KOROL'KOV, I.I.; ZAYTSEV, B.M. [deceased]; SHARKOV, V.I.; VAYNER, A.S.; EFROS, I.N.; EFROS, V.A.; BUBNOVA, N.I.

Percolation hydrolysis with a variable flow of liquid. Gidroliz. i lesokhim.prom. 14 no.2:10-14 '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti (for Korol'kov, Zaytsev, Sharkov, Vayner).
2. Segezhskiy gidroliznyy zavod (for I. Efros, V. Efros, Bubnova).
(Hydrolysis) (Percolation) (Wood—Chemistry)

Efros I/E.

EFROS, I. E.

Osnovy ustroistva pritselov dlia bombometaniia. Moskva, Voenizdat, 1941. 212 p., illus., diagrs.
Title tr.: Fundamentals of bombsight design.

UF830.E35

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

PHASE I BOOK EXPLOITATION SOV/6385

Efros, I. Ye., Engineer. Lieutenant Colonel

Osnovy ustroystva pritselov dlya bombometaniya (Design Principles of Bombsights) 2d ed., rev. Moscow, Voyenizdat, 1947. 318 p. 48,000 copies printed.

Ed.: V. M. Gromov, Major; Tech. Ed.: M. A. Strel'nikova.

PURPOSE: This self-study textbook is intended for technical engineering personnel and navigators in the Air Force

COVERAGE: Methods of aiming from a distance, optics of bomb sights, self-calculating mechanisms, and the electric synchronization of transfer and followup systems are described.

TABLE OF CONTENTS:

Card 1/6

ROZENBERG, E.I.; EFROS, I.Ya.

Telescopes for measuring the nonrectilinearity and noncoaxiality of medium-size articles by the sighting method. Izm.tekh. no.11: 10-11 N '63. (MIRA 16:12)

ROZENBERG, E.I.; EFROS, I.Ye.

Rapid mirror adjustment in measuring with autocollimators.
Izm. tekh. no.9:20-21 S '64. (MIRA 18:3)

ACC NR: AR6022049 SOURCE CODE: UR/0272/66/000/002/0029/0029

AUTHOR: Rozenberg, E. I.; Efros, I. Ye.; Vurganova, Ye. A.

TITLE: Investigation of double-image sight tubes for measuring deviations from rectilinearity and axial alignment in components of moderate dimensions

SOURCE: Ref zh. Metrol i izmerit tekh, Abs. 2.32.204

REF SOURCE: Tr. N.-i. proyektno-konstrukt. in-ta tekhnol. mashinostr., no. 1, 1965, 69-74

TOPIC TAGS: quality control, optic equipment component, optic measurement

ABSTRACT: The NIITmash of the ASNKh has developed several simplified double-image sight tubes for measuring deviations from rectilinearity and axial alignment in components of moderate dimensions. Pilot models of sight tubes were assembled on a first class surface plate (1500×1000 mm) for research and development of methods for measuring and determination of metrological parameters. These tubes were used for measuring the deviations from rectilinearity in a section of the surface of this plate. Tables and graphs are given showing the results of measurements which indicate that double-image sight tubes may be used for precision measurement by the telescopic method. 3 illustrations, 5 tables, bibliography of 3 titles. N. Zevina. [Translation of abstract]

SUB CODE: 13

Card 1/1 UDC: 535.317.2

along this axis. A [illegible]

ROZENBERG, E.I.; EFROS, I.Ya.

Visor for measuring the coaxial nonalignement of holes. Izm. tekh. no.4:52-53 Ap '65. (MIRA 18:7)

ACC NR: AP6025637 (A) SOURCE CODE: UR/0413/66/000/013/0088/0089

INVENTOR: Rozenberg, E. I.; Efros, I. Ye.

ORG: None

TITLE: A device for parallel translation of the transit line in a telescopic sight, e. g. in an autocollimator. Class 42, No. 183428

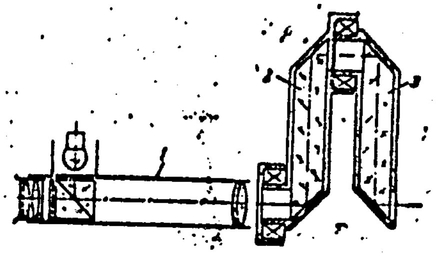
SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 88-89

TOPIC TAGS: optic equipment component, collimation, telescopic equipment, optic prism

ABSTRACT: This Author's Certificate introduces a device for parallel translation of the transit line in a telescopic sight, e. g. in an autocollimator. The main rhombic prism in the instrument (or an equivalent system of mirrors) is mounted so that it may rotate about the sighting axis of the telescope. The unit is designed for expansion of the limits of transit line displacement to any preset value within these limits. An additional rhombic prism is mounted so that it may be turned with respect to the main prism about an axis parallel to the sighting axis of the telescope.

Card 1/2 UDC: 535.885.5

ACC NR: AP6025637



1—telescope; 2—main prism;
3—additional prism

SUB CODE: 20, 14/ SUBM DATE: 05Apr65

L 13841-63 EWT(1)/EWG(k)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3 Pz-4
AT/IJP(C)/JXT(IJP)
ACCESSION NR: AP3003149 S/0056/63/044/006/2131/2141

66
64

AUTHOR: Gurevich, V. L.; Efros, L. A.

TITLE: On the theory of the acoustoelectric effect 21

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 2131-2141

TOPIC TAGS: sound absorption, conductor, semiconductor, acoustoelectric effect

ABSTRACT: A theoretical study is made of the acoustoelectric effect, which consists in the occurrence of direct current under the influence of a traveling sound wave propagating in a conductor, with the aim of constructing a phenomenological theory which would be valid in the limiting case of low sound frequencies. In this theory the effect is regarded as being of second order in the deformation. The frequency dependence of the effect and its tensor characteristics are derived. The concepts of even and odd acoustoelectric effects are introduced, depending on whether the sign of the direct current remains the same or reverses when the direction of sound wave propagation is reversed. It is shown that the even effect can exist only in crystals without symmetry centers. The general considerations are illustrated with several examples, such as a piezoelectric

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ACCESSION NR AP3003149

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semiconductor, a semiconductor with many energy minima, and a conductor with electrons and holes. The absorption of sound is calculated in the last two cases. The Mandelshtam-Leontovich theory is used to calculate the absorption coefficient. Other mechanisms which lead to the absorption of sound and to the acoustoelectric effect are also treated briefly. Orig. art. has: 49 formulas.

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

SUBMITTED: 08Feb63	DATE ACQ. 23Jul63	ENCL: 00
SUB CODE: 00	NO REF SOV: 004	OTHER: 009

Card 2/2

EFROS, L. D.

USSR/Metals - Tungsten **May 52**

"Reactive Diffusion of Carbon Into Tungsten. Part I," G. S. Kreymer, L. D. Efros, Ye. A. Voronkova 3

"Zhur Tekh Fiz" Vol XXII, No 5, pp 858-873

Diffusion of carbon into tungsten produces new carbide phases, 1st WC and thereafter W_2C, contrary to data by Andrews and Dushmann (cf. J. Phys-Chem, 29, 1925) and by Pirani and Sandor (cf. J. Inst of Metals, 73, 385, 1947). Relation to time of isothermal growth of W_2C layer is given.

222T30

The coeff of diffusion could be computed. Indebted to Prof Ya. S. Umanskiy and to help by the laboratory of the hard alloys combine. Received 10 Feb 51.

222T30

EFROS, L. D.

USSR/Metals - Tungsten May 52

3w

"Reactive Diffusion of Carbon Into Tungsten. Part II. Investigation of Carbon Diffusion in Unstrained Tungsten," G. S. Kreymer, L. D. Efros, Ye. A. Voronkova

"Zhur Tekh Fiz" Vol XXII, No 5, pp 874-876

Authors prove experimentally that the diffusion coeff is not affected by the previous treatment of tungsten. This is probably due to the fact that tensions vanish at the temp (1,500-1,800°) of the test. Even if some tensions remain in the recrystd material they are without effect on the speed of diffusion. Received 8 Aug 51.

