirradiated PE. With doses below 25 Mrad the initial concentration of vinyl groups decreased, whereas with

Card 1/2

Effect of fast electrons on....

S/190/63/005/004/015/020  
B101/B220

higher doses it increased. Thus irradiation induces the formation as well as the disappearance of vinyl double bonds, the disappearance being favored by higher temperatures. From the experimental fact that the  $N_{tv}/N_v$  ratio of the trans-vinylene to the vinyl groups is 18 for PE obtained by radiation polymerization, but 14 with high-density PE, it is assumed that the most probable process is a migration of energy and the formation of vinyl groups by the H atoms splitting off from two neighboring C atoms at the end of the molecular chain. There are 3 figures and 1 table.

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

SUBMITTED: October 11, 1961

Card 2/2

S/190/63/005/004/016/020  
B101/B220

AUTHORS: Slovkhotova, N. A., Koritskiy, A. T., Kargin, V. A.,  
Buben, N. Ya., Il'icheva, Z. F.

TITLE: Effect of fast electrons on polyethylene at low temperatures.  
II. Conjugated double bonds and allyl radicals in irradiated  
polyethylene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 4, 1963, 575-580

TEXT: The IR and epr spectra of irradiated polyethylene were studied.  
Results: (1) Irradiation with more than 50 Mrad induces the formation of  
conjugated double bonds which are characterized by the  $985\text{ cm}^{-1}$  band.  
(2) At low temperatures allyl groups form which are characterized by the  
 $944\text{ cm}^{-1}$  band detected also in the epr spectrum. (3) When benzene or  
toluene were admixed to the polyethylene the yield in allyl radicals and  
conjugated bonds was reduced. A protective action of the benzene ring  
owing to charge migration is assumed. There are 4 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-  
chemical Institute imeni L. Ya. Karpov)  
Card 1/2



KORITSKIY, A. V. Docent

PA 20/49129

USSR/Electricity  
Insulation, Electric  
Insulation, Temperature Characteristics

Dec 48

"Short Duration Action of High Temperatures on Paper and Cotton-Paper Insulation," Docent A. V. Koritskiy, Cand Tech Sci, All-Union Corr Power Eng Inst, 21 pp

"Vest Elektro-Prom" No 12

Many experiments have been conducted to study the performance of paper and cotton-paper insulation operating for long periods at temperatures close to those maximums set up by GOST. Koritskiy presents results of microscopic studies on structure of insulating material subjected to short exposure to high

20/49129

USSR/Electricity (Contd)

Dec 48

temperatures caused by short circuiting the transformer.

20/49129

KORITSKIY, A.V., kandidat tekhnicheskikh nauk (Moskva).

Tenth anniversary of the All-Union Electrical Engineering Correspondence School. Elektrichestvo no.10:92-93 0 '57. (MLRA 10:9)  
(Correspondence schools and courses)

KULBAKIN, V.S.; LARIONOV, A.N.; CHILIKIN, M.G.; GOLOVAN, A.T.;  
MOROZOV, D.P.; KURBATOVA, N.S.; KORITSKIY, A.V.; VESHENEVSKIY,  
S.N.; TISHCHENKO, N.A.; TULIN, V.S.

Doctor of Technical Sciences I.I. Petrov. Elektrichestvo no.12:  
83 D '57. (MIRA 10:12)  
(Petrov, Ivan Ivanovich, 1907-)

KORITSKIY, A.V.

**AUTHORS:** Petrov, I.I., Professor, Doctor of Technical Sciences, Koritskiy, A.V., Docent, Candidate of Technical Sciences 105-58-5-27/28

**TITLE:** A Manual of Electrical Engineering (Elektrotekhnicheskiy spravochnik)

**PERIODICAL:** Elektrichestvo, 1958, Nr 5, pp. 94-96 (USSR)

**ABSTRACT:** The above manual was published under the joint editorship of the professors of the Moscow Institute of Power Engineering A.T.Golovan, P.G. Grudinskiy, G.N. Petrov, A.M. Fedoseyev, M.G. Chilikin (chief editor) and I.V. Antik, engineer. Second revised edition in two volumes, 1152 pages, price 79.75 rubles. Publisher: Gosenergoizdat, 1955. The work consists of four parts: 1.) General Information, 2.) Electrotechnical Materials and Equipment, 3.) Generation, Transmission, and Consumption of Electric Energy, 4.) Technology of Measuring and Control. The book contains tables concerning electrical equipment including costs, formulae for calculations, schemes and their description, standards, etc. The work is, however, not free from basic errors. The material dealt with is not more voluminous than

Card 1/2

S/144/60/000/05/014/014  
E194/E255

AUTHORS: Koritskiy, A.V., Candidate of Technical Sciences, Docent,  
and Yavlinskiy, N. Ya., Candidate of Technical Sciences,  
Docent

TITLE: Book Review

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,  
Elektromekhanika, 1960, Nr 5, pp 134-135 (USSR)

ABSTRACT: "Aviation Electrical Generators"<sup>23</sup> by A. I. Bertinov,  
OBORONGIZ, Moscow, 1959, is a new textbook for technical  
colleges. The review is generally very favourable  
though a few minor defects are pointed out. ✓

ASSOCIATION: Vsesoyuzniy zaochniy energeticheskiy institut  
(All-Union Extra-Mural Power Institute)

Card 1/1

BABAKOV, N.A.; BRON, O.B.; KORITSKIY, A.V.; SAKHAROV, P.V.; SOTSKOV, B.S.;  
STUFEL', F.A.; TSYFKIN, Ya.Z.

