

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 17,
no. 5, 1964, 1908-1919

TOPIC: electron-electron interaction, colliding beams, electron-electron
interaction, electron-positron colliding beam

ABSTRACT: The authors calculate the cross sections for several
processes in the electron-electron interaction, and discuss the
possibility of the observation of these processes using electron-
electron colliding beams at energies 100-1000
eV. When the electron interaction becomes strong, the derivation of

(Assuming that there is no reason) and that the standard result

Y
The procedures and
ment and the differential cross section
differential cross section

square of the charge constant holds. The procedure is used to calculate the matrix elements and the differential cross sections. The differential cross sections are determined. Values obtained for the cross sections of the reactions $e^+e^- \rightarrow \mu^+\mu^- \nu$, $e^+e^- \rightarrow \mu^+\mu^- \bar{\nu}$, $e^+e^- \rightarrow \mu^+\mu^- \nu \bar{\nu}$ are 1.1×10^{-40} , 1.6×10^{-40} , 1.2×10^{-40} , and 1.1×10^{-34} , respectively, and are much smaller than the cross sections of the reaction $e^+e^- \rightarrow \mu^+\mu^-$ (1.1×10^{-34}). The authors are V. A. Kuznetsov and I. Ya. Pomranichnik. See also: 86-0118, 86-0119. Cross sections are still below the paper

figures, 55 formulas, and 1 table.

ASSOCIATION: Institute for Theoretical and Experimental Physics
(Institute of Theoretical and Experimental Physics)

SECRET

CLASSIFICATION

CONTROL

NO. 11

REF ID: A66909

ENCL: 0

OTHER: 105

SHEKHTER, V.M.; IOFFE, B.L., doktor fiz.-matem. nauk, otv. red.

[Resonance states of elementary particles] Rezonansnye
sostoianiiia elementarnykh chastits. Moskva, AN SSSR,
1965. 186 p. (MIRA 18:11)

ACCESSION NO: A25002412

S/0056/65/044/001/0375/0376

ADMIN: L'effe, B. L., Kobzarev, I. Yu.; Pomeranchuk, I. Ya.

TITLE: Some consequences of unitary symmetry for processes in which π , K , and ρ mesons participate

Source: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1, 1967,

SOURCE: *Journal eksperimental'noy i teoreticheskoy fiziki*, v. 48, no. 1, 1965.

... of the meson and the elementary symmetry, unitary singlet, unitary octet.
As a result of the meson exchange between the production of a pair of mesons and
... an extension is derived for their probability ratios, which makes
... and the various parts of the unitary-symmetry scheme. It is
... with the initial particle content. The
... of the hypothesis that the meson
... and an octet. If the meson
... then the experimentally-measured
... of the meson exchange is established.

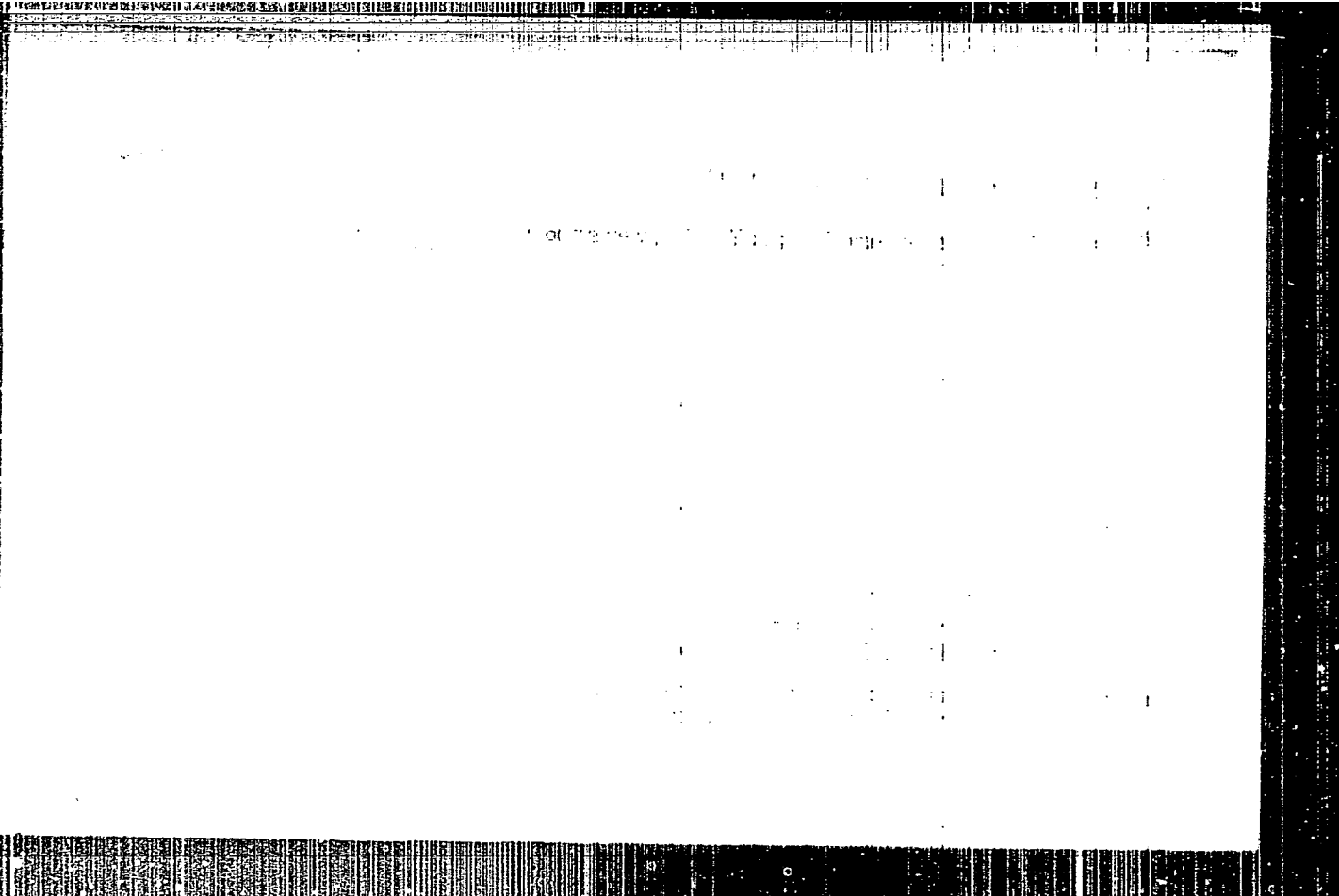
dimensionalities. The specific reaction analyzed is $B \rightarrow \pi + \rho$ at 1250 MeV. A
similar analysis is applied to the decay of the ρ^0 meson at 1250 MeV, and it is
concluded that it is likely that the ρ^0 meson is not a unitary singlet, but may belong
to a higher dimensional representation. Experimental evidence for and against this assump-
tion is discussed. The authors thank A. G. Meshcherysky and V. A. Eremenko for a
number of discussions prior to publication, and L. B. Okun' for useful discussions.

Submitted to the Proceedings of the International Conference on High Energy Physics,
CERN, Geneva, 1974. Institute of Experimental Physics, GNAE.

APPROVED FOR RELEASE: 08/10/2001 ENCL: 00 SUB CODE: WAF

SECRET 07/07/01 0001 00 008 0101 1/1

ad. x. 0001 002 00000001 0101





"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000618620015-2

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000618620015-2"

L 2149-66 EWT(m)/T/EWA(m)-2

ACCESSION NR: AT5022128

UR/3133/64/000/299/0001/0008

AUTHORS: Geshkenbeyn, B. V.; Ioffe, B. L. *44, 35*

*31
22
671*

TITLE: On $K^* \rightarrow K\pi\pi$ decay

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 299, 1964. O raspade $K^* \rightarrow K\pi\pi$, 1-8

TOPIC TAGS: K meson, pi meson

ABSTRACT: The probability of $K^* \rightarrow K\pi\pi$ decay is calculated in SU_3 theory on the basis of the hypothesis that ω and ϕ mesons are a mixture of a singlet and the $T = 0, Y = 0$ component of a unitary octet (S. Okubo. Phys. Lett., 5, 165, 1963; S. L. Glashow. Phys. Rev. Lett., 11, 48, 1963). The obtained ratio of the probabilities of $K^* \rightarrow K\pi\pi$ and $\omega \rightarrow 3\pi$ decays is

$$\frac{W(K^* \rightarrow K^+ \pi^+ \pi^-) + W(K^* \rightarrow K^0 \pi^+ \pi^-)}{W(\omega \rightarrow \pi^+ \pi^- \pi^0)} = \alpha \frac{M_{K^*}^2 F(M_{K^*}, m_\pi)}{M_\omega^2 F(M_\omega, \pi)}$$

which leads to the following experimentally observable value of the ratio of the Card 1/2

L 2149-66

ACCESSION NR: AT5022128

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width of $K^* \rightarrow K\pi\pi$ decay to the total width of K^* :

$$\frac{\Gamma(K^* \rightarrow K\pi\pi)}{\Gamma_{K^*}} = 0,015 \alpha^2 \frac{\Gamma_{\omega \rightarrow 3\pi}}{\Gamma_{K^*}} = 0,0024 \alpha^2 = 0,001$$

for a value of the mixing parameter of $\alpha = 0,64$. Experimental observations of $K^* \rightarrow K\pi\pi$ decays and their comparison with the theoretical prediction allow independent determination of the mixing parameter if the above hypothesis is valid. The authors thank V. V. Vladimirskiy, L. B. Okun', and V. M. Shekhter for useful discussion and remarks. Orig. art. has: 16 formulas.