222T31

ZATSEPINA, N.N.; TUPITSYN, I.F.; EFROS, L.S.

Isotopic exchange of hydrogen in methyl derivatives of nitrogen heterocycles and their oxides. Part 1: α-picoline, quinaldine, and their N-oxide. Zhur. ob. khim. 33 no.8:2705-2712 Ag '63.
(MIRA 16:11)

ZATSEPINA, N.N.; TUPITSYN, I.F.; EFROS, L.S.

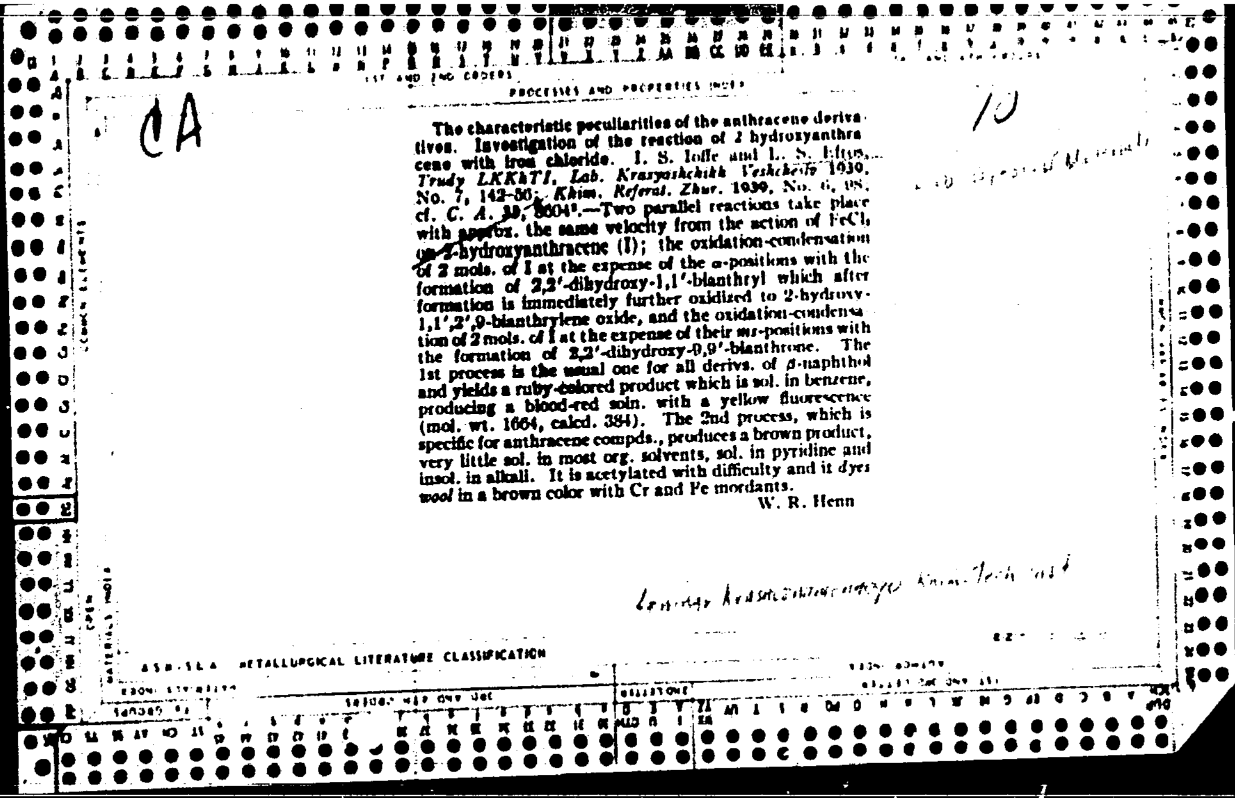
Electronic structure and the rate of deuterium exchange in methyl groups of nitrogen heterocycles and their N-oxides. Dokl. AN SSSR 154 no.1:148-151 Ja'64. (MIRA 17:2)

1. Gosudarstvennyy institut prikladnoy khimii. Predstavleno akademikom A.N. Tereninym.

EFROSIK, L. S.

"Diaryles et leurs derives. Communication XIX". Joffe, I. S., Efrosse, L. S. (p. 2712).

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii). 1937, Volume 7, No. 22.



CA

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

The characteristic peculiarities of the anthracene derivatives. Investigation of the reaction of 2-hydroxyanthracene with iron chloride. I. S. Ioffe and L. S. Efros. *Trudy LKKhTI, Lab. Krasyashchikh Veshchestv* 1939, No. 7, 142-50; *Khim. Referat. Zhur.* 1939, No. 6, 98; cf. *C. A.* 30, 8604^{8}.—Two parallel reactions take place with approx. the same velocity from the action of $FeCl_3$ on 2-hydroxyanthracene (I); the oxidation-condensation of 2 mols. of I at the expense of the α-positions with the formation of 2,2'-dihydroxy-1,1'-bianthryl which after formation is immediately further oxidized to 2-hydroxy-1,1',2',9-bianthrylene oxide, and the oxidation-condensation of 2 mols. of I at the expense of their *ms*-positions with the formation of 2,2'-dihydroxy-9,9'-bianthrone. The 1st process is the usual one for all derivs. of β-naphthol and yields a ruby-colored product which is sol. in benzene, producing a blood-red soln. with a yellow fluorescence (mol. wt. 1664, calcd. 384). The 2nd process, which is specific for anthracene compds., produces a brown product, very little sol. in most org. solvents, sol. in pyridine and insol. in alkali. It is acetylated with difficulty and it *dyes wool* in a brown color with Cr and Fe mordants.

W. R. Henn

Leningr. krasnoznamennogo khim.-tekh. inst.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Bromination of 2-hydroxyanthracene. I. S. Ioffe, L. S. Efros and Ts. N. Shcheglova. *J. Gen. Chem.* (U. S. S. R.) 9, 1128-32(1939).—2-Acetoxyanthracene (I), m. 198°, with Br in cold glacial AcOH gave the *9-Br deriv.* (II), yellow needles, m. 110°, which with $Na_2Cr_2O_7$ in hot glacial AcOH gave *2-acetoxyanthraquinone*, yellow, m. 158°, also obtained by oxidation of I. II heated with dil. NaOH for 10 min. gave *9-bromo-2-hydroxyanthracene*, yellow, m. 112-14°, which with 4-$O_2NC_6H_4N_2HSO_4$ (III) in alk. soln. gave the *1-azo deriv.*, red, m. 254°. 2-Hydroxyanthracene with Br in cold glacial AcOH underwent both oxidation and bromination to give *2-hydroxy-1,1'-bianthranyl 9,2'-oxide*; *1,10-dibromo-2-hydroxyanthracene* (IV), yellow, m. 123°, *Ac deriv.* (V), yellow, m. 108-9°; and *1,9-dibromo-2-hydroxyanthracene*, isolated only as the *Ac deriv.* (VI), yellow, m. 157-9°. Both V and VI lose the *ms*-Br when oxidized with $Na_2Cr_2O_7$ in glacial AcOH to give *1-bromo-2-acetoxyanthraquinone*, m. 171°. IV with III gave the *1-azo deriv.*, red-brown, m. 281°.