Seventieth anniversary of the birth of professor B.F.Vashura.  
Elektrichestvo no.9:96 S '60. (MIRA 13:10)  
(Vashura, Boris Fedorovich, 1890-)

KORITSKIY, A.V., prof.; MEL'NIKOV, N.A., prof.; TIMOFEYEV, D.V., kand.  
tekh.nauk

Nonsymmetrical three-phase to two-phase transformers for  
electric power supply of single-phase traction networks.  
Elektrichestvo no.1:48-51 Ja '63. (MIRA 1612)  
(Electric power distribution) (Electric transformers)  
(Electric railroads—Current supply)

ACC NR: AP6035861

(A)

SOURCE CODE: UR/0413/66/000/020/0072/0072

INVENTOR: Lakhov, V. I.; Vinokurov, V. A.; Koritskiy, A. V.

ORG: none

TITLE: Evaporative cooling system for electrical equipment. Class 21, No. 187135

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, n. 20, 1966, 72

TOPIC TAGS: cooling, evaporative cooling, electric equipment ~~cooling system~~

ABSTRACT: An Author Certificate has been issued for an evaporative cooling system for electrical equipment. To avoid the necessity of supplying cooling agent to the equipment, the moving parts and various structural elements are made of porous metals, such as porous powder steels, saturated with a liquid cooling agent which evaporates during the equipment's operation, providing intensive and uniform short-term cooling.

SUB CODE: 09, 13/ SUBM DATE: 30Dec58/

Card 1/1

UDC: 621.313.017.72



MOROZOV, Yu.D.; KORITSKIY, G.G.

Classification of instruments for electric arc and electric slag  
welding and hard facing. Avtom. svar. 17 no.3:62-64 Mr '64.

1. Donetskij politekhnicheskij institut.

ACC NR: AP5024389 SOURCE CODE: UR/0286/65/000/015/0068/0068

INVENTOR: Skripchenko, Ye. S.; Naumenko, P. V.; Podol'skaya, M. E.; Orlova, K. I.;  
 Balagin, I. B.; Sventokhovskaya, V. K.; Dyubnev, I. P.; Borochenko, S. I.; Klimovich,  
 V. V.; Chamin, Y. S.; Kabantsev, N. A.; Tarlinskiy, D. I.; Zaytsev, V. V.; Pekar',  
 I. K.; Znamenskaya, G. A.; Koritskiy, G. K.

ORG: none 82  
B

TITLE: Method of obtaining liquid lubricant-coolant for rolling thin steel strips.  
 Class 23, No. 173369

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15, 1965, 68

TOPIC TAGS: lubricant, coolant, liquid lubricant, rolling lubricant, cold rolling,  
 strip rolling

ABSTRACT: This Author Certificate introduces a method for the preparation of a liquid  
 coolant-lubricant based on methylenebisamide of synthetic fatty acid used, for  
 instance, in rolling thin transformer or stainless-steel strips. To obtain a stable  
 lubricant which would make it possible to roll the strips to a required thickness, an  
 alkylsulfonate, alkylarylsulfonate, or hydroxyethyl amine of fatty acid containing five  
 hydroxy radicals is added to the methylenebisamide of synthetic fatty acid. In a  
 variant, the specified components are melted and then emulsified in water. [L]

SUB CODE: PP, MM, IE/SUBM DATE: 21 Jun 61/ ORIG REF: 000/ OTH REF: 000/ AND PAGES: 1/28  
 Card 1/1

UDC: 621.892:621.7.016.3

KORITSKIY, G. V.

Teorema szego dlya nekotorykh chastnykh klassov odnolistnykh funktsiy. Matem. SB., 36  
(1929), 91-98.

SO: Mathematics in the USSR, 1917-1947

Edited by Kurosh, A.G.,

Markusevich, A.I.

Rashevskiy, P.K.

Moscow-Leningrad, 1948

KORITSKIY, G. V.

PA 241T81

USSR/Mathematics - Schlicht Reflections Jan/Feb 53

"Certain Properties of Schlicht Conformal Reflections," I. Ye. Bazilevich and G. V. Koritskiy, Moscow

"Matemat Sbor" Vol 32 (74), No 1, pp 209-218

If a unit circle is reflected conformally into a certain schlicht region in this circle, each level line of a given function (in form of a star) lying within a convex level line must be itself convex, and similarly for star-shaped reflections. S. N. Mergel'yan posed the problem of whether or not the number of points of recurtature of the level line is a

241T81

monotonic function of radius rho. Author shows that this problem is solvable in the negative sense. Submitted 29 Apr 52.

241T81

KORITSKIY S.V.  
 SUBJECT USSR/MATHEMATICS/Geometry CARD 1/2 PG - 7  
 AUTHOR KORIZKIJ G.W.:  
 TITLE On the curvature of the level curves and their orthogonal trajectories for conformal mappings.  
 PERIODICAL Mat. Sbornik 37, 103-115 (1955) reviewed 5/1956

The conformal mappings of the circular line  $|z| = r < 1$  are called level curves. Completing an investigation of Zmorovič (Ukrain. mat. Žurn. 4, 276-298 (1952)) and by use of a method due to Besilevič (Moscow) the author considers the upper and lower bounds for the curvature of the level lines and their orthogonal trajectories.

Consider the functions  $F_p(z) = \int_0^z \prod_{m=1}^n (1 - k_m^p z^p)^{-\mu_m} dz$  ( $p=2,3,\dots$ ), where

$k_m = e^{i\theta_m}$ ,  $\theta_m$  is an arbitrary integer,  $\mu_m$  is an integer and satisfies the conditions

$\sum_{m=1}^n \mu_m = \frac{2}{p}$ ;  $-1 \leq \sum_{m=j}^n \mu_m \leq 1 + \frac{2}{p}$  ( $j=1,2,\dots,n$ ); then e.g. for the lower

bound of the level lines holds

KORITSKIY, G.V.