44,55

ASSOCIATION: none

SUBMITTED: 01Dec64

ENCL: 00

SUB CODE: NP

NO REF SOV: 000

OTHER: 005

Card 2/2

L 14073-66 EWT(m)/T

ACC NR: AT6002499

SOURCE CODE: UR/3138/65/000/354/0011/0018

AUTHOR: Gribov, V. N.; Ioffe, B. L.; Pomeranchuk, I. Ya.

ORG: none

23
341

TITLE: Effective distances of high energy interactions

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 354, 1965. Na kakikh rass-
toyaniyakh proiskhodit vzaimodeystviye pri vysokikh energiyakh?, 1-18

TOPIC TAGS: pion scattering, proton scattering, scattering cross section, pion
proton interaction

19.55

ABSTRACT: The authors consider π -p scattering in an attempt to determine the dis-
tances necessary for elastic and inelastic scattering at high energies. The cross
section for the production of soft quanta in a given interaction is studied to find
out whether the scattering amplitude depends on the masses of the scattered parti-
cles. Theoretical formulas are given for scattering cross sections and experiments
are proposed for verification of these formulas. Coincidence between experimental

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2

L 14073-66

ACC NR: AT6002499

and theoretical data would mean that scattering amplitude is independent of particle mass at high energies. A difference between experimental data and theoretical predictions could be interpreted in two ways: either the scattering amplitude at high energies is a function of particle mass, i. e. the effective distances for elastic scattering increases rapidly with an increase in energy, or else there is a rapid increase with energy in the effective region from which γ -quanta are emitted. Orig. art. has: 1 figure, 21 formulas.

SUB CODE: 20/ SUBM DATE: 12May65/ ORIG REF: 001/ OTH REF: 002

CC

Card 2/2

L 1141-66. EWT(m)/T/EWA(m)-2

ACCESSION NR: AP5019592

AUTHOR: Geshkenbeyn, B. V.; Ioffe, B. L.; Marinov, M. S.; Roginskiy, V. I.

UR/0386/65/001/006/0023/0028

TITLE: Incompatibility of relativized unitarity SU(6) symmetry

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 1, no. 6, 1965, 23-28

TOPIC TAGS: particle symmetry, unitary symmetry, quark model, nuclear scattering, nuclear particles

ABSTRACT: Scattering amplitudes are studied for singlet-quark and quark-quark scattering in the O(12) model. The difficulties which are encountered are apparently characteristic for any relativistic generalization of SU(6) symmetry. It is found that there should be resonance in all partial waves, if any resonance is present, both for the case where a spin-zero particle which is a unitary singlet is scattered by a quark and for quark-quark scattering even without elastic unitarity. The authors are deeply grateful to V. N. Gribov, Yu. Kobzarev, and Y. M. Pomeransky for consultation and valuable advice.

ASSOCIATION: Utdeleniye yadernoy fiziki Akademii nauk SSSR (Department of Nuclear Physics, Academy of Sciences, SSSR)

SUBMITTED: 10 May 65

Card 1/1

ENCL: 00
NO REF SOV: 000

SUB CODE: NP
OTHER: 005

L 20952-66

ACC NR: AP6005875

tering amplitude may or may not depend on the mass of the scattered particle at high energies. Although no theoretical arguments can be advanced in favor of either possibility, the second possibility leads to highly interesting physical conclusions, and the authors show that it can be checked experimentally at energies achievable with present accelerators. Specifically, it can be ascertained whether or not the scattering amplitude at high energies depends on the masses of scattered particles by studying the differential cross section for the production of soft γ quanta accompanying a given scattering process. In fact, the emission of soft quanta occurs mainly before and after the scattering process, and the cross sections for the emission of such quanta can be expressed in terms of the scattering amplitudes. If experiment shows that the region of applicability of the usual formulas for this emission of γ quanta decreases with increasing energy of the incident particle, this proves that the effective longitudinal distance at which interaction occurs at high energy increases with increasing energy. If the experimental data do not agree with the theoretical predictions, then it can be concluded that either the effective distance for elastic scattering or the effective region for

6/8

2/3

L 20952-66

ACC NR: AP6005875

which the emission of γ quanta occurs increases rapidly with increasing energy. Reasons why experiments with protons would be less effective than experiments with pions are advanced. (Orig. art. has: 1 figure and 22 formulas. O)

SUB CODE: 20/ SUBM DATE: 28May65/ ORIG REF: 001/ OTH REF: 002

Card

3/3 7/10/65

L 21803-66 EWT(m) DIAAP
ACC NR: AP6012190

SOURCE CODE: UR/0386/66/003/008/0353/0336

AUTHOR: Vaynshteyn, A. I.; Ioffe, B. L.

ORG: none

TITLE: Check on T-invariance in the $\pi^+ \rightarrow e^+ + \nu + \gamma$ decay

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 8, 1966, 333-336

TOPIC TAGS: parity principle, pion, Gamma radiation, neutrino, positron, photon emission, probability

ABSTRACT: The authors consider a possible check on the hypothesis advanced by J. Bernstein et al. (Phys. Rev. v. 139 B, 1650, 1965), that electromagnetic interactions of hadrons are not invariant under time reversal, in the radiative pion decay $\pi^+ \rightarrow e^+ + \nu + \gamma$, by observing the polarization of the γ quanta. A theoretical analysis of this decay was presented by one of the authors elsewhere (Ioffe, with V. G. Vaks, ZhETF v. 35, 221, 1958). A quantity (λ) is defined which is real if T-invariance holds and complex if not. If 100% violation of T-invariance takes place, the real and imaginary parts of λ (λ' and λ'') should be of the same order. An expression is derived for the differential and integrated probability of $\pi^+ \rightarrow e^+ + \nu + \gamma$ decay with emission of a plane-polarized quantum. It is shown that to

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L 21803-66
ACC NR: AP6012190

observe the T-noninvariant term it is best to measure the plane polarization of the photons in a direction such that this term is a maximum. In the absence of such a term the probability that the photon will be polarized in this direction is equal to 1/2. An estimate based on presently available data shows that in the case of total violation of T-invariance the effect can be rather large. (orig. art. has: 11 formulas and 1 table.

SUB CODE: 20/ SUBM DATE: 02Mar66/ ORIG REF: 002/ OTH REF: 005

Card 2/2 ULR

ACC NR: AP7013699

SOURCE CODE: UR/0367/67/005/002/0367/0398

AUTHOR: Gribov, V. N.; Ioffe, B. L.; Shekhtor, V. M.

ORG: Physics-Engineering Institute im. A. F. Ioffe, AN SSSR (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: Isovector current conservation and relations for electromagnetic amplitudes

SOURCE: Yadernaya fizika, v. 5, no. 2, 1967, 387-398

TOPIC TAGS: lepton, vector meson, nucleon, particle scatter, particle interaction, scattering amplitude, electromagnetic property, hadron

SUB CODE: 20

ABSTRACT: A relation between the amplitude for the scattering of a lepton pair (or a hypothetical vector meson) on a nucleon and nucleon vertex is derived, assuming the conservation of the vector current with isospin 1 in the strong interactions. The meaning of such an equality is clarified by considering Feynman graphs. The Cabibbo-Radicati sum rule for the electromagnetic characteristics of hadrons is obtained in the zero momentum transfer limit if a dispersion relation with respect to the energy without subtraction

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ACC NR: AP7013699

can be written for one of the invariant functions of the amplitude. Arguments are given indicating that such an assumption may be wrong, even if the dispersion integral converges. An experimentally verifiable relation is found between the $\nu + N \rightarrow N + l + \gamma$ reaction amplitude and the nucleon form factor. The authors thank I. Ya.

Pomeranchuk (deceased), K. A. Ter-Martirosyan, I. Yu. Kobzarev, L. B. Okun' and I. T. Dyatlov for useful discussions. Orig. art. has: 6 figures and 49 formulas. [Based on authors' Eng. Abst.] [JPRS: 40,570]

Card 2/2

IOFFE, B. M.

USSR/Medicine - Roentgenology

FD 218

Card 1/1

Author : Gincherman, Ye. Z.; Ioffe, B. M.

Title : Roentgenotherapy of thyro-intoxication

Periodical : Vest. Rent. i Rad. 67-73, Mar/Apr 1954

Abstract : Roentgenotherapy is an effective means of treating thyro-intoxication. In a number of cases, the first treatment was effective, while in others, as many as four courses of X-ray radiation were necessary, depending on the form of thyro-intoxication. Preliminary treatment with micro-doses of iodine increases the effectiveness of the roentgenotherapy. Eleven references.

Institution : Polyclinical Division (Chief - Professor I. B. Khavin) All-Union Institute of Experimental Endocrinology (Director - Professor Ye. A. Vasyukova).