John Livak

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

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Nitro and amine derivatives of dibenzopyrene. I. S. Ioffe and L. S. Efros (1st Leningrad Med. Inst.). *J. Gen. Chem.* (U.S.S.R.) 16, 111-16(1946).—Dibenzopyrene (6.04 g.) was dissolved with warming in 1200 cc. $PhNO_2$ and treated, at 25-30°, dropwise with 0.4 g. HNO_3 (d. 1.52) in 10 cc. $PhNO_2$; after 4 hrs. the solvent was concd. to yield 4.9 g. *5-nitrodibenzopyrene*, m. 268-72° (from $PhNO_2$); boiling with $PhNHNH_2$ for 15 min. gave *5-aminodibenzopyrene* (I), m. about 310° (from PhCl); *Ac deriv.*, m. about 330° (from $PhNO_2$). Dibenzopyrene (3.02 g.) in 100 cc. $PhNO_2$, treated with 1.4 g. HNO_3 (d. 1.52), gave, in 5 hrs., 3 g. *5,10-dinitrodibenzopyrene*, m. 340-8° (decompn.; from $PhNO_2$); this, heated for 15 min. with boiling $PhNHNH_2$, gave *5,10-diaminodibenzopyrene*, m. 360-8° (from $PhNO_2$); *di-Ac deriv.*, m. 440°. Nitration of I in $PhNO_2$ gave *5-nitro-10-acetylaminodibenzopyrene*, m. 315-20° (from $PhNO_2$); reduction by boiling with $PhNHNH_2$ gave *5-amino-10-acetylaminodibenzopyrene*, m. about 357° (from $PhNO_2$), which on acetylation gave a product identical with that obtained by acetylation of the diamine described above. G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Imidazole derivatives. II. Synthesis of some new phenyl and alkylphenyl derivatives of benzimidazole. B. A. Poral-Koshits, L. S. Efros, and O. F. Ginzburg. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 1545-52(1949); cf. *C.A.* 42, 5886c.—*o*-Diamines more or less basic than *o*-$C_6H_4(NH_2)_2$ react less well with carboxylic acids in aq. HCl under pressure; diamines which are very easily oxidized may be converted to the imidazoles by fusion of the components at 180° without access to air. $PhCH_2CH_2CO_2H$ (3 g.) and 2.1 g. *o*-$C_6H_4(NH_2)_2$ with 10 ml. 20% HCl gave after 1 hr. at 180° 97% *2-phenethylbenzimidazole*, m. 189-90°; *HCl salt*, m. 268-70° (from dil. HCl). Heating 0.01 mole 4,1,2-$MeC_6H_3(NH_2)_2$ and 0.01 mole BzOH 40 min. to 180-5° with 10 ml. HCl gave 50-3% *2-phenyl-5-methylbenzimidazole* when 15-25% HCl was used; the best yield (8-8.5 g.) is reached in 1 hr. at 190-5° with 20% HCl (30 ml. with 6.1 g. diamine); the product, m. 241-2°, yields an *HCl salt*, m. 274-5° (from dil. HCl). $PhCH_2CO_2H$ in this reaction with 10% HCl gave *2-benzyl-5-methylbenzimidazole*, m. 150-1° (from dil. EtOH); *HCl salt*, m. 61-3°. Similarly, $PhCH_2CH_2CO_2H$ in 15% HCl at 180° gave *2-phenethyl-5-methylbenzimidazole*, m. 134-6° (from dil. EtOH); *HCl salt*, m. 82-3.5° (0.8 g. from 5.6 g. diamine). 3,4-Diaminophenetole, m. 79-81°, was obtained in 60% yield by reduction of 3,4-$(O_2N)_2C_6H_3OEt$ with Raney Ni in EtOH. The product (1.5 g.) and 1.22 g. BzOH heated in an evacuated tube 4 hrs. to 170-80° gave 1.3 g. *2-phenyl-5-ethoxybenzimidazole*, m. 251-3° (from dil. EtOH); *HCl salt*, m. 249-50° (from dil. HCl). Similarly, 1.4 g. $PhCH_2CO_2H$ gave *2-benzyl-5-ethoxybenzimidazole*, m. 162-3° (from dil. EtOH) [*HCl salt*, m. 189° (from dil. HCl)], while $PhCH_2CH_2CO_2H$ similarly gave *2-phenethyl-5-ethoxybenzimidazole*, m. 151-2° (from dil. EtOH); *HCl salt*, m. 216-17° (from dil. HCl). 3,4-Diaminoanisole, b. 140-1°, m. 50-2°, was obtained by catalytic (Ni) reduction of 3,4-nitroanisidine. The product (1.4 g.) and 1.22 g. BzOH after 4 hrs. at 170-80° in an evacuated tube gave 0.8 g. *2-phenyl-5-methoxybenzimidazole-HCl*, m. 255° [*free base*, m. 142 (from dil. EtOH)]. Similarly, $PhCH_2CO_2H$ gave *2-benzyl-5-methoxybenzimidazole-HCl*, m. 176-8° [*free base*, m. 16°], while $PhCH_2CH_2CO_2H$ gave *2-phenethyl-5-methoxybenzimidazole-HCl*, m. 239-41° (*free base*, m. 128-30°). Heating 0.01 mole 3,4-$(H_2N)_2C_6H_3Cl$ and 0.01 mole BzOH 40 min. to 180-5° with 10 ml. HCl gave 58% *2-phenyl-5-chlorobenzimidazole* when 20% HCl was used; 72% was obtained with 25% HCl, while higher or lower concns. gave lowered yields; the product m. 210° (from dil. EtOH); *HCl salt*, m. 290-1°. Thus, less basic amines having lesser electron-donor activity than *o*-$C_6H_4(NH_2)_2$ react less readily with acids, but their salts are more easily hydrolyzed by H_2O, a fact which tends to improve the yield under otherwise comparable conditions. G. M. Kosolapoff

EFROS L. S.

FA 194T52

USSR/Chemistry - Dyestuffs Nov 51
Benzothiazole Derivatives

"Research in the Field of Benzothiazole Derivatives. Preparation of 1-Benzothiazolyl-3-Methyl-5-Pyrazolone," L. S. Efros, L. R. Davidenkov, Lab of Technol of Org Dyestuffs, Leningrad Technol Inst

"Zhur Obshch Khim" Vol XXI, No 11, pp 2046-2050

Verifying patent data, oxidized 2-mercaptobenzothiazole in alk soln to form 2-benzothiazolylsulfonic acid, whose HSO_3 group is easily replaced by OH, NH_2, NHOH, and $NH-NH_2$ groups.

194T52

USSR/Chemistry - Dyestuffs (Contd) Nov 51

Condensation of 2-benzothiazolyl-hydrazine with ester or amide of acetoacetic acid yielded 1-benzothiazolyl-3-methyl-5-pyrazolone (I). Yield approached theoretical in condensation with amide. Introduced NO and N=N-R groups into I.

194T52

EFROS, L.S.

Imidazole derivatives. III. Nitration of derivatives of benzimidazole and preparation of some new derivatives of 1,2,4,5-diimidazolobenzene. Zhur. Obshchey Khim. 22, 1008-15 '52. (MLRA 5:8)
(CA 47 no.22:12366 '53)

1. Lensovet Tech. Inst., Leningrad.

EFROS, L.S.

Imidazole derivatives. IV. Chemical properties of derivatives of 1,2,4,5-diimidazolobenzene. Zhur. Obshchey Khim. 22, 1015-24 '52. (MLRA 5:8)
(CA 47 no.22:12366 '53)

1. Lensovet Tech. Inst., Leningrad.

EFROS, L. S.

Chem 7

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Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

Imidazole derivatives. III. Nitration of derivatives of benzimidazole and preparation of some new derivatives of 1,2,4,5-diimidazolobenzene. L. S. Efros (Lensovet Inst. Technol., Leningrad). *J. Gen. Chem. U.S.S.R.* 22, 1063-8(1952)(Engl. translation). IV. The chemical properties of derivatives of 1,2,4,5-diimidazolobenzene. *Ibid.* 1069-76.—See *C.A.* 47, 12366*ag*. H. L. H.