20-4-5/60

AUTHOR: Koritskiy, G.V.

TITLE: On the Curvature of Potential Lines in Schlicht Conformal Mappings (O krivizne liniy urovnya pri odnolistnykh konformnykh otobrazheniyakh)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 4, pp. 653-654 (USSR)

ABSTRACT: The theorems given here are a continuation of earlier obtained results (G.V. Koritskiy, Matem. sborn., 1955 Vol. 37 (79), p. 103). The author here studies the curvature K of the potential lines (of the mappings of the circles xi = xi\_0 + alpha\_0 + xi = xi\_0 e^{i phi}) in the class Sigma of the functions F(xi) = xi + alpha\_0 + sum\_{n=1}^p alpha\_n / xi^n as well as in the subclasses Sigma\_2 and Sigma\_p^\* (p = 1, 2, ... of the class Sigma. The functions F(xi) = xi + alpha\_0 + sum\_{n=1}^p alpha\_n / xi^n are schlicht and regular in the domain |xi| = rho > 1 (with the exception of the pole xi = infinity). The subclass Sigma\_2 consists of the functions F\_2(xi) = xi + sum\_{n=1}^2 alpha\_n / xi^{2n-1}. The subclasses Sigma\_p^\* (p = 1, 2, ...) con-

Card 1/2

On the Curvature of Potential Lines in Schlicht Conformal Mappings

sist of the functions w = F^\*(xi) = xi + sum\_{n=1}^p alpha\_n / xi^{np-1}, which map the domain rho > 1 onto a domain with p-fold symmetry of rotation and with complements radial with regard to point w = 0. The following theorems result from the data obtained here. Theorem 1: In the class Sigma the accurate estimation K rho <= rho (rho^2 + 1) / (rho^2 - 1)^2 is valid.

Corollary: As the function F\_2(xi) = xi + alpha\_1 / xi has a majorant in theorem 1, the theorem remains valid for the subclasses Sigma\_2^\*, Sigma\_3^\* (to which belongs this function). Theorem 2: In the subclasses Sigma\_p^\*, p = 2, 3, ... the exact estimation

K < [rho (rho^{2p} + 2(p-1) rho^p + 1)] / [(rho^p - 1)^2 (rho^p + 1)^{2/p}] is valid.

There are 5 references, 4 of which are Slavic, no estimation. ASSOCIATION: Moscow Aviation Institute imeni Sergo Ordzhonikidze (Moskovskiy aviatsionnyy institut imeni Sergo Ordzhonikidze) PRESENTED: March 12, 1957, by M.A. Lavrent'yev, Academician SUBMITTED: March 7, 1957 AVAILABLE: Library of Congress

Card 2/2

85220

S/042/60/015/005/013/016XX  
C111/C222

16.3000

AUTHOR: Koritskiy, G.V.

TITLE: On the Curvature of Equipotential Lines at Schlicht Mapping 16

PERIODICAL: Uspekhi matematicheskikh nauk, 1960, Vol.15, No.5, pp.179-182

TEXT: Let  $S$  be the class of the schlicht functions  $f(z) = z + \sum_{n=2}^{\infty} a_n z^n$ ,  $z = re^{i\varphi}$ , regular in  $|z| < 1$ . Let  $S_p$  ( $p=2,3,\dots$ ) be subclasses of  $S$  consisting of the functions  $f_p(z) = z + \sum_{n=1}^{\infty} a_{np+1} z^{np+1}$  which map  $|z| < 1$  onto domains with a  $p$ -fold symmetry with respect to rotation. Let  $K_r$  be the curvature of the equipotential line (image of the circle  $|z|=r$  at the mapping by  $f(z)$  or  $f_p(z)$ ). Ya.S.Miroshnichenko (Ref.1) has shown that the following estimations are valid for  $K_r$ : In the class  $S$  it is

$$(I) \quad K_r \geq \frac{1-4r+r^2}{r} \left( \frac{1+r}{1-r} \right)^2$$

if  $2 - \sqrt{3} \leq r < 1$ ; in the class  $S_p$  it is  
Card 1/2

85220

28656

S/020/61/140/002/001/023

G111/C444

16.3000

AUTHORS: Bazilevich, J. Ye., Koritskiy, G. V.

TITLE: Certain properties of level lines in conformal mappings with one-to-one correspondence

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 2, 1961, 279-280

TEXT: It is shown that under a sufficient fast increasing of the modulus of a schlicht function in  $|z| < 1$  a certain regularity can be observed in the behavior of its level lines for  $r \rightarrow 1$ .

The paper refers to the former publication of the author (Ref. 1: Matem. sborn. 32 (74), 1, 209, (1953)).

Theorem 1 (Theorem 2): For the class S of the functions  $f(z) =$

$z + \sum_{n=2}^{\infty} c_n z^n$ , being regular and schlicht in  $|z| < 1$ , there exists an absolute constant  $\alpha_s$ ,  $0.1005 < \alpha_s < 0.134$  ( $\alpha_k$ ,  $0.333 \dots < \alpha_k <$

$< 0.511$ ) such that every arc of the level line  $L_r$  of an arbitrary

Card 1/4

+



28656  
S/020/61/140/002/001/023  
C111/C444

Certain properties of level lines . . .  
function  $f(z) \in S$ , lying in the ring

$$\alpha_s \frac{r}{(1-r)^2} < |f(z)| < \frac{r}{(1-r)^2}, \quad |z| = r < 1,$$

$$\left( \alpha_k \frac{r}{(1-r)^2} < |f(z)| < \frac{r}{(1-r)^2}, \quad |z| = r < 1, \right)$$

is star-shaped (convex); but there are functions  $f(z) \in S$  for which a certain arc of the level line, lying in the ring

$$(\alpha_s - \epsilon) \frac{r}{(1-r)^2} < |f(z)| < \frac{r}{(1-r)^2}, \quad \epsilon > 0,$$

$$\left( (\alpha_k - \epsilon) \frac{r}{(1-r)^2} < |f(z)| < \frac{r}{(1-r)^2}, \quad \epsilon > 0 \right)$$

is no longer star-shaped (convex) for  $r$  sufficiently near to 1.