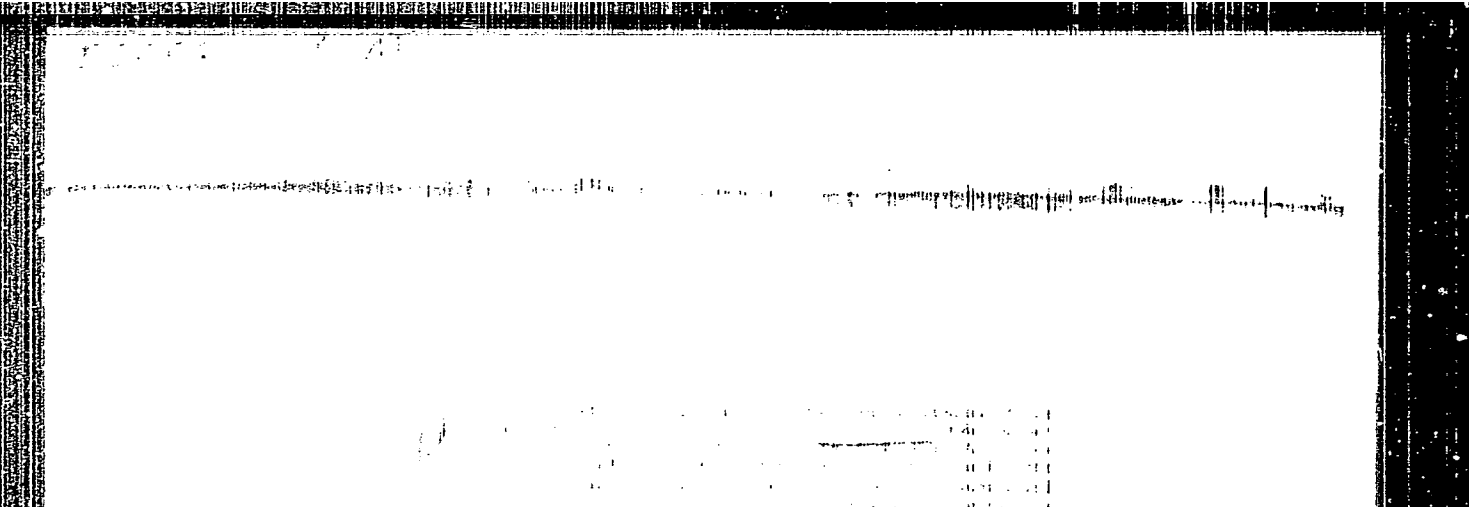
APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000618620015-2

IOFFE, B.M.; TIRKINA, T.N.; YAKUSHEVA, T.S.

Effect of roentgen irradiation of the brain on glycemia and on glycosuria in experimental diabetes. Vest.rent.i rad. no.1:42-49 Ja-F '55. (MIRA 8:5)

1. Iz etdela patofiziologii (sav. prof. S.M.Leytes) Vsesoyuznogo instituta eksperimental'noy endokrinologii (dir.prof.Ye.A.Vasyukova). (DIABETES MELLITUS, experimental, eff. of x-irradiation of brain on blood & urine sugar) (BRAIN, effect of radiations on, x-ray, blood & urine sugar in exper. diabetes) (ROENTGEN RAYS, effects, on brain, blood & urine sugar variations in exper. diabetes).



10456... irradiation... improvement... 1946...
... cervical... thyroid... 35%...
... over 20 years... 10%...
... with mild symptoms... 75%...
... with average symptoms...
... no case was deteriorated

Country : USSR 3
Category: Human and Animal Morphology (Normal and Pathological).
Pathological Anatomy.

Abs Jour: RZhBiol., No 2, 1959, No 7644

Author : Sokolov, D.D.; Ioffe, B.M.

Inst : -

Title : On the Problem of Syndrome of Fibrous Dysplasia of
Bones With Early Sexual Maturity and Skin Pigmentation.

Orig Pub: Probl. endokrinol. i gormonoterapii, 1955, No 6,
88-92

Abstract: A description of two cases of early sexual maturity
of girls accompanied by multiple injuries of skeletal
bones in combination with pigment spots of the
skin. The affection of the bones consists in fibrous
dysplasia in which the normal osteogenesis stops at

Card : 1/2 *Clinical Dept, A-U Inst. Exptl. Endocrinology*
8-43

IOFFE, B.M. (Moskva)

Pneumorenocentgenography in diagnosis of adrenal tumors. Probl.endok.
i gorm. 2 no.5:90-94 S-O '56. (MIRA 9:12)

1. Iz klinicheskogo (sav. - prof. Ye.A.Vasyukova) i poliklinicheskogo
(sav. - prof. I.B.Khavin) otdelov Vsesoyuznogo instituta eksperimen-
tal'noy endokrinologii (dir. - prof. Ye.A.Vasyukova)
(ADRENAL GLANDS, neoplasms,
diag., pneumorenocentgenography (Rus))

IOFFE, B.M., kandidat meditsinskikh nauk; ZAKHARYCHEVA, A.A., kandidat meditsinskikh nauk (Moskva).

Effect of roentgenotherapy of the intermediohypophyseal region on urinary 17-ketosteroids and corticosteroids in Itsenko-Cushing syndrome. Probl. endok. 1 gorn. 2 no.6:12-19 M-D '56. (MLRA 10:2)

1. Iz kliniki Vsesoyuznogo instituta eksperimental'noy endokrinologii (dir. - prof. Ye. A. Vasyukova).

(CUSHING SYNDROME, therapy,

x-ray, eff. on urine 17-ketosteroids & adrenal cortex hormones (Rus))

(RADIOTHERAPY, in various diseases,

Cushing synd., eff. on urinary 17-ketosteroids & adrenal cortex hormones (Rus))

(STEROIDS, in urine,

17-keto, eff. of x-ray ther. of Cushing synd. (Rus))

(ADRENAL CORTEX HORMONES, in urine,

eff. of x-ray ther. of Cushing synd. (Rus))

LUSHNIKOV, Ye.S.; IOFFE, B.M.

Role of intraperitoneal injection of gas in diagnosing adrenal tumors
[with summary in English]. *Nksp. khir.* 3 no.1:52-55 Ja-F '58.

(MIRA 11:2)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo instituta rentgenologii i radiologii (dir. I.G.Lagunova) i Vsesoyuznogo instituta eksperimental'noy endokrinologii (dir. Ye.A.Vasyukova)

(PNEUMOPERITONEUM, ARTIFICIAL, in various dis.

retroperitoneum in cancer of adrenal glands, diag. value (Rus))

(ADRENAL GLANDS, neoplasms

diag. value of retroperitoneum (Rus))

IOFFE, B. M.; SANTOTSKIY, M. I. (Moskva)

Roentgenographic representation of the dynamics of restorative changes in the skeleton in hyperparathyroid osteodystrophy following surgery. Probl. endok. i gorm. no.6:82-88 '61. (MIRA 14:12)

1. Iz khirurgicheskogo otdeleniya kliniki (zav. - prof. O. V. Nikolayev) Vsesoyuznogo instituta eksperimental'noy endokrinologii (dir. - prof. Ye. A. Vasyukova)

(BONES—DISEASES)
(SKELETON—RADIOGRAPHY)

PEREPUST, L.A.; IOFFE, B.M.; KALININ, A.P. (Moskva)

Roentgenological data on the state of the adrenal glands in Itsenko-Cushing disease and diencephalic syndrome pursuing the course of Itsenko-Cushing disease. Probl. endok. i gorm. 9 no.6: 75-80 N-D '63. (MIRA 17:11)

1. Iz rentgenologicheskogo otdeleniya (zav. - doktor med. nauk M.I. Santotskiy) i khirurgicheskogo otdeleniya (zav. - prof. O.V. Nikolayev) Vsesoyuznogo instituta eksperimental'noy endokrinologii (dir. - prof. Ye.A. Vasyukov).

SANTOTSKIY, M.I., doktor med. nauk; IOFFE, B.M., kand. med. nauk; BUKHMAN,
A.I., kand. med. nauk

Current status of the problem of x-ray diagnosis of the adrenal
glands under normal and pathological conditions. Vest. rent. i
rad. 39 no.1:40-45 Ja-F '64. (MIRA 18:2)

1. Rentgenovskoye otdeleniye (zav. - doktor med. nauk M.I. Santotskiy)
Vsesoyuznogo instituta eksperimental'noy endokrinologii, Moskva.

PEREPUST, L.A.; IOFFE, B.M.

Restoration of bone changes in the Itsenko-Cushing disease.
Probl. endok. i gorm. 10 no.6:27-34 N-D '64. (MIRA 18:7)

1. Rentgenologicheskoye otdeleniye (zav. - prof. M.I. Santotskiy)
Vsesoyuznogo instituta eksperimental'noy endokrinologii (dir. -
prof. Ye. A. Vasyukova), Moskva.

ICPNS, E. S.

USSR/Metals
Testing Procedures
Deformation

May 1948

"The Use of Conical Impressions for the Study of the Effect of Speed on the Resistance of Metals to Deformation," F. F. Vitman, N. N. Davidenkov, N. A. Zlatin, B. S. Ioffe, Leningrad Phys Tech Inst, Acad Sci USSR, 16 pp

"Zavod Lab" Vol XIV, No 5

Discusses plastic deformation of metals and determination of hardness and yield point by means of conical impressions produced by ballistic pendulum method. Presents mathematical treatment of various effects.

PA 75T87

IOFFE, B. S.

USSR/Metals
Deformation
StressAnalysis

Mar 49

"The Resistance of Metals to Deformation for Deformation Rates of 10^{-6} to 10^{-2} Meters/Second, I," F. F. Vitman, N. A. Zlatin, B. S. Ioffe, Leningrad Physicotech Inst, Acad Sci USSR, 15 pp

"Zhur Tekh Fiz" Vol XIX, No3

Introduces simple new method to study dependence of deformation resistance of metals on speed of deformation. Gives results of experiments with lead, aluminum, copper, soft steel, and duraluminum. Proves that, within a wide range, variation in deformation rate cannot be the only relationship between resistance-to-deformation and rate. Comparison of experimental results with other data showed that method is fully justifiable. Submitted 25 Nov 48.