YEFROS, L. S.

Imidazole Derivatives

Investigations of imidazole derivatives. Part 4. Chemical properties of 1, 2, 4, 5-diimidazolo-benzene derivatives. Zhur. ob. khim. 22 no. 6, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 195~~3~~2. Unclassified.

EFROS, L. S.

"An Investigation in the Field of the Chemistry of Benzimidazole." Dr Chem Sci, Leningrad Technological Inst imeni Leningrad Council, Leningrad, 1953. Dissertation (Referativnyy Zhurnal--Khimiya Moscow, No 2, Jan 54)

SO: SUM 186, 19 Aug 1954

[illegible]

EFROS, L. S.

1/2

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1 54
Organic Chemistry

9 (4)

Imidazole derivatives. VI. Synthesis of some polybenzimidazoles. B. A. Porai-Koshits, ~~L. S. Efros~~, and E. S. [illegible] (Lensovet Technol. Inst., Leningrad). *Zhur. Obshchei Khim.* 23, 835-41(1953); cf. *ibid.* 697.—To 1.32 g. 5-methylbenzimidazole in 10 ml. 1:3 H_2SO_4 was added dropwise at 100-3° 2.4 g. chromic acid in 10 ml. H_2SO_4 (1:3) and the mixt. chilled after 15 min., yielding *5-benzimidazolecarboxylic acid sulfate*, which with NaOAc gave the free *acid*, m. 300-25° (from H_2O). This (1.62 g.) and 1.08 g. o-$C_6H_4(NH_2)_2$ in 10 ml. 20% HCl heated in sealed tube 4 hrs. at 180-200°, then neutralized with NH_4OH and filtered, gave *5-(2'-benzimidazolyl)benzimidazole*, isolated as the *di-HCl salt*, m. 362° (from concd. HCl); the free *base* could not be purified owing to the formation of gels. Similar oxidation of 2,5-dimethylbenzimidazole gave 70-5% *2-methyl-5-benzimidazolecarboxylic acid* (I), m. 301-2° (from H_2O). This with o-$C_6H_4(NH_2)_2$ in 20% HCl as above gave after 40 min. at 180-200° *2-methyl-5-(2'-benzimidazolyl)benzimidazole-2HCl*, m. 339-40° (from HCl), which with NH_4OH gave the free *base* (II), m. 340° (from dil. EtOH); this with NH_4OH-$AgNO_3$ in EtOH gave a flocculent *di-Ag salt*; the free base yields a *dipicrate*, m. 282-2.5°. 3,4-$(H_2N)_2C_6H_3$-Me (1.22 g.) and 1.76 g. I in 10 ml. 20% HCl heated in a sealed tube 4 hrs. at 180-200° gave *2,5'-dimethyl-5-(2'-benzimidazolyl)benzimidazole*, m. high and unsharp, which gave a *di-HCl salt*, m. above 360° (from 25% HCl); the free *base* yields a *picrate*, m. 274°. This oxidized with chromic acid as above gave *2-methyl-5-(5'-carboxy-2'-benzimidazolyl)benzimidazole-2HCl* (III), m. about 350° (from 15% HCl); this, decarboxylated by heating with sodalime at 300° gave II (picrate, m. 274°). III with o-$C_6H_4(NH_2)_2$ and 15% HCl 4 hrs. at 180-200° gave 75% *2-methyl-5-[2'-benzimidazolyl-5'-(2''-benzimidazolyl)]benzimidazole-3HCl*, m. above 360° (from dil. HCl). Similarly condensation with 3,4-$(H_2N)_2C_6H_3$Me gave 85-90% *2,5'-dimethyl-5-[2'-benzimidazolyl-5'-(2''-benzimidazolyl)]benzimidazole-3HCl*, m. about 400° (from dil HCl). 2-Phenyl-5-methylbenzimidazole with chromic acid in aq. H_2SO_4 gave *2-phenyl-5-benzimidazolecarboxylic acid*, isolated as the *HCl salt*, m. 304-6° (from aq. HCl). Electrometric titration of this gives 2 pH breaks; at 8.4 and a weak one whose posi-

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6. A.
Prai-Koshits
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tion is unstated. This heated with o-$C_6H_4(NH_2)_2$ in 15% HCl in sealed tube 6 hrs. at 180-200° gave *2-phenyl-5-(2'-benzimidazolyl)benzimidazole*, m. 308-10° (from dil. EtOH); *HCl salt*, m. 323-6° (from dil. HCl). Similarly 3,4-$(H_2N)_2$-C_6H_3Me gave *2-phenyl-5-(5'-methyl-2'-benzimidazolyl)benzimidazole*, m. 329-31° (from dil. EtOH); *HCl salt*, m. 311-15° (from dil. HCl). This was oxidized as above to *2-phenyl-5-(5'-carboxy-2'-benzimidazolyl)benzimidazole*, isolated as the *HCl salt*, m. 314-19°, which, heated with o-$C_6H_4(NH_2)_2$ and 10% HCl, gave *2-phenyl-5-[2'-benzimidazolyl-5'(2''-benzimidazolyl)]benzimidazole*, isolated as the *di-HCl salt*, does not m. 300° (from aq. HCl). 3,4-$(H_2N)_2$-C_6H_3Me gave *2-phenyl-5-[2'-benzimidazolyl-5'(5''-methyl-2''-benzimidazolyl)]benzimidazole*, isolated as the *di-HCl salt*, does not m. 360°; the free base is insol. in org. solvents except AcOH in which it forms the corresponding salt. Heating 2.25 g. 3,4-$(H_2N)_2C_6H_3CO_2H$.HCl with o-$C_6H_4(NH_2)_2$ and 10 ml. 20% HCl in a sealed tube 40 min. at 180-200° gave 0.1 g. *3,4-diaminophenylbenzimidazole*, m. 325-30° (from 10% HCl); this reacts with HNO_2 without forming a diazonium salt; in AcOH it gives a green ppt. with phenanthrenequinone. Condensation with HCO_2H or AcOH gave the previously described bis-benzimidazole derivs. (cf. *C.A.* 44, 1100*b*). Benzimidazoles have characteristic absorption max. at 2700-800, dibenzimidazoles at 3100-200, and tribenzimidazoles at 3400-600 A.; even the latter absorb but weakly in the visible, being pale yellow. VII. **Preparation of sulfonic acids of benzimidazole by baking method.** L. S. Efros. *Ibid.* 842-3; cf. *C.A.* 48, 2000*b*.—*Benzimidazole* (11.8 g.) ground with 6 ml. concd. H_2SO_4 and washed with Et_2O gave 19 g. cryst. *sulfate*, $C_7H_6N_2.H_2SO_4$ (I). I (5 g.) heated to 220-40° in a wide test tube until H_2O evolution stopped, then to 260-80° until a test with H_2O failed to give a ppt. of benzimidazole on addn. of NH_3, gave 4-4.5 g. *5-benzimidazolesulfonic acid*, m. 365-7° (from H_2O), also formed (0.95 g.) by heating 1.12 g. 3,4-$(H_2N)_2$-$C_6H_3SO_3H$ (II) with 1 ml. HCO_2H and 5 ml. H_2O 40 min. in a sealed tube at 180-90°. *2-Methylbenzimidazole* with H_2SO_4 similarly gave the *sulfate*, which baked as above at 230-80°, yielded 80% *2-methyl-5-benzimidazolesulfonic acid*, needles with very high m.p., also formed by heating II with AcOH to 180-90° as above.

G. M. Kosolapoff

YEFROS, L.S.

Imidazole derivatives. Part 7. Preparation of benzimidazole sulfonic acids by fusion. Zhur.ob.khim. 23 no.5:842-843 My '53. (MLRA 6:5)

1. Laboratoriya tekhnologii organicheskikh krasitelei imeni A.Ye. Poray-Koshitsa Leningradskogo tekhnologicheskogo instituta imeni Lensoveta. (Benzimidazole)

[illegible]

YEFROS, L.S.

