L 17141-65
ACCESSION NR: AP5000551

mixing. The sublimated phosphors were prepared by evaporating the initial compounds in vacuum (5×10^{-5} mm Hg) at 150--350° for 10 minutes, the details being described elsewhere (Izv AN MSSR No. 1, 1963). The absorption spectra were measured with an SF-4 spectrophotometer using hydrogen and incandescent lamps. The method used in the 350--[illegible] nm region was that described by N A Vasilenko (Uch zap KhGU, Tr fiz otd v 7, [illegible] 1958). The radiation spectra were measured photoelectrically using an ISP-51 spectrograph, with the excitation by the 365 nm line. The tests were made with PbI_2 concentrations of 1, 25, and 50%. The results show that at room temperature the glow of the mixed CdI_2-PbI_2 phosphors is due to the lead ions, the environment of which contains oxygen in addition to the anion. There are at least two or more luminescent centers, differing in their absorption and radiation spectra and in the luminescence yield. The principal centers are produced at low lead contents and include one lead ion. The secondary centers are produced only when the lead content is high and probably include two lead ions in a row. The concentration quenching observed at large PbI_2 contents is due to the [illegible] sections in the cation layers. The types of centers are essentially the same [illegible] the method of preparation [illegible] slight differences [illegible] induced by the possible formation of several [illegible] modifications of the crystal-

Card 2/3

L 17141-65
ACCESSION NR: AP5000551

0

...e structure in a single compound. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 20Jan64 ENCL: 00

SUB CODE: OP, IC NR REF SOV: 013 OTHER: 004

Card 3/3

SOURCE: Acta physica polonica, v. 26, no. 3-4, 1964, 455-468

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000929710(

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000929710(

L 29665-65

ACCESSION NR: AP5001289

Compound and solvent	Quenching material	quench

L 58305-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG
ACCESSION NR: AP5010039 UR/0368/65/002/002/0115/0125

AUTHOR: Levshin, V. L.; Fridman, S. A.; Chikhacheva, V. A.; [illegible]enko, V. V.

TITLE: Rare earth elements as activators of zinc sulfide cathode luminors

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 2, 1965, [illegible]

TOPIC TAGS: zinc sulfide optical material, cathode luminescence, rare earth activator, transition frequency, integral luminescence yield, emission spectrum

ABSTRACT: This is a continuation of earlier studies (Izv. AN SSSR [illegible], 392, 1961 and others) of the interaction between [illegible] produce in [illegible] luminors prepared under controlled conditions and suitable for [illegible]

Card 1/4

L 58305-65
ACCESSION NR: AP5010039

comparison luminors, in order to ascertain the effect exerted on the

L 54505-65

ACCESSION NR: AP5010039

ASSOCIATION: None

SUBMITTED: 23Jun64 ENCL: 01 SUB CODE: OP, SS

NR REF SOV: 015 OTHER: 010

Card 3/4

L 14105-65

ACCESSION NR: AP5010039

ENCLOSURE: 01

Table 1. Relative energy yield of ZnS-TR phosphor luminescence

Element	Atmosphere		Element	Atmosphere	
	H_2S	NH_3		H_2S	NH_3
Ce^{4+}	7500	8040	Tb^{3+}	64	--
Pr^{3+}	864	312	Dy^{3+}	600	--
Nd^{3+}	870	800	Ho^{3+}	22	34
Sm^{3+}	403		Er^{3+}	222	-
Eu^{3+}	111	489	Tm^{3+}	7300	6400

Card 4/4

L 15883-66 EWT(1)/EWT(m)/T/EWP(t) IJP(c) JD/AT

ACC NR: AP6001481 SOURCE CODE: UR/0368/65/003/006/0504/0509

AUTHOR: Goryunov, V. A.; Levshin, V. L.

ORG: None

54
52
B

TITLE: Thermostimulated and photostimulated ZnS-Cu single crystal conductivity

SOURCE: Zhurnal prikladnoy spektroskopii, v. 3, no. 6, 1965, 504-509

TOPIC TAGS: photoconductivity, single crystal, crystal phosphor, luminescent crystal

ABSTRACT: Photoconductivity studies in phosphor crystals can contribute to the understanding of luminescence. Consequently, the authors studied the thermostimulated and photostimulated conductivity in ZnS phosphors. A detailed description of the experimental setup is given and the data are discussed. Tests showed that IF 1.2 μm radiation releases electrons from all trapping levels (-155, -133, and 68C) whereas λ = 2.4 and 3.15 μm light acts only on the -155C level. The number of electrons released by the 3.15 and 2.4 μm lines is close to the number of thermally released electrons from the same -155C level; this points to the insignificance or even complete absence of quenching of photoconductivity during the electron release from the given level system. The opposite seems to be true

Card 1/2 UDC: 535.37

L 15883-66

ACC NR: AP6001481

2

in the case of the 68C level where the photo and thermal electron yields differ substantially. The photostimulated conductivity also shows a strong temperature dependence; the 1.2 μ m induced conductivity flash intensity decreases with temperature while the inertia of the same effect becomes larger. Authors thank E. S. Bespaiova for the samples and K. Arun for help during the Hall constant determination. Orig. art. has: 4 figures.

SUB CODE: 20 / SUBM DATE: 18Feb65 / ORIG REF: 006 / OTH REF: 007

Card 2/2

L 24071-65 EWT(1)/EWG(m)/EWP(t) IJP(c)

ACCESSION NR: AP5005051 S/0051/65/018/002/0328/0330

AUTHOR: Levshin, V. L.; Tunitskaya, V. F.