PA 38/49T95

evaluation B-81183

1071 B, 1072

M

11 B

Application of the Method of Microhardness Measurement to the Solution of Some Physical Problems. B. S. Ioffe (*Zhur. tekhn. Fiz.*, 1949, 18, (10), 1089-1102; *Appl. Mechanics Rev.*, 1961, 4, 38).—[In Russian]. A review of literature on microhardness. I. discusses various methods used for determining microhardness, type of indenters, amount of loading, etc. He concludes that existing methods are far from satisfactory and stresses the need for further improvement. A great deal of attention is devoted to information obtained on the properties of surface layers. Despite shortcomings inherent in microhardness determinations, I. believes that results obtained so far point to the fact that the surface layer of metals is weaker than the inner layers, and seeks to correlate these results with results of investigations on distribution of residual stress in specimens deformed plastically in tension. Another piece of information on properties of metals which microhardness determinations appear to supply, is the influence of grain boundaries on the hardness of the grains in a polycrystalline material. Measurements taken on the surface of individual grains show a gradual increase of hardness from the centre of the grain to the boundary. Also, the average hardness of smaller grains is greater than that of larger grains in aggregate. 31 references, 18 of Russian origin.

Leonid Physico-Tech. Inst. AS USSR

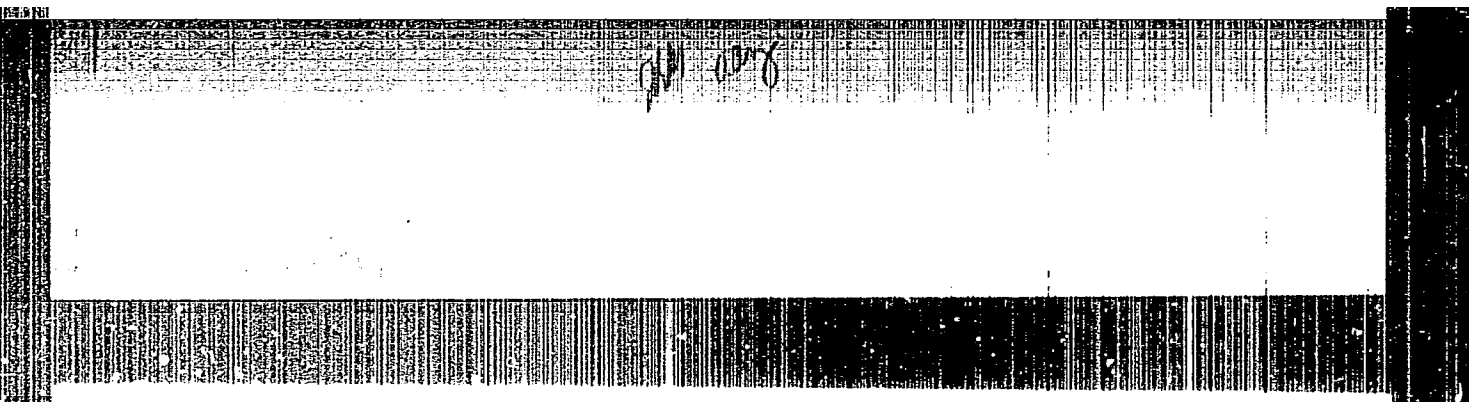
June 1957

LOFFE, B S

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"APPROVED FOR RELEASE: 08/10/2001

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APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000618620015-2"

VITMAN, F.F., prof., doktor fis.-mat.nauk, otv.red.; IOFFE, A.F., akademik;
red.; KURDYUMOV, G.V., akademik, red.; ZHURKOV, S.N., red.;
KONSTANTINOV, B.P., red.; GLIKMAN, L.A., prof., doktor tekhn.
nauk, red.; ZLATIN, N.A., doktor fis.-mat.nauk, red.; STEPANOV,
V.A., doktor tekhn.nauk, red.; FRIDMAN, Ya.B., prof., doktor
tekhn.nauk, red.; IOFFE, B.S., kand.tekhn.nauk, red.; AYER'YANOV,
V.I., red.isd-va; PEVNER, R.S., tekhn.red.

[Some problems on the strength of solid bodies; collection of
articles dedicated to the 80th birthday of N.M.Davidenko, member
of the Academy of Sciences of the Ukrainian S.S.R.] Nekotorye
problemy prochnosti tverdogo tela; sbornik statei, posviashchennyi
vos'midesiatiletiu akademika AN USSR N.M.Davidenkova. Moskva,
1959. 386 p. (MIRA 12:6)

1. Akademiya nauk SSSR. 2. Chlen-korrespondent AN SSSR (for
Zhurkov, Konstantinov).
(Strength of materials)

VITMAN, F.F.; IOFFE, B.S.; PUGACHEV, G.S.

Penetration of short stress impulses from rigid to plastic rods.
Fiz. met. i metalloved. 10 no.3:435-444 S '60. (MIRA 13:10)

1. Fiziko-tehnicheskiy institut AN SSSR.
(Strains and stresses) (Elastic waves)

ACCESSION NR: AP4029003

S/0126/64/017/003/0435/0439

AUTHOR: Vitman, F. F.; Ivanov, H. I.; Ioffe, B. S.

TITLE: Fracture of a rod during the impact of two short tensile stress impulses

SOURCE: Fizika metallov i metallovadeniye, vol. 17, no. 3, 1964, 435-439

TOPIC TAGS: tensile stress, rod fracture, tensiometric measurement, friable state

ABSTRACT: The authors made an attempt to fracture a metal rod by simultaneously loading both ends by means of an explosion. By means of tensiometric measurements were explained the wave amplitude changes after the first collision, reflection from the ends of the second collision during which the structure of the tensile impulses cause the fracture of the rod. The paper proves that the methods used for loading the sample and recording of parameters of the waves along the rod make it possible to measure the strength of materials which approach a brittle state. The method used and the equipment are explained in detail. A tensiogram of the stress in a rod of U10A tempered steel is given. The amplitude measurements of the colliding waves are given in a table. In conclusion the authors claim that the examined method may be useful only in limited cases when the metal is very close to a brittle state. This method is therefore inapplicable to a wide range of plastic materials. Never-

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ACCESSION NR: AP4029003

theless, this method may be used for a comparative evaluation of the breaking resistance of tempered steels and to study the influence of a transition from a static to a rapidly occurring impulse load of the metal on this characteristic. The development of methods for measurement of break resistance in plastic materials with impulse loading should be continued for the purpose of limiting the influence of plastic deformation waves which accompany the propagation and decrease the amplitude of the running wave. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Fiziko-tekhnicheskij institut im. A. F. Ioffe AN SSSR (Institute of Technical Physics, AN SSSR)

SUBMITTED: 20May63

DATE ACQ: 27Apr64

ENCL: 00

SUB CODE: ML

NO REF SOV: 003

OTHER: 003

Card 2/2

L. 22896-65 EWT(m)/EWP(w)/EWA(d)/EPR/T/EWP(t)/EWP(b) Pa+4 LJP(c)

ACCESSION NR: AP5001241

MJW/JD

8/0128/64/018/005/0717,0713

AUTHOR: Vitman, F. F. ; Ivanov, M. I. ; Ioffe, B. S.

TITLE: Rupture strength of ductile metals subjected to pulsed loading

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 6, 1964, 717-723

15

TOPIC TAGS: rupture strength, ductile metal, steel strength, iron strength, copper strength, alloy strength, lead strength, alloy VT3, alloy Vob

ABSTRACT: The aim of this paper was to supplement the existing data on the rupture strength of ductile metals subjected to pulsed loading. The results of experiments on the rupture of ductile metals (steel, iron, alloy VT3, alloy Vob) under the action of pulsed loading are presented. The test method used was that of electron microscopy.

obtained raises several questions of independent physical interest (dependence of rupture
Card 1/2

L 22896-65

ACCESSION NR: AP5001241

strength on composition and structural state, nature of failure observed, etc.) which can
be determined by using stress-measurement methods and analyses of the
processes occurring in the crystal lattice are employed. Orig. art. has: 12 figures and
1 table.

processes occurring in the crystal lattice are employed. Orig. art. has: 12 figures and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy Institut im. A. F. Ioffe AN SSSR (Physicotechnical Institute, AN SSSR)

SUBMITTED: 20May63

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 017

Card 2/2

121 A-2 THE INDEX TECHNICAL AND SUBJECTIVE INDEX

CA

2

The relative relative dispersion of aliphatic and aromatic hydrocarbons. B. V. Ioffe (Chem. Inst., Leningrad State Univ.), *Moscow Acad. Sci. Ser. Chem. Div. 1966, No. 13, 5-6; J. C.A. 41, 2607*.—The relative dispersion between the lines F and C , $\alpha = 10^4(\alpha_1 - \alpha_2)/(\alpha_1 + \alpha_2)$, has approx. the same value for all paraffins and cycloparaffins b. index 200', $\alpha_1 = 17.6$. For olefins of mol. wt. M and of index no. i , $\alpha_1 =$ approx. $17.6 + (400/M) = 17.6 + 0.007 i$. Aromatic hydrocarbons have much higher dispersions α_1 , e.g., $\alpha_1 = 20.7$ for $C_{10}H_8$ and 20.8 for toluene. Measurement of α_1 of a mixt. of paraffins (or cycloparaffins) with simple aromatic hydrocarbons gives the constant (α_1) of the latter of $A = 100(\alpha_1 - 17.6)/(\alpha_1 - 17.6)$. In the presence of olefins, $A = 100(\alpha_1 - 17.6 - 0.0170)/(\alpha_1 - 17.6)$, where i = index no. of the paraffin. If i is odd, within a few units of the 5th decimal, the error is less than 1%. N. Then

62-702-1512C

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	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PROCEDURE AND PROPERTIES INDEX

T

F 1487. OPTICAL METHOD FOR DETERMINING AROMATIC HYDROCARBONS IN THEIR MIXTURES WITH PARAFFINS AND NAPHTHENIC HYDROCARBONS. *Ioffe, B. V.* (J. Gen. Chem. U.S.S.R., 1946, 16, 1121-1134; Chem. Abstr., 1947, 41, 2660).