Card 2/4

28656

S/020/61/140/002/001/023

C111/C444

Certain properties of level lines . . .

Theorem 3 (Theorem 4): For the class  $\Sigma$  of the functions

$F(\xi) = \frac{1}{f(1/\xi)}$ ,  $f(z) \in S$ ,  $\xi = \frac{1}{z}$ , there exists an absolute constant

$A_s = 1/\alpha_s$ ,  $7.667 < A_s < 10$  ( $A_k$ ,  $1.75 < A_k < 10$ ) such that every arc of the level line  $L_\xi$ ,  $\xi = |\xi|$ , of an arbitrary  $F(\xi) \in \Sigma$  lying in the ring

$$\frac{(\xi - 1)^2}{\xi} < |F(\xi)| < A_s \frac{(\xi - 1)^2}{\xi}, \quad |\xi| = \xi > 1$$

$$\left( \frac{(\xi - 1)^2}{\xi} < |F(\xi)| < A_k \frac{(\xi - 1)^2}{\xi}, \quad |\xi| = \xi > 1 \right)$$

is star-shaped (convex), but there are functions  $F(\xi) \in \Sigma$  for which a certain arc of a level line, lying in the ring

$$\frac{(\xi - 1)^2}{\xi} < |F(\xi)| < (A_s + \epsilon) \frac{(\xi - 1)^2}{\xi}, \quad \epsilon > 0$$

Card 3/4

28656

Certain properties of level lines . . . C111/C444

$$\left( \frac{(\xi - 1)^2}{\xi} < |F(\xi)| < (A_k + \epsilon) \frac{(\xi - 1)^2}{\xi}, \quad \epsilon > 0 \right)$$

is no more star-shaped (convex), if  $\xi$  is sufficiently near to 1.

There is 1 Soviet-bloc reference.

ASSOCIATION: Moskovskiy institut stali imeni J. V. Stalina (Moscow Steel Institute imeni J. V. Stalin)

PRESENTED: April 22, 1961, by M. V. Keldysh, Academician

SUBMITTED: April 22, 1961

Card 4/4

KORITSKIY, K.I.

Effect of twist on the structure and physical parameters of yarn.  
Izv.vys.ucheb.zav.; tekhn.tekst.prom. no.5:30-38 '61. (MIRA 14:11)

1. Tsentral'nyy nauchno-issledovatel'skiy institut khlopchatobu-  
mashnoy promyshlennosti.

(Yarn--Testing)

**KORITSKIY K. I.**

PROCESSES AND PROPERTIES INDEX

25

Utilization coefficient of the strength of the fibers in thread. K. I. Koritskiy. *Khloprachobumashaynoy Prom.* 6, No. 1, 20-5 (1938); *Chem. Zvest.* 1938, II, 981. — For the calcn. of the percentage strength utilization coeff. of the thread the following formula is given:  $B = 0.22 a + 0.26 a - 4.3 \phi + 23.0$ , where  $a$  is the no. of fibers in the thread; cross section,  $a$  the coeff. of twist and  $\phi$  the fiber strength. In mixes. of different kinds of cotton the  $B$  coeffs. must be considered in addn. to corresponding fiber lengths. If the  $B$  values of 2 different cottons differ by 3% or more (e. g., 45 and 49), then a mixt. of the two is not to be recommended.

M. G. Moore

A 5 B 3 L A METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
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KORITSKIY, Konstantin Ivanovich, doktor tekhnicheskikh nauk, professor;  
FILATOV, M.S., rezensent; MAL'CHIKOV, Yu.A., redakter; EL'KINA,  
E.M., tekhnicheskiiy redakter.

[Manufacture of fancy twist yarns] Proizvodstvo fasennoi priashi.  
Moskva, Gos.nauchno-tekhn.izd-vo Ministerstva tekstil'noi promyshl.  
SSSR, 1955, 169 p. (Yarn) (Spinning) (MLRA 9:6)

KORITSKIY, K. I., doktor tekhnicheskikh nauk

Twisting techniques in foreign countries. Tekst.prom.15 no.9:40-44  
S '55. (MLFA 8:11)

(Cotton spinning) (Spinning machinery)

KORITSKIY, K.I., doktor tekhnicheskikh nauk

Equipment used in twisting abroad. Tekst.prom.15 no.10:60-63 0'55.  
(Spinning machinery) (MIRA 8:12)

KORITSKIY, K.I., doktor tekhnicheskikh nauk.

For an improvement in twisting techniques. Tekst. prom. 16 no.1:  
15-19 Ja '56. (MIRA 9:4)

(Cotton spinning)



KORITSKIY, Konstantin Ivanovich, prof., doktor tekhn.nauk; GRILIKHES,  
Yefim Abramovich; KOSTSOV, Aleksandr Aleksandrovich; SOKOLOVA, V.Ye.,  
red.; KOGAN, V.V., tekhn.red.

[Yarn and thread manufacture] Krutil'noe i nitochnoe proizvodstva.  
Pod red. K.I.Koritskogo. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry  
po legkoi promyshl., 1957. 309 p. (MIRA 11:1)

(Yarn)

(Thread)

KORITSKIY, K.I., prof.

Twisting theory. Tekst. prom. 18 no.2:35-37 F '58.

(Yarn--Research)

(MIRA 13:3)

KORITSKIY, K.I.