[redacted]

Imidazole derivatives. Part 8. Investigation of nitration and azo-coupling reactions of 4-aminobenzimidazole derivatives. Zhur.ob.khim. 23 no.6:951-957 Je '53. (MLRA 6:6)

1. Laboratoriya tekhnologii organicheskikh krasiteley imeni A.Ye.Poray-Koshitsa Leningradskogo tekhnologicheskogo instituta imeni Lensoveta. (Benzimidazole)

EFROS, L.S.

Imidazole derivatives. Part 9. Synthesis of 4-aminobenzimidazoles and comparison of their chemical properties with those of 5-aminobenzimidazoles. (MLRA 6:6)
Zhur.ob.khim. 23 no.6:957-963 Je '53.

1. Laboratoriya tekhnologii organicheskikh krasiteley imeni A.Ye. Poray-Koshitsa Leningradskogo tekhnologicheskogo instituta imeni Lensoveta. (Benzimidazole)

ZAKHAROVA, N.A.; PORAY-KOSHITS, B.A.; YEFROS. L.S.

Investigation in the field of imidazole derivatives. Part 10. Acylation of 2-oxymethylbenzimidazole and products of its methylation. Zhur.ob. khim. 23 no.7:1125-1230 Jl '53. (MLRA 6:7)

1. Insitut eksperimental'noy meditsiny Akademii meditsinskikh nauk SSSR.
(Imidazole derivatives)

EFROS, L. S.

Nitration of piazthiole. L. S. Efros and [illegible] Levit (Lensovet Technol. [illegible] Leningrad). Zhur. Obshchei Khim. 23, [illegible] (1953). Piazthiole (2,1,3-benzothiadiazole) (I) on nitration yields the 4-nitro deriv., which corresponds with the theoretical considerations since the N atoms can be expected to induce a partially pos. charge on the 5- and 6-position of the benzenoid ring. This result is contrary to published work (Khaletskii and Pesin, *C.A.* 46, 1066f), in which the structural proof of the product is dubious. Heating 50 g. *o*-$C_6H_4(NH_2)_2$, 800 ml. MePh and 160 g. $SOCl_2$ 12 hrs. gave, after distn., 80.5% I, b_2 79-80°, m. 42-4°. I (20 g.) and 56 ml. concd. H_2SO_4 treated at 0° slowly with 13 ml. HNO_3 (d. 1.4) in 18 ml. concd. H_2SO_4, and the mixt. poured on ice after 0.5 hr. at room temp. yielded 90.5% *4-nitro deriv.* (II) of I, m. 107° (from EtOH). Heating 1 g. 3,1,2-$O_2NC_6H_3(NH_2)_2$, 30 ml. dry MePh, and 2 g. $SOCl_2$ 6 hrs. gave on cooling 67.8% II, m. 107-8°, identical with the above specimen. When 4,1,2-$O_2NC_6H_3(NH_2)_2$ was heated as above with $SOCl_2$ in MePh 6 hrs., no reaction took place and the starting material was recovered. II (2.5 g.) in 100 ml. hot H_2O treated with 30 ml. concd. HCl, 12 g. Zn dust added rapidly, and the filtrate treated after completion of the reaction with 25 ml HCl yielded a ppt. of *1,2,3-$C_6H_3(NH_2)_3$.2HCl* (67% from aq. HCl), which with $PhCH_2CO_2H$ gave *4-amino-2-benzylimidazole*, m. 154° (*HCl salt*, m. 242-8°) (cf. Efros, *C.A.* 48 8223a).

G. M. Kosolapoff

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VEFROS, L. V.

USSR/Chemistry - Heteroatomic compounds

Card 1/1 : Pub. 151 - 17/37

Authors : Efros, L. S.; Kononova, L. N.; and Eded, Ya.

Title : Investigation of imidazole derivatives. Part 13.-Bromination of 1,2-naphthimidoazole

Periodical : Zhur. ob. khim. 24/3, 488-491, Mar 1954

Abstract : The analogy existing between 1,2-naphtimidoazole and phenanthrene during the oxidation, as well as bromination of 1,2-naphthimidazole, is debated. The two stages of the bromination process - formation of conversion productin position 4 and formation of a labile and easily dissociating addition product - are described. The characteristics of 1,2-naphthimidazole and their relation to the imidazole ring effect on the bond equilibrium in molecules with condensed nuclei are explained. The possibility of bromination of 1,2-naphthimidazole in mineral-acid aqueous solutions, as well as in methyl alcohol or ice-cold acetic acid, was established. Four references: 3-USSR and 1-USA (1910-1954).

Institution : The Lensoviet Technological Institute, Leningrad

Submitted : October 29, 1953

EFROS, L.S.

USSR

Imidazole derivatives. XIII. Bromination of 1,2-naphthimidazole. L. S. Efros, L. N. Konunova, and Ya. Eded. J. Gen. Chem. U.S.S.R. 24, 407-9(1954)(Engl. translation).—See C.A. 49, 0230f. H. L. H

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USSR/Chemistry - Heteroatomic compounds

Card 1/1 : Pub. 151 - 22/37

Authors : Poray-Koshits, B. A.; Kononova, L. N.; and Efros, L. S.

Title : Study of imidazole derivatives. Part.12.-Oxidation of 1,2-naphthimidazole

Periodical : Zhur. ob. khim. 24/3, 507-512, Mar 1954

Abstract : The chemical similarity between 1,2-naphthimidazole and phenanthrene was established by studying the effect of the imidazole ring on its condensation with the benzene ring. This similarity was also confirmed by the oxidation of 1,2-naphthimidazole. It was found that the oxidation reaction leads first to the formation of 1,2-naphthimidoazole-3,4-quinone which converts into phenylimidazole-dicarboxylic acid. Eight references: 4-USSR and 4-German (1892-1953). Table.

Institution : The Lensoviet Technological Institute, The A. E. Poray-Koshits Technological Laboratory of Organic Dyes, Leningrad

Submitted : September 25, 1953

EFROS, L. S.

USSR

Imidazole derivatives. XII. Oxidation of 1,2-naphthimidazole. B. A. Porai-Koshits, L. N. Kon'mova, and L. S. Efros. J. Gen. Chem. U.S.S.R. 24, 517-22 (1954)(Engl. translation).—See C.A. 49, 82354. H. L. H.

EFROS, L. S.
USSR/Chemistry

Card 1/1

Authors : Poray-Koshits, B. A.; Efros, L. S.; Vertkina, V. N.; and Lutsenko, V. V.

Title : Quinaldine derivatives obtained from aromatic amines and simple vinyl ethers

Periodical : Zhur. Ob. Khim. 24, Ed. 5, 895 - 898, May 1954

Abstract : Quinaldine is a valuable intermediate product used in the synthesis of stable acid and cyanine dyes. The reaction of primary aromatic amines with simple vinyl ethers appears to be the general method of obtaining quinaldine derivatives. The success of the reaction depends upon the nature of the substitute oriented in the nucleus. In case of a highly activated molecule of the reacting amine as well as in the case of deactivation, especially of the o-position relative to the amino group, no quinaldine derivatives can be obtained. Nine references; 4 German since 1883.

Institution: The Lensoviet Technological Institute, Leningrad, The A. E. Poray-Koshits Technological Laboratory of Organic Dyes

Submitted : December 24, 1953

L. Moe, L. [illegible]

[illegible]

with certain intermediates: 4-chloro-2-trifluoromethylaniline (I); 2-chloro-5-trifluoromethylaniline (II); 4-trifluoromethyl-[illegible] (III); 4-trifluoromethyl-2-nitroaniline [illegible]

[illegible]

Y[illegible], [illegible] S,

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AUTHORS: Efros, L. S., and Yel'tsov, A. V.