Moscow State U. in Leningrad. Lab. for Chem. and Phys.

A method for analysis of aromatic hydrocarbons in their mixtures with paraffin and naphthenic materials is presented based on the relative dispersion of light at F, C, and D lines, which are substantially different for the different classes of hydrocarbons and which have linear dependence on relative concentration in their mixtures. The formula used is: $P = K(W_m - W_s)$, where P is concentration of the given aromatic hydrocarbon in the mixture, W_m is the relative dispersion of the mixture of this hydrocarbon with paraffinic and naphthenic hydrocarbons, and W_s is the average dispersion of the latter classes (this value is set at 17.5). K is a constant, the values of which are: for benzene 6.29, for toluene 6.76 and for m-xylene 7.14. Calibration curves are given for the Abbe refractometer to make it suitable for dispersion measurements. Mixtures of known composition were analyzed by this method usually within 2%.

ASD-55A METALLURGICAL LITERATURE CLASSIFICATION *Inst. Sci. Res. Inst. Metall. Eng. Leningrad*

FROM SYNONYM	SYNONYM	RELATIONS	SYNONYM
1	2	3	4

PROCESSING AND PROPERTIES INDEX

T

F10FFE10.V

3773. APPLICATION OF RELATIVE LIGHT DISPERSION TO ANALYSIS OF HYDROCARBON MIXTURES. *Joffe, B. V.* (Compt. Rend. (Doklady) Acad, Sci. U.R.S.S., 1946, 21, 433).

The relative dispersion ω is defined by the relation $\omega = n_1 - n_2 / n_3$, where n_1, n_2, n_3 are the refractive indices at three wave-lengths $\lambda_1, \lambda_2, \lambda_3$, such that $\lambda_1 < \lambda_3 \leq \lambda_2$, these being in the present case the $H_\gamma, H_\beta,$ and H_α spectrum lines. Computations from literature data show that for paraffins and naphthenes ω has a mean value of 17.5 and is nearly double this value for monocyclic aromatics. For mixtures of saturates and an aromatic the relative dispersion is given by a simple additive function of the relative dispersions and weight fractions of the components. In the analytical application of this relation, the Abbe refractometer is used to measure both n_D^{20} and $n_D^{20} - n_D^{20}$, the latter quantity being obtained directly from the reading of the refractometer compensator and corrected graphically for variations in n_D^{20} upon which it is dependent. or a single aromatic a set of linear graphs relating aromatic content and com-

METALLURGICAL LITERATURE CLASSIFICATION

K I O N I S U M A R Y

R E S U L T O F D I S C U S S I O N

penzator reading can be constructed. Mixtures containing olefins also can be analyzed by including an additional term involving the iodine value. Tests on about 100 synthetic mixtures each containing two or three hydrocarbons of the three types considered indicate that the aromatic content can be determined with an absolute accuracy of 1-2%. This can be improved by using the more precise Pulfrich refractometer. The method is claimed to be simpler, more rapid and more precise than that of Grease and Washer.

PROCEDURES AND INSTRUMENTS USED

CA

Accurate determination of the index of refraction by refractometer measurements. R. V. Ioffe. *Zvezdichye Lab. 13, 1400-1(1947)*.—Many refractometers fail in accuracy because of imperfect design of the compensators. In the Abbe design the defect is removed by taking a mean of readings with the compensator set in 2 positions 180° apart. In Zeiss instruments compensation setting is unique and the following procedure can be followed: The instrument is set with water with artificial light or daylight and the compensator setting is recorded; then sodium light is used with the same setting of the compensator; the difference on the instrument scale is noted. This is repeated at several other settings of the compensator and finally the procedure is repeated with other liquids. The corrections are plotted and are used as a correction scale. Deviations in the 3rd decimal are common.

O. M. Kozlov

METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

CLASSIFIED OR NOT

CLASSIFIED OR NOT

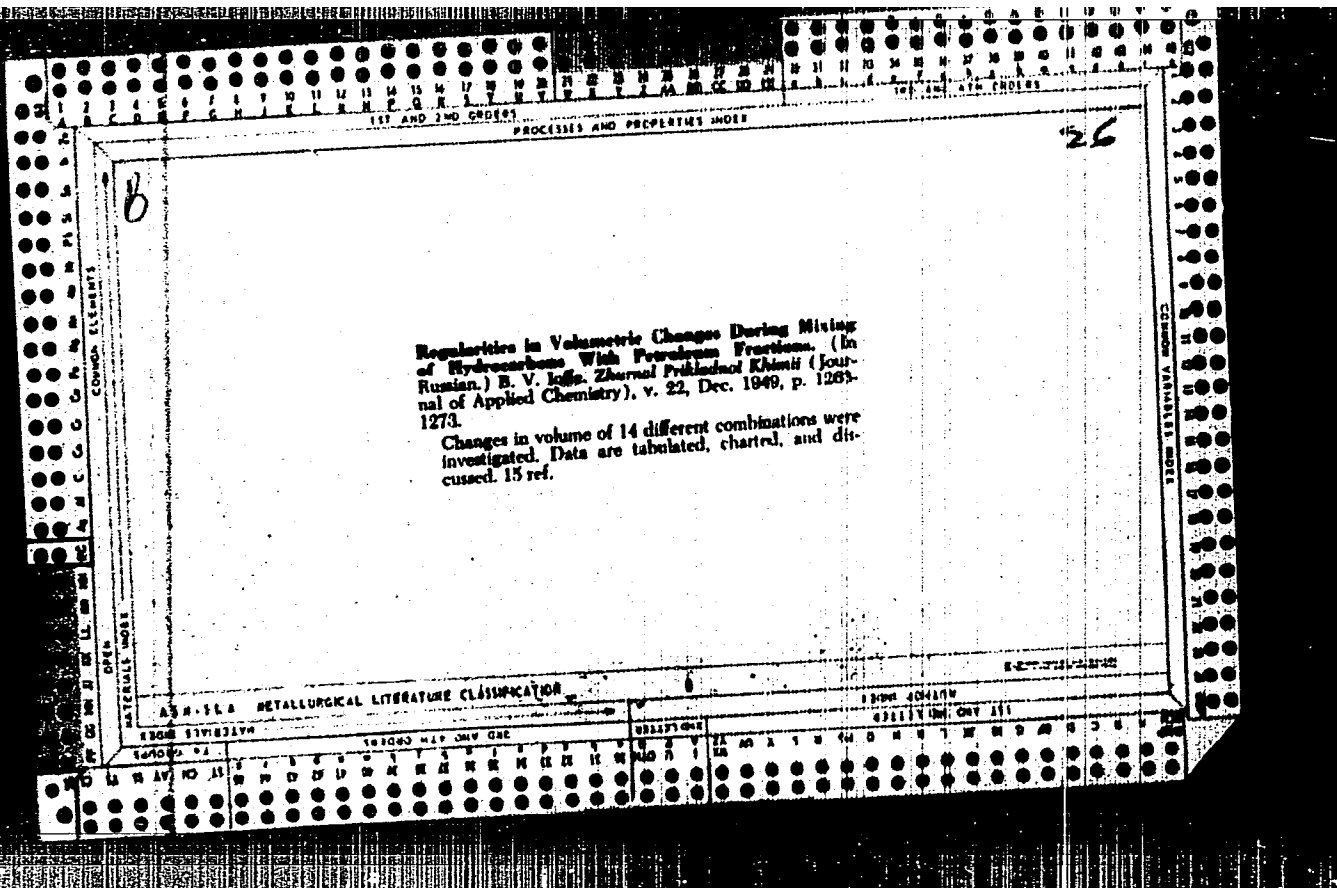
10A

Accurate measurement of refractive dispersion. D. V. Ioffe. *Zvezdshaya Lab. 14. 1003-4(1948)*. -- In detail, with the Abbe refractometer, subjective errors due to differences of estm. between different observers may attain 2-3 units of $10^4 (n_D - n_C)$; those due to the source of white light (daylight or incandescent lamp), about 3 units. An individual observer should be able to reproduce comparison reading within ± 0.05 . N. Thom

IOFFE, B. V.

"A. S. Broun," Vest. Leningrad U., No.1, 1948

Cand. Chem. Sci.