Problems of the design of staple fiber yarns. Izv.vys.ucheb.zav.;  
tekh.tekst.prom. no.2:23-29 '60. (MIRA 13:11)

1. Tsentral'nyy nauchno-issledovatel'skiy institut khlopchatobumazhnoy  
promyshlennosti.

(Yarn)

KORITSKIY, K.I.

Design for strength of combination yarns. Izv. vys. ucheb. zav.;  
tekh. teks. prom. no. 2:24-31 '61. (MIRA 14:5)

1. Tsentral'nyy nauchno-issledovatel'skiy institut khlopkhato-  
bumazhnoy promyshlennosti.  
(Textile fibers, Synthetic) (Spinning)

KORITSKIY, K.I.

Design and calculation of rayon cord characteristics for strength.  
Izv.vys.ucheb.zav.; tekhn.tekst.prom. no.1:42-49 '62. (MIRA 15:3)

1. Tsentral'nyy nauchno-issledovatel'skiy institut khlopchatobu-  
mazhnoy promyshlennosti.

(Rayon spinning)

KORITSKIY, Konstantin Ivanovich; KOMAROV, V.G., reds.; GROMOVA,  
T.G., red.; BATYREVA, G.G., tekhn. red.

[Fundamentals of the design of yarn properties] Osnovy pro-  
ektirovaniia svoistv priazhi. Moskva, Gizlegprom, 1963.  
245 p.

(MIRA 16:6)

(Yarn)

KORITSKIY, K.I.

Coefficient of utilization of the strength of the yarn in the fabric. Izv.vys.ucheb.zav.; tekhn.tekst.prom. no. 3:19-26 '63.

(MIRA 16:9)

1. Tsentral'nyy nauchno-issledovatel'skiy institut khlopchatobumazhnoy promyshlennosti.

(Textile fabrics--Testing)





YEREMINA, N.S.; KORITSKIY, K.I.

Design of cotton fabrics; review of literature material. Nauch.-  
iss. trudy TSNIKHBI za 1962 g.:189-222 '64. (MIRA 18:8)

Fabric resistance to tearing deformation. Nauch.-iss. trudy  
TSNIKHBI za 1962 g.:222-237 '64. (MIRA 18:8)

KORITSKIY, V.; STERIN, Kh.

Fourteenth Conference on Spectroscopy. Opt.i spektr. 12

no.5:662-664 My '62.

(Spectroscopy--Congresses)

(MIRA 15:5)

LEBEDEV, V.K.; KORITSKIY, V.A.

Resistance to short-circuiting of a welding transformer with moving  
coil. Avtom.svar. 14 no.7:21-24 JI '61. (MIRA 14:7)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki  
im. Ye.O.Patona AN USSR.  
(Electric welding--Equipment and supplies)

LEEDEV, V.K.; KORITSKIY, V.A.

Transformer for measuring secondary currents of resistance  
welding machines. Avtom. svar. 15 no.1:23-30 Ja '62. (MIRA 14:12)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki  
imeni Ye.O. Patona AN USSR.  
(Electric welding--Equipment and supplies)

LEEDEV, V.K.; KORITSKIY, V.A.; SIDORENKO, M. N.; MAKAROV, M. D.

New transformers for manual arc welding. Avtom. svar. 15  
no.11:51-55 N '62. (MIRA 15:10)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki  
imeni Ye. O. Patona AN UkrSSR.

(Electric welding--Equipment and supplies)

POTAP'YEVSKIY, A.G.; KGRITSKIY, V.A.; Primali uchastiye: MECHEV, V.S.;  
MAKAROV, M.D.; VAYSHTEYH, A.L.; KULIKOV, N.N.; SHAMOVSKAYA, I.V.;  
PAKLAN, S.N.; FEDOTOVA, L.P.; TATARINOV, G.V.

Ob-458m attachment for welding in CO<sub>2</sub> using PS-300, PSO-300,  
and PS-500 transformers. Avtom.svar. 15 no.10:68-70

0 '62.

(MIRA 15:11)

(Electric welding—Equipment and supplies)

1ST AND 2ND ORDERS		PROCESSES AND PROPERTIES INDEX	
CA		7	
<p>Applications of spectral analysis at the Chusov Metallurgical plant. R. M. Rozhkov. <i>Bull. acad. sci. U.S.S.R., Ser. phys.</i> 9, 673-5(1945).—The Bessemer process is controlled by the content of V and Cr. The steel should contain not more than 0.3% Cr and about 0.04-0.06% V. A rapid analysis is made with the steeloscope in 4-5 min. After the introduction of spectral analysis the no. of defective melts fell from 13% to 2%. S. Pakswier</p> <p>Spectral analysis of ferrous metals. V. G. Koritskil <i>Bull. acad. sci. U.S.S.R., Ser. phys.</i> 9, 647-50(1945) (English summary).—A report on the state of spectral analysis in the industry of ferrous metals in USSR. S. Pakswier</p>			
ASM-ISA METALLURGICAL LITERATURE CLASSIFICATION			
AUTHOR INDEX		SUBJECT INDEX	
1ST AND 2ND ORDERS		1ST AND 2ND ORDERS	

PROCESSES AND PROPERTIES INDEX

21

**Spectral Analysis of Steel.** V. G. Koritski. (Bulletin de l'Académie des Sciences de l'U.R.S.S., Série physique, 1967, vol. 11, pp. 368-375; Chemical Abstracts, 1968, vol. 48, Mar. 30, p. 1848). The methods of steel spectroscopy by analyzing samples of known composition were studied by standard methods; modifications were made wherever necessary. For semi-quantitative determination with the steelscope, iron-rod and copper-disc electrodes were used to determine chromium, tungsten, manganese, vanadium, molybdenum, and nickel. A satisfactory method of analysis could be worked out for all elements with the exception of nickel and manganese. The different homologous pairs are tabulated. In quantitative determinations with the spectrograph, the influence of a third element in the alloy and the linearity of the working curves were studied. The influence of electrode materials (iron, aluminum, copper, and graphite) on working curves in the analysis with a steelscope was also studied.