TITLE: Investigation of Imidazole Derivatives. Part 15. Nitration of Benzimidazolone and 1,3-dimethylbenzimidazolone (Issledovaniye v oblasti proizvodnykh imidazola. XV. Nitrovaniye benzimidazolona i 1,3-dimetilbenzimidazolona)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, No. 1, pp. 127-135 (U.S.S.R.)

ABSTRACT: Because of the absence of systematic investigations on imidazole derivatives the authors began with the study of the nitration reaction of benzimidazolone and found that at very soft conditions (at 0° and with equimolecular amount of nitric acid) benzimidazolone dissolved in concentrated sulfuric acid easily forms good yields of 5-nitrobenzimidazolone. This product was identified with the one obtained by the Kym-Rattner (2) prescription from 1,2-diamino-4-nitrobenzene and urea. The product (4-nitrobenzimidazolone) derived from urea and 1,2-diamino-3-nitrobenzene could not be separated from the reaction products. It is evident that direct nitration of benzimidazolone does not yield great amounts of this product which is in good conformity with the general properties of benzimidazolones. Trinitro- and tetranitro derivatives of benzimidazolone and 1,3-dimethylbenzimidazolones in cold state

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Investigation of Imidazole Derivatives. Part 15.

substitute their mobile nitro groups with aniline radicals. The analogy in the nitration reaction tendency of benzimidazolone and 1,3-dimethylbenzimidazolone on one hand and other benzimidazole derivatives on the other hand confirms a previous hypothesis by L. S. Efros (4) regarding the formation by the benzimidazolones and their analogues in a strong acid medium of cations as result of addition of the proton from the medium to the oxygen atom and it shows the incompetence of the statement that the benzimidazolone enters into reaction in tautomeric form of 2-oxybenzimidazole. One list of chemical formulas. There are 5 references, of which 1 is Slavic.

ASSOCIATION: The Leningrad Technological Institute im. Lensovet (Leningradskiy Tekhnologicheskiy Institut im. Lensoveta).

PRESENTED BY:

SUBMITTED: January 30, 1956

AVAILABLE:

Card 2/2

79-2-28/58

AUTHORS: Efros, L. S. and Ionin, B. I.

TITLE: Study of Imidazole Derivatives. Part 16. About the Basicity of Isomeric 4- and 6-Amine-3-Methylbenzimidazoles (Issledovaniye v oblasti proizvodnykh imidazola. XVI. Ob osnovnosti izomernykh 4- i 6-amino-3-metilbenzimidazolov)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, vol 27, No 2, pp. 406-411 (U.S.S.R.)

ABSTRACT: Experiments were conducted to determine the effect of the amino group in positions 4 and 6 respectively on the basicity of isomeric benzimidazoles. A comparison of the basicity constants of derivatives of 4-amino-3-methylbenzimidazole with the constants of analogous derivatives of 6-amino-3-methylbenzimidazole showed that in this series of the amino group in position 4, in contrast to the amino group in position 6, has almost no effect on the basicity of the compounds investigated. A study of secondary hydrolysis constants of isomeric 4- and 6-amino-3-methylbenzimidazoles showed that also in the case of derivatives having no methyl groups in position 3, the basicity of the amino group in position 4, is considerably smaller than the basicity of the amino group in position

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Study of Imidazole Derivatives. Part 16. 79-2-28/58

6. The absence of the effect of the amino group in position 4, on the basicity is explained by the disruption in the conjugation between the indicated amino group and the nitrogen atom of the benzimidazole hetero ring.

1 table, 3 graphs. There are 7 references of which 2 are Slavic

ASSOCIATION: Leningrad Technological Institute imeni Lensovet

PRESENTED BY:

SUBMITTED: March 1, 1956

AVAILABLE: Library of Congress

Card 2/2

[illegible]

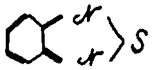
Efros, L. S.

AUTHORS: Efros, L. S., Todres-Selektor, Z. V. 79-11-45/56

TITLE: Some New Derivatives of Piazoselenol and Their Absorption Spectra (Nekotoryye novyye proizvodnyye piazselenola i ikh spektry pogloshcheniya).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp. 3127-3132

ABSTRACT: Together with R. M. Levit one of the authors in a paper gave the results of measurement of the absorption spectra of a number of derivatives of piazothiol



which to a certain degree support the quinone-character of the benzene ring of this compound. The present paper is devoted to corresponding investigations on the derivatives of piazoselenol and on the comparison of their spectra with those of piazothiol As raw products for the

Some New Derivatives of Piazoselenol and Their Absorption Spectra 79-11-45/56

derivatives. Some of the amines react with diazotized aniline and give azo-dyes which the authors succeeded in analyzing and producing in a pure state. The results of the measurements of spectra of the piazoselenol derivatives and their comparison with those of the analogous piazothiol derivatives are represented in 5 tables of absorption-spectra. The isomeric 4- and 5-aminopiazoselenols like the amino-piazothiols possess the properties of aromatic amines: they readily form aceto-compounds, diazotize and unite with diazo-compounds. The results of the investigations of absorption-spectra of piazoselenol and some of its derivatives confirm the authors' opinion that it is closer to o-quinonediimine than piazothiol.
There are 5 figures, and 6 references, 3 of which are Slavic.

ASSOCIATION: **Leningrad Technological Institute imeni Lensovet** (Leningradskiy tekhnologicheskiy institut im. Lensoveta)

SUBMITTED: November 24, 1956

AVAILABLE: Library of Congress

Card 2/2 1. Piazoselenol - Derivatives - Spectra

VERTKINA, V.N.; DINABURG, M.S., kand. khim. nauk; MAZAL', R.F.;
MAR'YANOVSKAYA, K.Yu.; PORAY-KOSHITS, B.A., prof.; UL'MAN, K.E.;
EFROS, L.S., prof.

Developments in the synthesis of direct dyes. Khim. nauka i prom.
3 no.2:191-212 '58. (MIRA 11:6)

(Azo dyes)

EFROS, L.S.

79-1-14/63

AUTHORS: Efros, L. S., Yel'tsov, A. V.

TITLE: Investigations in the Field of Imidazole Derivatives (Issledovaniye v oblasti proizvodnykh imidazola) XVIII. On the Problem of the Nitration of 5-Methylbenzimidazole (XVIII. K voprosu o nitrovanii 5-metilbenzimidazola)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 1, pp. 62-69 (USSR)

ABSTRACT: In the investigation of the chemical properties of the benzimidazole derivatives the authors absolutely needed 5-methyl-6-nitrobenzimidazole (formula IV) with the exactly determined position of the substituents. Their attempts to start from a partial reduction of 2,4-dinitro-5-methylaniline failed. For this reason a detour was made. By the treatment of an amine mixture with hydrogen sulfide in potassium alcoholate they obtained a 5-methyl-6-nitro-2-mercaptobenzimidazole (formula II) which could with permanganate in an alkaline medium very easily be oxidized to sulfo acid (III) which was then with hydrochloric acid converted to the expected benzimida-

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79-1-14/63

Investigations in the Field of Imidazole Derivatives. XVIII. On the Problem of the Nitration of 5-Methylbenzimidazole

zole derivative (IV). On boiling of the mixture, obtained with formic acid, of the reaction products of 2,4-dinitro-5-methylaniline the authors with a 65 % yield obtained a compound which had a melting point of 197°C and which according to the elementary analysis is identical with methylnitrobenzimidazole, and which accordingly had to possess the structure of 5-methyl-6-nitrobenzimidazole (X). The latter was also synthesized by Fischer and Heß by nitration of 5-methylbenzimidazole (V) with a melting point of 241°C, which contradicted the finding of the authors. After a repetition and closer examination of Fischer's and Heß' experiments the authors succeeded in proving that in their nitration with 5-methylbenzimidazole not 5-methyl-6-nitrobenzimidazole, but 4- and 6-mononitro derivatives in the ratio 5,7 : 4,3 were obtained. It was found that the product with a melting point of 240°C synthesized by Fischer and Heß was a 5-methyl-4-nitrobenzimidazole, but no 6-nitro derivative, as they had stated. There are 2 figures, and 7 references, 2 of which are Slavic.