7

CA

Use of relative dispersion for the identification of hydrocarbons. B. V. Ieda (Leningrad State Univ.). *Zhur. Anal. Khim.* 4, 183-91 (1949).—A new system of classification of hydrocarbons is outlined. This system is based on the singularity of relative dispersion (ω_{rel}) of hydrocarbons defined by $\omega_{rel} = [(n_D - n_C)/(n_D - 1)] \times 10^4$, where n_D , n_C , and n are indices of refraction of lines F, C, and D, resp. The relative dispersion values of all paraffinic and cycloparaffinic hydrocarbons lie between 17 and 18. Hydrocarbons with multiple bonds have ω_{rel} values considerably higher than paraffins and cycloparaffins. In these compounds, the factors affecting ω_{rel} most is the no. of multiple bonds and their position in the molecule. ω_{rel} of homologous hydrocarbons having multiple bonds generally decreases with increasing mol. wt., but the effect of mol. wt. on ω_{rel} is frequently masked by the influence of structure. The proposed system applies to volatile, liquid hydrocarbons with a b.p. up to 200°. Colored, gaseous, and solid hydrocarbons are relatively few and are readily identified otherwise. By this scheme the 2 main divisions of hydrocarbons are those with ω_{rel} not greater than 18 and those with ω_{rel} greater than 18. To the former belong paraffins and cycloparaffins; to the latter olefins, acetylenic, aromatic, and other hydrocarbons having multiple bonds. The members of the 1st division are further subdivided according to the no. of rings ascertained previously by elementary analysis. Members of the 2nd division are divided into 3 groups according to their b.p. 30-100, 100-180, and 180-200°. In each of the 3 groups members with similar degree of unsat. are joined into subgroups. Within a subgroup members are readily identified by their ω_{rel} . Tables illustrating this classification scheme are given. M. Hirsch.

CA

Exact determination of aromatic hydrocarbons by the method of relative dispersion. M. J. Jode (Leningrad State Univ.), *Zhur. Anal. Khim.* 4: 237-43 (1949); cf. *C.A.* 41, 2655, 2660; preceding abstr.—In the improved method, the Abbe refractometer is replaced by a Pulfrich instrument. This reduces the abs. error from 1-2% to $\pm 0.1\%$. For measuring the C and P lines of the H spectrum are used. The concn. of aromatic hydrocarbons in a given mist. is calcd. from $P = K_{\text{rel}}(n_{\text{D}} - 17.55)$ where K_{rel} is a const. characteristic for a given aromatic hydrocarbon and $n_{\text{D}} = [(n_{\text{D}} - n_{\text{D}})/(n_{\text{D}} - 1)] \times 10^4$ is the relative dispersion of the mist. Tables, listing the values of n_{D} and K_{rel} for various aromatic hydrocarbons are given. M. Hirsch

CA

Determination of aromatic hydrocarbons in the presence of unsaturated hydrocarbons by the method of relative dispersion. *I. V. Ioffe (Leningrad State Univ.). Zhur. Anal. Khim. 3, 2000(1960).*—Relative dispersion (ω) values of unsatd. hydrocarbons depend on their mol. wt. and their structure. The most important structural characteristic affecting ω of compds. with 1 or 2 double bonds is the position of the double bond. For hydrocarbons within a group of homologs having the double bond in the same position can be written $M(\omega_1 - \omega_2) = \text{const.}$, where M is the mol. wt., ω_1 is the relative dispersion of the olefin and ω_2 is the relative dispersion of satd. compds. Since the iodine no. (I) is inversely proportional to the mol. wt. and because it is readily detd., a more convenient form of the equation is $\omega_1 = \omega_2 + \frac{I}{k}$ where k is a const. for a group of olefins having the double bond in the same position. For aliphatic monoolefins (C_nH_{2n}), the av. value is $k = 0.018 \pm 0.002$. For cyclic olefins the av. value is $k = 0.018 \pm 0.002$. For diolefins with n eqvl. double bonds k has the same values as for monoolefins. For diolefins with conjugated bonds k varies widely depending on the structure. After proper substitution, the equation for calcg. the content of aromatic hydrocarbons ($P\%$) becomes $P = K_{ar}(\omega_{ar} - 17.45 - 0.015 I)$ or $P = K_{ar}(\omega_{ar} - 17.55 - 0.015 I)$. The values of K_{ar} and $K_{ar}(\omega_{ar})$ are given in C.A. 44, 2413. Thus, for detg. P , it is necessary only to det. ω and I of the mint. Tested on mint. of known compn. this method gave an accuracy of 0.05% abs. with a Fulfich and 1.2% abs. with an Abbe refractometer. M. Hensch

CA

22

Light dispersion in binary hydrocarbon mixtures. B. V. Ioffe (Leningrad State Univ.), *Zhur. Anal. Khim.* 8, 501-5 (1969).—Light dispersion by the following systems was studied: (1) cyclohexane-cyclohexene, (2) cyclohexane-benzene, (3) cyclohexane-cyclohexene, (4) isobutane-benzene, (5) isobutane-cyclohexane, (6) isobutane-cyclohexane, (7) diisobutyl-*tert*-butylbenzene, and (8) *sec*-butylcyclohexane-*tert*-butylbenzene. For the systems 1, 2, and 3 the relation between the sp. dispersion δ and relative dispersion ω and ω_{rel} is linear: $\delta = \delta_0 + [(\delta_1 - \delta_0)/100]P$ and $\omega = \omega_0 + [(\omega_1 - \omega_0)/100]P$, where δ_0 and ω_0 are specific and relative dispersion of the 1st component in the mixt., δ_1 and ω_1 are the same values for the 2nd component, and P is the concn. of the 2nd component (having the higher dispersion) in wt. %. In the present (having the higher dispersion) in wt. %. In the present (having the higher dispersion) in wt. %. In the present (having the higher dispersion) in wt. %.

For the systems (2), (4), (6), (7), and (8) δ and ω were smaller than the values calculated by the above equations. For these systems the dispersion can be adequately calcd. from: $\delta = \delta_0 + [(\delta_1 - \delta_0)/100]P - C_1(100 - P)P$ and $\omega = \omega_0 + [(\omega_1 - \omega_0)/100]P - C_2(100 - P)P$, where C_1 and C_2 are const. for a given pair of components. The values of $C_1 \times 10^4$ and $C_2 \times 10^4$ for these systems calcd. from expl. data are (2) 2.26 and 0.24, (4) 2.18 and 1.17, (6) 2.20 and 0.41, (7) 2.26 and 0.40, and (8) 1.94 and 0.01. Generally, the deviations from linear relationships were greater for δ than for ω . Therefore, ω is preferable for analytical purposes. The magnitude of the deviations depended on the nature of the hydrocarbons. The deviations in benzene mixts. were greater than the deviations of its homologs with the same aromatic component. The magnitude of deviation depended on the number of side chains. Mixts. of aromatic hydrocarbons with paraffins had greater deviations than mixts. of aromatic hydrocarbons and cycloparaffins. M. Hersh

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

② Chem
Certain assumptions of the refractometric method of physicochemical analysis. V. V. Jaffe (State Univ., Leningrad). Doklady Akad. Nauk S.S.S.R. 84, 713-16 (1952).—In the systems mesitylene-pentane, CCl₄-2,2,4-trimethylpentane, tetrahydronaphthalene (1)-dichloroethane, benzene-2,2,4-trimethylpentane, I-CCl₄, and benzene-BuBr, n_D shows much better additivity when compn. is calcd. in terms of vol. rather than molarity or wt. The shape of isotherms of n_D as a function of compn. cannot be used to classify mixtu. with regard to interaction of components. Cyrus Feldman

LOFFE, B. V.

Physica D₂

British Abst.
A I
Aug. 1953
Physical Properties and
Molecular Structure of
Solutions, Etc.

✓ Minima and inflexion points on the isotherms of refractive indices
B. V. Loffe (C. R. Acad. Sci., U.R.S.S., 1952, 87, 763-765).
Presence of min. on the n -composition isotherms are found in six
new systems: Ba^+OH - n -octane; butyric acid- n -octane; *sec*-octyl
alcohol-cyclohexane; dibutyl carbinol-cyclohexane; cyclohexane-
dioxan and methylcyclohexane-dioxan. The min. appear in pairs of
liquids with n differing slightly ($n_1 - n_2 < 0.02$) in which mixing is
accompanied by a large increase of vol. Presence of an inflexion
point on the isotherm of n_D^{20} is confirmed for $\text{N}^+\text{H}_4\text{Me}_2$ - AcOH
mixture. The small number of known cases in which S-shaped
 n isotherms appear prevents the correlation of that phenomena
with the properties of pure components and their behaviour in
mixtures.
S. K. Jachowicz

6/25/54

Leningrad State U. in. Zhdanov

I. F. F. B. V.

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LOFFE, B.V.

Chem Abs, v. 48,
1-10-54
Analytical Chem.

Use of the Lunge nitrometer for determining nitroamines, nitrosamines, and alkyl nitrates. B. V. Loffe and M. S. Serogov (Leningrad State Univ.). *Zhur. Anal. Khim.* 8, 235-7 (1953).—According to Cope and Barab (*C.A.* 11, 147) the ability to be reduced in a Lunge nitrometer is a characteristic property of NN:O and NNO₂ groups as distinguished from CNO₂ and CN:O groups. C. and B. drew their conclusions from expts. with nitro-eter test to a number of aliphatic and alicyclic nitro-urea (I), nitroquankline (II), tetryl (III), and diphenyl-nitrosoamine (IV). The authors applied the Lunge nitro-eter test to a number of aliphatic and alicyclic nitro-amines and nitrosamines and found that generally they did not react with Hg and H₂SO₄ in the cold. Therefore, the ability of the NO and NO₂ to be reduced depends on the presence of C:O and C:N linkages as in I and II and the benzene ring as in III and IV. The Lunge nitrometer method was also applied to the detn. of alkyl nitrates, only methyl nitrate was reduced.
M. Hosen

Chem 6
③

7-21-54

10776, B. V.