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

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SECTION	SECTION	SECTION	SECTION
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97	98	99	100

CA

Influence of the dimensions and of the mass of the sample on the results of spectral analysis of steels. V. G. Kurtskii. *Izv. Akad. Nauk S.S.S.R., Ser. Fiz. Khim. (1948)*; cf. C.A. 43, 6550. In a condensed spark, the difference  $\Delta S$  of the optical  $d$ , of the analytical lines for Cr, Mn, Ni, etc., loses its constancy when the diam. of the steel cylinder falls below 9-10 mm. This effect is due to the fact that the diam. of the spark spot is about 9-10 mm, and consequently, the cross section of samples of a smaller diam. is not completely covered by the spot. Apart from the role of the cross section, the influence of the mass is detd. by differences of the temp., was demonstrated by detns. in which the samples were kept at a const. temp. The results, given in plots of  $\Delta S$  against the temp., for the pairs Mn-Fe, Si-Fe, Ni-Fe, Cr-Fe, and Cu-Fe, show that the heating-up of samples of too small a mass (below 10-20 g.) introduces a systematic error in  $\Delta S$ .  
N. Thou



117 AND 2ND EDDERS      PROCESSES AND PROPERTIES INDEX      100 AND 4TH EDDERS

21

**THE INFLUENCE OF SIZE AND SHAPE OF SPECIMEN ON THE RESULTS OF THE SPECTRUM-ANALYSIS OF STEELS.** V.G. Keritskii and T.B. Edneral. (Zavodskaya Laboratoriya, 1948, vol 14, May, pp 558-565). (in Russian). The influence of the shape and mass of the specimen on the results of its spectrum analysis was investigated in a series of experiments in which the following standard conditions for the production of the spectra were observed: (1) Condensed spark with two gaps according to Rniski's scheme; (2) transformer 110/10,000 V; (3) capacity 0.01 $\mu$ F; (4) self-inductance of oscillatory circuit about 20 H; (5) set spark (gap of 3.6 mm; (6) working gap 3 mm; (7) auxiliary electrode of carbon, 5.5 mm in dia, ending in a 45°-cone truncated to give a plane 1.5 mm in dia; and (8) slit 0.015 mm wide. An appreciable systematic error in the determination of the manganese, silicon, chromium, nickel, copper, molybdenum, vanadium, and tungsten in the steel was found to appear when the size of the specimen was reduced below a certain value. This error is due to the disturbance of the spark which occurs when the size of the plane exposed to it becomes less than the size of the "spark stain." The spark stain depends on the geometry of the spark gap, the type of steel being analyzed, and

ASB-11-A METALLURGICAL LITERATURE CLASSIFICATION

FROM SIGNATURE      FROM SIGNATURE

the nature of the generator. For the standard conditions used it was found to vary from 9 mm in dia for low-alloy steels to 12 mm in dia for stainless steels. The reduction of the mass of the specimen below a certain value was also found to cause an appreciable systematic error in the analytical results, this limiting value depending on the thermal characteristics of the metal analysed (its thermal capacity and thermal conductivity) and varying to a certain extent for different elements. The experimental results obtained indicate the need for care in the choice of relative dimensions for standard and specimen used in spectrum analysis. With standards having an effective working plane 10-12 mm in dia, specimens with working planes of diameter  $\leq$  10-12 mm can be analysed, but when the plane of the standard is less than 10 mm in dia only those specimens with a plane of exactly the same diameter can be analysed. For conditions other than those used in this investigation, the numerical values of the above limiting dimensions would be different and should be determined experimentally.—S.K.

PROCESSES AND PROPERTIES INDEX

21

**Advances in Russian Spectrochemical Analysis in the U.S.S.R. during 1948.** V. G. Kuritskii. (Zavodskaya Labora-  
toriya, 1949, vol. 15, June, pp. 661-668). (In Russian).  
A review is given of the work of Russian scientists during 1948 in the field of analysis based on the examination of emission spectra. The work covers theoretical applica-  
tions include the determination of alloying elements in steel and cast iron, the analysis of ferro-alloys, the determination of gases in steel, and slag analysis. The desirable extensions of research on spectral analysis and of its applications are considered and shortages of equipment are discussed. There are 36 references. S. R.

METALLURGICAL LITERATURE CLASSIFICATION

6-ETT/02-14/1949

KORITSKIY, V. G.

USSR/Metals - Alloys  
Spectrum Analysis

Apr 50

"Application of the Carbon Electrode for Spectrum Analysis of Alloys," I. M. Veselovskaya, V. G. Koritskiy, L. N. Filimonov, Moscow Inst of Steel imeni I. V. Stalin, 8½ pp

"Zavod Lab" Vol XVI, No 4

Discusses application of carbon electrode in spectrum analysis. Carbon electrode, having definite advantages in application to analyzing low-alloy steels, may lead to systematic errors when used for analysis of some high-alloy steels, as stainless, acid-resisting, and heat-resisting alloys, and also of alloys on bases of copper, nickel, cobalt, and other metals. Investigates and discusses influence of carbon electrode on analysis process, and compares its action with that of metal electrodes.

PA 160770

KORITSKIY, V. G.

USSR/Metals -- Chromium  
Analysis, Spectrochemical

May 50

"Spectrochemical Determination of Chromium in Carbides," I. M. Veselovskaya, V. G. Koritskiy, Moscow Steel Inst imeni I. V. Stalin, 1½ pp

"Zavod Lab" Vol XVI, No 5

Describes spectrochemical method used by authors in studying phase diagram of iron-chromium-carbon system. Method is much more efficient than usual chemical analysis because it does not require one-gram sample of carbide, separation of which from alloy is time-consuming operation.