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79-1-14/63

Investigations in the Field of Imidazole Derivatives. XVIII. On the Problem of the Nitration of 5-Methylbenzimidazole

ASSOCIATION: **Leningrad Technological Institute imeni Lensovet** (Leningradskiy tekhnologicheskiy institut im. Lensoveta)

SUBMITTED: December 10, 1956

AVAILABLE: Library of Congress

Card 3/3 1. Chemistry 2. Nitro compounds 3. Chemical analysis

EFROS L. S

79-2-36/64

AUTHORS: Efros, L. S., Yel'tsov, A. V.

TITLE: Research in the Field of Imidazol Derivatives (Issledovaniye v oblasti proizvodnykh imidazola)
XIX. Aminoderivatives of the Benzimidazolon and 1,3-Dimethylbenzimidazolon (XIX. Aminoproizvodnyye benzimidazolona i 1,3-dimetilbenzimidazolona)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 441 - 447 (USSR)

ABSTRACT: It was shown already earlier that benzimidazolon (I) and its N,N'-
-dimethylderivatives in highly acid medium differ neither according
to their reactivity nor in their absorption spectrum from benzimi-
dazolonderivatives. Hence is concluded that in salt formation the
proton is added to the carbonyl oxygen and forms a cation. In the
neutral medium (I) is in the o-phenylcarbamide form, and its he-
teroring differs from that of imidazol. In connection with this
the influence of the imidazolring on the condensation with a ben-
zenering was investigated in the present paper, and the detection
of the deformation character of the cloud of electrons in the lat-
ter was attempted. For this purpose the isomers of the 4- and 5-
-aminoderivatives of the benzimidazolon were investigated as well
as of its 1,3-dimethylderivative. From the investigation is assumed

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79-2-36/64

Research in the Field of Imidazol Derivatives. XIX. Aminoderivatives of the Benzimidazolon and 1,3-Dimethylbenzimidazolon

that the double binding between the 5th and 6th carbon atom is to a great extent enlarged in the 5-aminobenzimidazolon as well as in its 1,3-dimethylanalogous. This leads to the nitrogenization at the 6th carbon atom (as was found experimentally). If this assumption is right, an analogous deformation of the cloud of electrons is bound to occur in the benzene core of the unsubstituted benzimidazolon nucleus, or the different reaction properties of the 5-aminobenzimidazol and 5-aminobenzimidazolon would be difficult to explain. The configuration disturbance of this kind is worth mentioning since it has not yet been observed, except the data on the hydrides which were found to be wrong of late. Preparative details as well as specific data of the compounds are given. There are 1 figure, 1 table, and 8 references, 4 of which are Slavic.

ASSOCIATION: Technological Institute imeni Lensovet, Leningrad (Leningradskiy tekhnologicheskiy institut im. Lensoveta)

SUBMITTED: March 11, 1957

AVAILABLE: Library of Congress

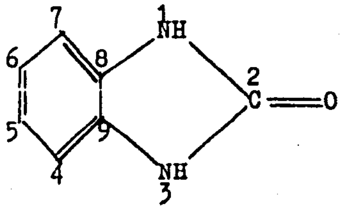
Card 2/2

AUTHORS: Efros, L. S., Yel'tsov, A. V. 79-28-4-21/60

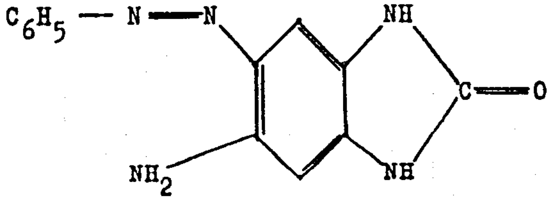
TITLE: Investigations in the Field of Imidazol Derivatives (Issledovaniye v oblasti proizvodnykh imidazola). XX. Some Amino Derivatives of Benzimidazolone (XX. Nekotoryye aminoproizvodnyye benzimidazolona)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 4, pp. 941-945 (USSR)

ABSTRACT: In investigating the chemical properties of amino derivatives of benzimidazolone (I) the authors found, that the azo-binding of 5-aminobenzimidazolone with diazized aniline takes place at the 6th carbon atom. (II). 5-amino-1,3-dimethylbenzimidazolone behaves in a similar way:



(I)



(II)

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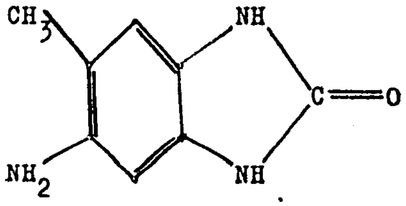

(III)

On the basis of these facts the authors supposed that the electron shell of the benzene nucleus is deformed in such a way under the action of the imidazolone nucleus, as to markedly strengthen the double binding between the 5th and the 6th carbon atom. In order to determine the degree of this deformation, two aminobenzimidazolones were synthesized and the interaction of this substances with diazonium salts was observed, whereby in one of these position 6 and in the other position 4 was blocked by methylgroups. It was found, that the 5-amino-6-methylbenzimidazolone cannot enter into the reaction of the azo-binding. The 5-amino-4,7-dimethylbenzimidazolone, however, reacts with diazo compounds and forms azo dyes. These observations prove the earlier drawn con-

Investigations in the Field of Imidazol Derivatives. 79-28-4-21/60
XX. Some Amino Derivatives of Benzimidazolone

clusion, that in the molecule of benzimidazolone the double bond of positions 5 and 6 is strengthened and the double bond of positions 4 - 5 and 6 - 7 is weakened under the influence of the nonaromatic imidazolone nucleus. There are 8 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy tekhnologicheskiy institut imeni Lensoveta (Leningrad Institute for Technology imeni Lensovet)

SUBMITTED: March 11, 1957

Card 3/3

AUTHORS: Efros, L. S., Yel'tsov, A. V. SOV/79-28-8-37/66

TITLE: Some Aminoderivatives of the Piaselenole (Nekotoryye aminoproizvodnyye piazselenola)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 8, pp. 2172 - 2174 (USSR)

ABSTRACT: Recently, L.S.Efros (Ref 2) found that the 5-aminopiaselenole (Formula II) is capable of entering into an azo developing. For the resulting azo compound the structure (III) had been suggested, derived from structure (I). In order to substantiate this suggested azo developing of the 5-amino piaselenole the authors synthesized the amines (IV) and (V), in one of which the positions 4 and 7, in the other the position 6 are blocked by methyl groups. Both amines were obtained by the combination of the aqueous solutions of the hydrochlorides of the corresponding substituted triaminobenzenes and of sodiumselenite. Besides, the nitro compounds (VI) and (VII) were characterized which are easily formed from the corresponding ortho-diamines and selenium dioxide. The 1,2,4-triamine-3,6-dimethylbenzene, hitherto unknown and

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necessary for the synthesis of compound (IV), was obtained by reduction of the trinitro-p-xylene with tin in hydrochloric acid. It was proved that the 5-amino-6-methylpiaselenole (V) easily enters into an azo developing reaction with the salts of the aryldiazonium. The dye (VIII), gained from (V) and diazotized 2,5-dichloro aniline, was described. With 5-amino-4,7-dimethylpiaselenole (IV) an azo developing was failing, as expected. The results hardly allow to doubt the suggested structure of the azo dye (IV) and suggest a quinoidine structure of the piaselenole (I), a piaselenole with a double-bond between the 5-4 and the 6-7 carbon atoms. The incapability of the compound (IV) to form an azo developing points to the accuracy of the assumption that the entrance of the azo group into the 5-aminopiaselenole occurs at the fourth carbon atom. There are 7 references, 4 of which are Soviet.