Rational method for recalculating the concentration of solutions. B. V. Loffe. *Izvestiya Akad. Nauk SSSR, Ser. Khim.* 1953, No. 12, 216-221. Referat. *Zhur., Khim.* 1953, No. 623. Four-figure logs for the values of $r/(1-r)$ are given for aqueous solutions of various. The tables are provided with proportional parts. For argument, values of 0.0200-0.0200 and 0.0100-0.0100, the modulus, are given at intervals of 0.0010 and for values of 0.0010-0.0010 at intervals of 0.0010. The use of the tables is illustrated by examples in changing from wt. fraction to molar fraction, and from wt. or molar fraction to molality. The use of the tables is shown in calculating the vapor-liquid in binary systems used for electrochemical cells, of measurements made with a Wheatstone bridge, and the like.

SECRET

10000000

USSR.

V Refractometric investigations. I. Refractive index iso-
therms for ideal systems. B. V. Joffe (A. A. Zhukov State
Univ., Leningrad). J. Gen. Chem. U.S.S.R. 23: 100-103
(1953) (Engl. translation); Zhur. Obshch. Khim. 25: 190-7
(1953).—The n was detd. at intervals over the whole range
of compn. for the following mixts. which approach ideality:
mesitylene-pentane, CCl_4 -2,3,4-trimethylpentane (I), brom-
benzene-I, Tetralin-dichloroethane, benzene-I; Tetralin-
 CCl_4 , and benzene-BaBr. The deviations of n from addi-
tivity were detd. when n was considered additive as a func-
tion of compn. in terms of molar units, wt. units, and vol.
units. Markedly less deviation from additivity was ob-
tained for vol. units. Thus assumptions of additivity of n
as a function of molar or wt. proportions must be considered
inaccurate.
J. J. Casey

ref
et

101-8, 5.1

USSR :

Conditions of formation of maxima and minima on the refraction-composition curves B. V. Ioffe (A. A. Zhukovskii State Univ., Leningrad). *Doklady Akad. Nauk S.S.S.R.* 93, 851-4 (1953).--The shape of the sp. refraction-compos. curves of mixts. is explained on the basis of a quant. evaluation of the phys. factors detg. n , instead of by a chem. interaction between the components. The formula $V_2 = 1/2 + ((n_1 - n_2)/2K)$, where V_2 is the equiv. of one of the components at the max. or min. values of n ; n_1 and n_2 are the indices of the 2 components, and K is some const. depending primarily on the vol. changes upon mixing the components. A max. is formed when $K > 0$ (vol. contraction) and a min. when $K < 0$ (expansion). The validity of this assumption of the additivity of sp. refraction without chem. interaction between the components is proved experimentally for cyclohexyl chloride- CCl_4 mixt. W. M. Starabiy.

IOFFE, B.V.

Corrections for the specific weight of nitric acid containing nitrogen dioxide. Uch.zap.Len.un.163:206-208 '53. (MIRA 9:6)
(Specific gravity) (Nitric acid)

IOFFE, B.V.

Efficient method for the computation of concentrations of solutions.
Uch.zap.Len.un. 163:215-222 '53. (MLRA 9:6)
(Solution (Chemistry))

IOFFE, B. V.

USSR/Chemistry

Card 1/1

Author : Ioffe, B. V.

Title : About the additivity of a refractional dispersion and comparative evaluation of dispersiometric methods of determining aromatic hydrocarbons. (Discussion)

Periodical : Zhur. Anal. Khim, 9, Ed. 1, 60-64, Jan-Febr. 1954.

Abstract : The additivity value n_D in mixtures of aromatic hydrocarbons with paraffinic or naphthene hydrocarbons reveals systematic deviations from the additivity which at times exceed the possible errors of the given experiment. Disregard of the deviations from the additivity in the case of a dispersiometric analysis may lead to errors of up to 2-2.5% abs. A recently introduced method for the determination of aromatic hydrocarbons has no real advantages over the relative dispersion method and is inferior to the latter in accuracy. Twelve references. Tables.

Institution : The Lenin State University, Chemical Institute, Leningrad

Submitted : Oct. 22, 1953

U S S R :

... of refractive dispersion and comparative
... of dispersion methods for determining pro-
... hydrocarbons H. V. Kalle, J. Anal. Chem.
... See Cat. 48.
H. L. H.

IOFFE, B.V.

KAZANSKIY, B.A.; ROZENGART, M.I.; STERLIGOV, O.D.; TARASOVA, G.A.

Concerning the article of B.V.Ioffe: "On the additiveness of refractive dispersion and the comparative estimate of dispersimetric methods for the determination of aromatic hydrocarbons." Reviewed by B.A.Kazanskii, M.I.Rozengart, O.D.Sterligov, G.A.Tarasova. Zhur.anal.khim. 9 no.2:116-119 Mr-Apr '54. (MLRA 7:3)
(Dispersimetry) (Aromatic compounds) (Ioffe, B.V.)

Ioffe, B. V.

USSR/Chemistry - Analysis

Card 1/1 Pub. 151 - 15/36

Authors : Ioffe, B. V., and Likich, L. S.

Title : Investigation of the tetranitromethane-benzene system by means of various physico-chemical analysis methods

Periodical : Zhur. ob. khim. 24/1, 81-88, Jan 1954

Abstract : The application of thermal and viscosimetric physico-chemical analysis methods, for the study of chemical reactions in the tetranitromethane - benzene system, is debated. The results, obtained by means of spectrophotometric and refractometric physico-chemical analysis methods, are tabulated. The main factor determining the form of isothermal curves obtained during the investigation of tetranitromethane - benzene systems is elucidated. Seventeen references: 11-USSR; 5-USA and 1-German (1910-1953). Tables; graphs.

Institution: State University, Chemical Institute, Leningrad

Submitted : August 27, 1953

IOFFE, B. V.

USSR/Chemistry - Physical chemistry

Card 1/1 : Pub. 22 - 26/48

Authors : Ioffe, B. V.

Title : Positive-negative isotherms of refraction indexes

Periodical : Dok. AN SSSR 97/5, 855-858, August 11, 1954

Abstract : The causes for the origination of positive-negative isotherms of refraction indexes, which are characterized by the presence of inflexion points and change in the sign of deviations from the additiveness, are discussed. It was established that the appearance of inflexion points on the negative-positive isotherms are not connected with the formation of components in the system of chemical compounds. The factors determining the density and additive values and their connection with the chemical processes occurring in chemical systems are explained. Six references: 4-USSR; 1-USA and 1-German (1883-1953). Graphs.

Institution : The A. A. Zhdanov State University, Leningrad

Presented by : Academician A. N. Terenin, April 3, 1954

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... the same group but differ ...
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... triangular diagram ...
... plotted isorefraction curves ...
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... higher by at least 0.01 than the ...
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... with the aid of a triangular ...
... and α . The ...
... (Engl. translation).
M. Hoch

IOFFE, B.V.

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium.
Physicochemical analysis. Phase transitions

B-8

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11172

Author : Ioffe B.V.

Title : Concerning the Dependence of Refractive Indices on Concentration and the
Refractometric Analysis of Binary Liquid Systems (In Connection with the
Paper by I.V. Krasovskiy and R.N. Dikaya).

Orig Pub : Ukr. khim. zh., 1955, 21, No 6, 816-821

Abstract : Discussion article. See RZhKhim, 1956, 46333.

Card 1/1

I OFFE, B. V.

USSR/ Chemistry - Book review

Card 1/1 Pub. 116 - 28/29

Authors : Ioffe, B. V.

Title : Dependence of refraction indices upon concentration and the refractometric analysis of binary liquid systems

Periodical : Ukr. khim. zhur. 21/6, 816-821, Dec 1955

Abstract : Presenting a critical review of the book by I. V. Krasovskiy and R. N. Dikaya report on refractometric analysis of solutions, the reviewer points out, among other things, that the explanation that the deviations of refractive indices from additiveness as a function of composition expressed in mole/fractions is due to the formation of primary complexes of component molecules, is erroneous. Corrections to many of the other errors in the report are included. Nine references: 7 USSR, 1 U.S.A. and 1 Germ. (1903-1955). Tables.

Institution : Leningrad State University, Chem. Inst.

Submitted : April 4, 1955

IOFFE, B. V.

2

✓ Molecular refraction of carboxamides. B. V. Ioffe,
J. Gen. Chem. U.S.S.R. 25, 867-72 (1955) (Engl. transla-
tion).—See C.A. 49, 13717c.
B. M. R.

IOFFE, B.V.

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium.
Physicochemical analysis. Phase transitions .

B-8

Abs Jour : Referat Zhur- Khimiya, No 4, 1954, 11171

Author : Ioffe B.V.

Title : Negative isotherms of Refraction Indices in Systems with Chemical Interaction of the Components

Orig Pub : Zh. fiz. khimi, 1955, 29, No 5, 877-882

Abstract : To confirm propositions set forth in previous papers (RZhKhim, 1956, 46334, 71150), a study was made of refraction indices in systems of aniline (I) and m-cresol (II), isovaleric (III) and formic (IV) acid. Confirmed was the existence of "refractive indices-composition" (volumetric) isotherms having negative deviation from additive properties ($\Delta n(V) < 0$), notwithstanding chemical interaction of components. In system I - IV isotherms of refraction indices have different form and sign (from + to -) depending on wave length of light, which the author attributes to the fact that sometimes change in volume and change of absorption bands, which take place on interaction of components, produce an antibathic effect and therefore $\Delta n(V)$ can become small and positive or even negative.