PA 160T79

KORITSKIY, V. G.

USSR.

Diffusion of chromium, vanadium, and manganese into surface layers of steel from gaseous medium. U. N. Dubinin, V. G. Koritskiy, and L. M. Veselovskaya. *Zhur. Tekh. Fiz.* 25, 1751-60(1953).--Diffusion of metals from the chloride in presence of H<sub>2</sub> and HCl at temp. above 800° was investigated on Fe (0.03% C) and steel (1.0-1.2% C). Cr and V gave solid solns. and Mn gave Mn<sub>2</sub>(Fe) or Fe<sub>2</sub>(Mn), depending on the thickness of the layer in Fe. On steel, Cr gave (Cr,Fe)<sub>2</sub>C, V yielded VC, and Mn produced (Mn,Fe)<sub>2</sub>C and Mn<sub>2</sub>(Fe). V- and Mn-treated iron (0.03% C) samples were not affected in 10% NaCl for 25 days at 20° and are recommended as replacement for expensive chrome-nickel steel for chem. equipment. Cr treatment does not protect the Fe against 10% NaCl. V.N. Bedninski

KORITSKIY, V. G.

USSR/Chemistry - Spectral analysis

Card 1/1 Pub. 43 - 55/97

Authors : Koritskiy, V. G.

Title : Plan for a standard method of marked spectral analysis of steel

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, 276-277, Mar-Apr 1954

Abstract : Needs are expressed for standard spectral analysis methods which would utilize standard Soviet made devices and would warrant an accuracy similar to that of a chemical analysis. Briefly described in this report is a method which could be used as a basis for the formulation of standard methods of marked spectral analysis of steel. The use of the ISF-22 spectrograph with slit width of  $15\mu$ , height 1 mm is suggested for the new standard method.

Institution : The I. V. Stalin Steel Institute, Moscow

Submitted : .....

AVRASIN, Ya.D., kandidat tekhnicheskikh nauk; BERG, P.P., professor, doktor tekhnicheskikh nauk, BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; GEMEROZOV, P.A., starshiy nauchnyy sotrudnik; GLINER, B.M., inzhener; DAVIDOVSKAYA, Ye.A., kandidat tekhnicheskikh nauk; YELCHIN, P.M., inzhener; YEREMIN, N.I., kandidat fiziko-matematicheskikh nauk; IVANOV, D.P., kandidat tekhnicheskikh nauk; KNOROV, L.I., inzhener; KOBRIN, M.M., kandidat tekhnicheskikh nauk; ~~KORINSKIY, V.G.~~, dotsent; KRUTKOV, D.V., inzhener; KUDRYAVTSEV, I.V., professor, doktor tekhnicheskikh nauk; KULIKOV, I.V., kandidat tekhnicheskikh nauk; LEPSTOV, V.A., kandidat tekhnicheskikh nauk; LIKINA, A.F., inzhener; MATVEYEV, A.S., kandidat tekhnicheskikh nauk; MIL'MAN, B.S., kandidat tekhnicheskikh nauk; PAVLUSHKIN, N.M., kandidat tekhnicheskikh nauk; PTITSYN, V.I., inzhener [deceased]; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk, RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; RYABCHENKOV, A.V., professor, doktor khimicheskikh nauk; SIGOLAYEV, S.Ya., kandidat tekhnicheskikh nauk; SMIRYAGIN, A.P., kandidat tekhnicheskikh nauk, SUL'KIN, A.G., inzhener; TUTOV, I.Ye., kandidat tekhnicheskikh nauk, KHRUSHCHOV, M.M., professor, doktor tekhnicheskikh nauk; TSYPIN, I.O., kandidat tekhnicheskikh nauk; SHAROV, M.Ya., inzhener; SHERMAN, Ya.I., dotsent; SHMELEV, B.A., kandidat tekhnicheskikh nauk; YUGANOVA, S.A., kandidat fiziko-matematicheskikh nauk; SATEL', E.A., doktor tekhnicheskikh nauk, redaktor; SOKOLOVA, T.F., tekhnicheskii redaktor

[Machine builder's reference book] Spravochnik mashinostroitelia; v shesti tomakh. izd-vo mashinostroit. lit-ry. Vol.6. (Glav. red.toma E.A.Satel'. Izd. 2-oe, ispr. i dop.) 1956. 500 p. (MLRA 9:8)  
(Machinery--Construction)



KORITSKIY, V.G.

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[Physical metallurgy and the heat treatment of steel and iron; a reference book] Metallovedenie i termicheskaya obrabotka stali i chuguna; spravochnik. Pod red. N.T.Dudtsova, M.L.Bernshteina, A.G. Rakhshadta. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 1204 p. (MLRA 9:9)

1. Chlen -korrespondent Akademii nauk USSR (for Bunin)  
(Steel--Heat treatment) (Iron--Heat treatment)  
(Physical metallurgy)

KORITSKIY, V. G.

KORITSKIY, V. G.: "Some problems in the method of spectral analysis of steel." Min Higher Education USSR. Moscow Inst of Steel imeni I. V. Stalin. Moscow, 1956. (Dissertations for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya letopis' No. 22, 1956

*Koritskiy, V. G.*

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## AUTHORS:

Koritskiy, V.G., Nalimov, V.V., Nedler, V.V., Payskiy, S.M.  
Rusanov, A.K., Filimonov, L.N.