Some Aminoderivatives of the Piaselenole SOV/79-28-8-37/66

ASSOCIATION: Leningradskiy tekhnologicheskiy institut imeni Lensoveta
(Leningrad Technological Institute imeni Lensovet)

SUBMITTED: July 4, 1957

Card 3/3

AUTHORS: Efros, L. S., Yel'tsov, A. V. SOV/79-28-8-38/66

TITLE: Investigations in the Field of Imidazole Derivatives (Issledovaniye v oblasti proizvodnykh imidazola)XXI.Synthesis and Properties of the Imidazolone Imidazolobenzenes (XXI. Sintez i svoystva imidazolonoimidazolobenzolov)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 8, pp. 2174 - 2178 (USSR)

ABSTRACT: The previously investigated diimidazole benzenes (Formula I) approached, as far as their chemical properties are concerned, the anthracene derivatives (Ref 1): on oxidation they formed quinones, on halogenation dihalogen derivatives; their nitration yielded mononitro compounds. In the case of compound (I) the influence of aromatic imidazole rings on the central benzene nucleus the meso-positions of which become unsaturated, plays an important role. The authors assume (Refs 2,3) that the electron cloud of the benzimidazolone, as contrasted with benzimidazole (II), is so deformed that the double-bond character between the 5 and 6 carbon atoms increases (III). It was interesting to investigate the properties of compounds in which the benzene ring

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XXI.Synthesis and Properties of the Imidazolone Imidazolobenzenes

could be condensed both with imidazole and imidazolone hetero-rings. On the treatment of the 5,6-diamino-benzimidazolone and its 1,3-dimethyl analogs with formic and acetic acid the compounds (IV), (V) and, correspondingly, (VI),(VII) were synthesized (Refs 4,5). The ortho-diamines readily offer themselves as initial products on fusion with urea, yielding the compounds (VIII) and (IX), hitherto unknown, the properties of which shall be subjected to further studies. The oxidation-, bromination- and nitration reactions of the derivatives of the 1,2-imidazolone-4,5-imidazole benzene were investigated. Their higher reactivity as compared with the derivatives of 1,2,4,5-diimidazolebenzene became evident. There are 5 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy tekhnologicheskiy institut imeni Lensoveta (Leningrad Technological Institute imeni Lensovet)

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Investigations in the Field of Imidazole Derivatives. SOV/79-28-8-38/66
XXI. Synthesis and Properties of the Imidazolone Imidazolobenzenes

SUBMITTED: July 4, 1957

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EFROS, L.S.

Aromatic bond and some problems of the structure of aromatic compounds.
Analele chimie 15 no.3:67-98 Jl-Ag '60. (EEAI 10:2)
(Aromatic compounds)

EFROS, L.S.

Aromatic bond and some problems involving the structure of aromatic compounds. Usp.khim. 29 no.2:162-186 F '60. (MIRA 13:6)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta. (Chemical bonds) (Aromatic compounds)

POZDYSHEV, V.A.; TODRES-SELEKTOR, Z.V.; EFROS, L.S.

Infrared absorption spectra of piaselenole and of a number of its derivatives. Zhur.ob.khim. 30 no.8:2551-2555 Ag '60.
(MIRA 13:8)

1. Gosudatstvennyy nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (NIOPiK), Moskva.
(Benzoselenadiazole--Spectra)

EL'TSOV, A.V.; EFROS, L.S.

Imidazole derivatives. Part 23: 5,6-Dioxo derivatives of benzimidazolone. Zhur.ob.khim. 30 no.10:3319-3324 O '61. (MIRA 14:4)

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(Benzimidazole)

IOFFE, D.V.; EFROS, L.S.

N-oxides of aromatic nitrogen-containing heterocycles. Usp.khim. 30 no.11:1225-1351 N '61. (MIRA 14:10)

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(Heterocyclic compounds)

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YEL'TSOV, A.V.; EFROS, L.S.; GLIBIN, Ye.N.

Imidazole derivatives. Part 25: 4, 5-dimethoxy derivatives of benzimidazolinone. Zhur.ob.khim. 31 no.5:1581-1585 My '61.
(MIRA 14:4)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Benz imidazolinone)

YEL'TSOV, A.V.; EFROS, L.S.

Derivatives of imidazole. Part 26. Zhur.ob.khim. 31 no.12:3994-4001 D '61. (MIRA 15:2)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Imidazole)

YEL'TSOV, A.V.; EFROS, L.S.

Derivatives of imidazole. Part 27. Zhur. ob. khim. 32 no.1:196-199
Ja '62. (MIRA 15:2)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Imidazole)

YEL'TSOV, A.V.; EFROS, L.S.

Imidazole derivatives. Part 24: Synthesis and oxidation of 5-chloro-6-methoxybenzimidazolone. Zhur. ob. khim. 31 no.4:1215-1218 Ap '61. (MIRA 14:4)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Benzimidazolinone)

- EFROS, L.S.; POLYAKOVA, R.P.; ARGITTI, M.G.

Derivatives of piazthiole and piazselenole. Part 7: Monohydroxy derivatives. Zhur.ob.khim. 32 no.2:516-521 F '62. (MIRA 15:2)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Benzothiadiazole)
(Benzoselenadiazole)

MISHINA, I.M.; EFROS, L.S.

Reactivity of methyl derivatives of N-oxides of aromatic heterocycles. Zhur.ob.khim. 32 no.7:2217-2227 Jl '62.
(MIRA 15:7)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Heterocyclic compounds) (Methyl group)

ZHEN' GO-DU [Jên Kuo-tu]; EFROS, L.S.

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1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

(Ethylenimine)
(Dyes and dyeing)

CHZHU CHUN'-KHUA[Chu Ch'un-hua]; EFROS, L.S.

Intermediate products and dyes containing a β-chloropropionic acid radical. Part 1. Zhur. ob. khim. 33 no.5:1539-1543 My '63.
(MIRA 16:6)

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TOMCHIN, A.B.; EFROS, L.S.

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Zhur.ob.khim. 33 no.7:2321-2327 Jl '63. (MIRA 16:8)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta.
(Epichlorohydrin) (Anthraquinones)

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YEL'TSOV, A.V.; KUZNETSOV, V.S.; EFROS, L.S.

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1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

ZAKHS, E.R.; EFROS, L.S.

Derivatives of imidazole. Part 32: Synthesis of 4,5(6,7)-quinones of benzimidazole. Zhur. ob. khim. 34 no. 3:956-961 Mr '64.

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1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

ZAKHS, E.R.; EFROS, L.S.

Derivatives of imidazole. Part 35.: Benzimidazole 6,7-quinones.
Zhur. ob. khim. 34 no. 5:1633-1636 My '64. (MIRA 17:7)

MISHINA, I.M.; EFROS, L.S.

Kinetics and mechanism of the azo coupling of 9-methylacridine and iodomethylate of 9-methylacridine. Zhur. ob. khim. 34 no.7: 2358-2366 Jl '64 (MIRA 17:8)

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YEL'TSOV, A.V.; ZAKHS, E.R.; EFROS, L.S.

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ZATSEPINA, N.N.; TUPITSYN, I.F.; EFROS, L.S.

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KUZNETSOV, V.S.; EFROS, L.S.

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1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

ZAKHS, E.R.; MINKIN, V.I.; EFROS, L.S.

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(MIRA 18:11)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

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Theoretical determination of the winding radius of roving
on roving frames. Sbor. nauch.-issl. rab. TTI no.3:63-67
'56. (MIRA 11:9)
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EFROS, L.Ye.

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