Card 1/2

Leningrad State Univ.

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium.
Physicochemical analysis. Phase transitions

B-8

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11171

Thus in systems $|\Delta n(v)| < 0.007-0.008$ the sign of $\Delta n(v)$ can provide no indication as to behavior of components, $\Delta n(v) > 0.008$ indicates chemical interaction of components.

Card 2/2

IOFFE, Boris Veniaminovich; RAUTIAN, G.W., doktor tekhnicheskikh nauk, redaktor;
SHCHERBAKOVA, G.A., redaktor; LANOVA, A.V., tekhnicheskii redaktor.

[Manual on refractometry for chemists] Rukovodstvo po refraktometrii
dlia khimikov. [Leningrad] Izd-vo Leningradskogo univ., 1956. 209 p.
(Refractometry)

, LOFFE, B.V.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1404
AUTHOR RAUTIAN, G.N., JOFFE, B.W.
TITLE On the Article by F. NEČAJ "Concerning the Possibility of Measuring the Refraction Index of Crystalline Bodies on the Refractometer, Type Abbe".
PERIODICAL Žurn. techn. fis, 26, fasc. 9, 2129-2130 (1956)
Issued: 10 / 1956 reviewed: 10 / 1956

The article by F. NEČAJ on measuring refraction indices of crystals on the "Abbe type" refractometer is surprising because of the fact that it is contradictory to the generally known principles of refractometry which can be proved in an elementary manner.

On page 437 (Žurn. techn. fis, 26) the authors make the statement that "any" liquid may serve as a liquid layer between the prism of the Abbe-refractometer and the sample to be investigated, "as long as it moistens the crystal". The elementary truth, however, which is always repeated in instructions of use issued together with this apparatus is that the refraction index of the liquid intermediary layer must be greater than that of the sample to be investigated. Consequently, it is not possible to use just "any" liquid, nor is it possible that this layer consists merely of air (if the sample is placed upon the prism in a "dry" condition), which fact the authors shortly mentioned on page 437.

It is incomprehensible how it was possible for the authors, on the Abbe-refractometer, to find the refraction indices (from 1,52 to 1,56) of the substances enumerated in table 1 if water was used as an intermediary layer ($n_D = 1.333$).

It is quite impossible that the authors were able to see boundaries which actually corresponded to the limiting angle for glass and for the mica which were laid one

√ Zurn.techn.fis, 26, fasc.9, 2129-2130 (1956) CARD 2 / 2

PA - 1404

on top of the other and were moistened with water "for the purpose of establishing contact". The authors alleged that the refraction indices of the crystalline fragments, i.e. bodies of irregular shape, are measurable "by pouring a liquid on to the prisms of the refractometer where the crystal is mounted for the purpose of establishing an optical contact". By studying the text of the article, however, we find that the authors' statement is without foundation, because they carried out their experiments with small plates having a smooth surface and not with irregularly shaped fragments. The fact that the Abbe-refractometer is useless for work carried out with anisotropic crystals is not due to the "dispersion of light on the boundaries where contact between prisms and crystals exists", as the authors vaguely alleged (p.436), but to the difficulties arising from the precise orientation of the crystal with respect to the surface of the refraction rays, the latter being necessary when working with anisotropic bodies by the method of the limiting angle. It is surprising that, when investigating the question as to measuring the refraction index of crystals, F.NEČAJ completely ignores the anisotropy of the refraction of light in crystals. For such typically anisotropic bodies as gypsum, ice, acetamide, etc., the authors mention only one refraction index although it is generally known that anisotropic crystals are characterized by two or three different indices. As to the crystallization of the substance on the prism of the refractometer, which is suggested by the authors, it must be said that this method has already been known for a long time as being applicable in the case of easily melting isotropic bodies, but for anisotropic bodies it is obviously useless because of the indefinite orientation of the crystal obtained in the polycrystalline plate if it is intended to measure with some degree of accuracy.

INSTITUTION:

LOFFE, B.V.

The use of thermometry for studying the interaction of electrolytes. The authors have studied the thermodynamics of the interaction of electrolytes with the surface of a metal electrode. It is shown that the thermodynamic functions of the electrolyte can be used to prove the existence of a double layer of ions near the electrode surface. The authors also discuss the possibility of using thermometry to study the interaction of electrolytes with the surface of a metal electrode.

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APPROVED FOR RELEASE: 08/10/2001

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IOFFE, B.V.

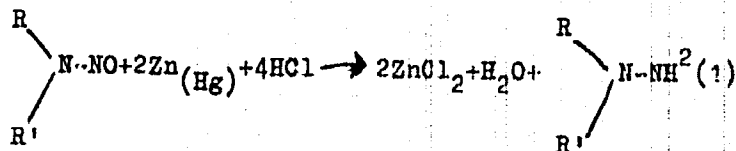
Design of thermostatic devices used for liquids on IRF-23 Pulfrich
refractometers. Opt.-mekh.prom. 25 no.1:28-30 Ja '58. (MIRA 11:7)
(Refractometers)

AUTHOR: Ioffe, B. V.

79-28-5-40/69

TITLE: ~~Synthesis of Asymmetrical Dialkylhydrazines~~
(Sintez nesimmetrichnykh dialkilgidrazinov)PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5,
pp. 1296-1302 (USSR)

ABSTRACT: In the present work a method for the synthesis of asymmetrical dialkylhydrazines is suggested which differs from earlier described ones by its simplicity and the small amount of reagents in good yields of hydrazines. This method is based on the reduction of nitrosoamines with amalgamated zinc in hydrochloric acid medium:



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Because of the high super-tension of hydrogen in pure amalgamated zinc no hydrogen formations takes place so

Synthesis of Asymmetrical Dialkylhydrazines

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that the reduction proceeds so quickly and so energetically that the reaction mixture must be cooled with ice. Compared to the method by Fischer (References 1-4) the consumption of zinc can be decreased to one tenth. As a side reaction a hydrolytic splitting of the nitrosoamines into salts of the secondary amines and nitrous acid (reaction 2) takes place which is then further reduced to ammonia, nitrogen oxide (nitrous oxide). From table 1 can be seen that the role of the side reaction (2) becomes more noticeable with the increase of the hydrocarbon radicals. For the synthesis of the hydrazines with aromatic radicals this above-mentioned method does not apply, as was shown by the experiments. This way the following derivatives of the asymmetrical dimethylhydrazine were synthesized: diethylhydrazine, di-n-propylhydrazine, di-n-butylhydrazine, methyl-n-butylhydrazine, methylisobutylhydrazine, methylisopropylhydrazine and methyl-n-propylhydrazine. The last three have hitherto been unknown. Thus the yield of hydrazines decreases with the increase of the alkyl radicals.

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Synthesis of Asymmetrical Dialkylhydrazines

79-28.5-4a/69

with the yield of secondary products--secondary amines--
increasing at the same time.

There are 3 tables and 10 references, 4 of which are
Soviet.

ASSOCIATION: Khimicheskiy institut Leningradskogo gosudarstvennogo
universiteta (Chemical Institute of Leningrad State University)

SUBMITTED: April 6, 1957

Card 3/3

5(3)

SOV/79-29-9-76/76

AUTHORS: Ioffe, B. V., Poroshin, L. Ye.

TITLE: Synthesis of Tertiary Aliphatic Hydrazines by Means of Mixed Organo-magnesium Compounds

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 9, pp 3154 - 3156 (USSR)

ABSTRACT: Only two cases of Grignard reaction with dialkyl hydrazones are known: the reaction of methyl-magnesium bromide with dimethyl- and diethyl hydrazone of formaldehyde in anisole under the formation of dimethyl-ethyl (Ref 1) and triethyl hydrazine (Ref 2). For the purpose of applying this Grignard reaction also to the synthesis of higher tertiary hydrazones, the authors investigated the reaction of methyl-magnesium iodide, ethyl-magnesium bromide, propyl-magnesium chloride, butyl-magnesium bromide with dialkyl hydrazones of formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, and isobutyraldehyde. 0.8 mol dialkyl hydrazone in diisoamyl ether was added to the Grignard compound, which had been produced from 1 mol alkyl halide in diisoamyl ether. The mixture was heated in nearly boiling water bath within two hours. The reactant was

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Synthesis of Tertiary Aliphatic Hydrazines by Means
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then poured into a mixture of ice and concentrated hydrochloric acid. The aqueous layer was separated, then half of it evaporated, and after the addition of caustic soda solution it was overdistilled until the volatile bases were completely separated. The distillate was salted out with solid alkali hydroxide and fractionated. In all cases the main product or one of them consisted of tertiary hydrazines (Table). Up to the present, only two (1 and 14) of the 14 synthesized trialkyl hydrazines have been known. In untightly sealed vessels they are converted into the corresponding hydrazones with equal hydrocarbon skeleton through the oxidation of atmospheric oxygen. The yields of hydrazines decrease in the transition from dimethyl- to diethyl- and dipropyl hydrazones, they are, however, still sufficient if the alkyl radicals are not too compound so that the Grignard reaction with dialkyl hydrazones can be considered a generally applicable method of synthesizing tertiary aliphatic hydrazines. The by-products of this reaction are amines. The diethyl- and dipropyl hydrazones of formaldehyde tend to form great quantities of secondary amines in a slight cleavage of the N-N-bond. There are 1 table and

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Synthesis of Tertiary Aliphatic Hydrazines by Means
of Mixed Organo-magnesium Compounds

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2 references.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State
University)

SUBMITTED: June 23, 1959

Card 3/3