## TITLE:

A Short Survey of the Development of the Emission Spectral  
Analysis in the USSR (Kratkiy ocherk razvitiya emissionnogo  
spektral'nogo analiza v SSSR)

## PERIODICAL:

Uspekhi Fiz. Nauk, 1957, Vol. 62, Nr 2, pp. 435 - 454 (USSR)

## ABSTRACT:

A voluminous investigation of the flame spectra from a Bessemer converter (bessemerovskiy konvertor), was published in 1876 by D.K. Chernov. D.K. Chernov furthermore found several interesting laws with respect to the relation between the flame spectrum and certain stages of the Bessemer process (bessemerovskiy protsess). All these laws, however, were of an entirely qualitative character. First publications on spectroscopy were published in the Soviet Union at the end of the twenties. 1931 S.G. Landsberg turned his interest towards practical spectral analysis, and together with his students he started the systematic elaboration of the practical applications of the emission spectral analysis. From 1931 to 1950 about 1000 investigations were published in the scientific journals of the Soviet Union, and this number doubled up to the present. This indicates a

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A Short Survey of the Development of the Emission Spectral Analysis in the  
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very wide range of the research dealing with this subject. The majority of this papers were published in the journal "Zavodnaya laboratoriya" (Plant Laboratory) and "Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya". The first section of this survey deals with apparatus for the spectral analysis. In the machine-building industry spectral analysis is utilized for the control of the casting of iron and non-ferrous metals as well as for the control of semifinished products, single parts and finished production parts. By these means the metals delivered to the plants are also controlled. Spectral analysis was employed to a special degree in the automobile plant "ZIL". In iron metallurgy the spectral analysis is used for the express-analysis of steel during its production and for the final analysis, the so-called "marking analysis". Further possibilities of application in iron metallurgy are enumerated. In the metallurgy of non-ferrous metals and in iron metallurgy as well, the semi quantitative methods of analysis are employed with success. The spectral analysis also makes possible a fast and practically simultaneous determination of the chemical elements contained in the mineral raw materials. There are 13 figures, 3 tables and 75 Slavic references.

Card 2/3

SHAYEVICH, Aron Borisovich; MALIMOV, V.V., kand.tekhn.nauk, retsentsent;  
KORITSKIY, V.G., red.; TSYMBALIST, N.N., red.isd-vo; TURKINA,  
Ye.D., tekhn.red.

[Methods of evaluating the accuracy of spectral analysis] Metody  
otsenki tochnosti spektral'nogo analiza. Sverdlovsk, Gos.nauchno-  
tekhn.isd-vo lit-ry po chernoi i tevetnoi metallurgii, Sverdlovskoe  
otd-nie, 1959. 54 p. (MIRA 13:3)  
(Spectrum analysis)

BERENSHTEYN, L.Ye.; KORITSKIY, V.G.

Spectrum analysis of thin metallic films. Zav.lab. no.11:  
1344-1345 '59. (MIRA 13:4)

1.Moskovskiy institut stali.  
(Metallic films-- Spectra)

5(4)

SOV/32-25-4-1/71

AUTHORS: Koritskiy, V. G., Polyakova, V. V., Filimonov, L. N.

TITLE: Standards for the Spectrum Analysis (Ob etalonakh dlya spektral'nogo analiza)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 4, pp 387-390 (USSR)

ABSTRACT: The problem of a unification in the manufacture of standard samples (SS) for the spectrum analysis arises in the USSR. In the present paper it is pointed out that at present the only institution especially charged with this problem is the Laboratoriya standartnykh obraztsov Ural'skogo instituta chernykh metallov (LSO) (Laboratory for Standard Samples of the Ural Institute of Iron Metals), and that there only SS for the analyses of iron metals are being made. For the manufacture of SS for the analyses of other metals there are at present about 15 different organizations where this work is done, for the major part in an unorganized way. In particular, it is suggested to reorganize the LSO to the Institut spektral'nykh etalonov i khimicheskikh normaly (Institute for Spectral Standards and Chemical Standards). For the more special analyses of pure metals, for instance, the institutes of the proper branches of in-

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Standards for the Spectrum Analysis

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dustry, such as Gipronikel', Giprotsmo, Gintsvetmet, VNIITsvetmet, VAMI, TsNIIOlovo etc should be appertaining. An example for passing from the usual small-scale manufacture of SS for the "proper use" to a common manufacture of SS was already given by a firm which prepared a series of 50 high-quality SS of the bronze Br. AZh 9-4. A suggestion for an extended centralization of the manufacture of SS was also made by the Kamensk-Ural'skiy zavod obrabotki tsvetnykh metallov (Kamensk-Ural Works for the Processing of Nonferrous Metals). Good SS for copper alloys MTs 2 are issued by the Kaluzhskiy turbinniy zavod (Kaluga Turbine Works). Some shortcomings of the present manufacture of SS are pointed out, and it is stated that in the planning and execution of a controlled manufacture of SS an important part is played by the works laboratories, the technical departments of the firms, the administration of the Councils of Economy, and particularly the Komitet standartov (Committee of Standards).

Card 2/2



SVENTITSKIY, Nikolay Semenovich; KORITSKIY, V.G., retserzent; BREUE, T.K., red.; KOZLOV, V.D., red.; BRUDNO, K.F., tekhn. red.

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(Spectrum analysis)

BURAVLEV, Yuriy Matveyevich; KORITSKIY, V.G., retsenzent; IVANOVA, T.F., retsenzent; SKORNYAKOV, G.P., red.; KRYZHOVA, M.L., red. izd-va; MATLYUK, R.M., tekhn. red.

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(MIRA 16:8)

(Alloys--Metallography) (Spectrum analysis)

KORITSKIY, V.G., kand. tekhn. nauk

Spectroscopy and its applications; a congress in Minsk.  
Vest. AN SSSR 33 no.11:120-121 N '63. (MIRA 17:1)