TITLE: On some luminescence characteristics of ZnS-Mn phosphors in the 15--77K region

SOURCE: Optika i spektroskopiya, v. 18, no. 2, 1965, 328-330

TOPIC TAGS: luminescence, thermoluminescence, zinc sulfide optic material, low temperature research

ABSTRACT: The authors have extended their earlier researches on the luminescent characteristics of ZnS-Mn phosphors to lower temperatures (Opt. i spektr., v. 8, [illegible] and v. 9, [illegible]). The results have shown that the emission spectra [illegible] in the same way as they [illegible] the most significant results were obtained in the study of the capture levels and in the development of thermoluminescence at 77K. The test procedure is briefly described. The

Card 1/2

L 34871-65
ACCESSION NR: AP5005051

results have shown that the maximum of the first thermoluminescence peak shifts [illegible] the lower temperatures, and the previously observed peak at 100-120K does [illegible] exist at all. If account is taken of the presence of a large number of shal- [illegible] this peak should really be replaced by a quasi-continuous system of [illegible] hold for all other [illegible] the phosphorescence. Orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 27Mar64 ENCL: 00 SUB CODE: OP

NO REF SOV: 003 OTHER: [illegible]

2/2

L 13652-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) WG/JD/JG

ACC NR: AP6001665 SOURCE CODE: UR/0051/65/019/006/0992/0993

81
77
B

AUTHOR: Levshin, V. L.

ORG: none

21,44,55

TITLE: Fourteenth conference on luminescence

SOURCE: Optika i spektroskopiya, v. 19, no. 6, 1965, 992-993

TOPIC TAGS: crystal phosphor, luminescence, optic conference, luminescent crystal, electroluminescence, alkalai halide, recombination luminescence, photoconductivity, electron trapping, color center, laser beam, laser effect, IR radiation, rare earth element

ABSTRACT: The Fourteenth Conference on Luminescence was held 16-22 September 1965 in Riga, under the joint sponsorship of the Scientific Council on Luminescence, the Institute of Physics of the Latvian Academy of Sciences, and the Latvian State University. The kinetics of luminescence of crystal phosphors, mostly alkali-halide phosphors, was the general subject of the 220 papers presented at the conference. Studies of the alkali-halide phosphors included such topics as the recombination mechanism and activation of luminescence, multiplication of electron excitation (photons) in ionic crystals, migration of carriers under infrared excitation at low temperature, polarization of luminescence in thallium activated mixed KI-KBr crystals, and γ- and x-ray lumines-

Card 1/3

L 13652-66

ACC NR: AP6001665

cence. Low-temperature emission spectra of polycrystalline $A^{II}B^{VI}$—$A^{II}B^{VI}$ compounds and pure CdSe and CdS crystals, infrared stimulated emission and luminescence quenching in ZnS phosphors, laser-beam excited luminescence and photoconductivity in ZnS crystals were the topics of a series of studies on $A^{II}B^{VI}$ phosphors. Intensification of the infrared stimulated flash luminescence in ZnS phosphors was achieved by preliminary application of an electric field. A large number of papers were devoted to the study of electroluminescence. In one of these studies, the threshold voltage applied to CdS thin films was found to be smaller than the quantum energy emitted. The effect of preparation procedure on formation of the electron traps was studied in ZnO, ZnS, and ionic crystal phosphors. Formation of color centers of electronic nature was the subject of study on MeF_2 [presumably, Me is an alkaline-earth metal] crystals, activated with rare earth elements. Papers were presented on the spectra of the rare-earth elements in mixed yttrium, indium, and scandium oxides. The kinetics of photoluminescence was also studied in SiC-N phosphor which was found sensitive to infrared radiation up to lambda = 4.5 m mu. Aluminum nitride activated with Mn, Co, Cr, or a rare-earth element was singled out as a new photo-, cathodo-, and electroluminescent phosphor. The role of electron and hole recombination in luminescence of alkali-halide crystals, the nature of trapping

Card 2/3

centers in various crystal phosphors, chemistry of crystal phosphors, and mechanism of electroluminescence were the topics of the general discussions which were organized for the first time at this conference. [ATD PRESS: 4166]

SUB CODE: 20 / SUBM DATE: none

jw

Card 3/3

L 43939-65 EWT(1) Pi-4 IJP(c)

ACCESSION NR: AP5008503 S/0048/65/029/003/0346/0354

AUTHOR: Levshin, V.L.

TITLE: Features of cathodoluminescence due to the electronic nature of the excitation /Report, 12th Conference on Luminescence held in L'vov, 30 Jan-5 Feb 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.29, no.3, 1965, 346-354

TOPIC TAGS: luminescence, cathodoluminescence, photoluminescence

ABSTRACT: This paper presents a general discussion of those features of cathodoluminescence that distinguish it from photoluminescence, with a few illustrative examples taken from the literature. The subjects discussed include: reflection and scattering of primary and secondary electrons; Stokes losses (energy loss by nonradiative transitions during thermalization of the electrons and holes, and the emission of photons with less energy than that of the thermalized pair); internal and external quenching (nonradiative recombination of the thermalized electrons and holes; these processes are due to quenching centers in the lattice and are very different from their analogs in photoluminescence); saturation effects due to the high excitation density; and decay of the luminescence. It is concluded that phot-

Card 1/2

L 43939-65

ACCESSION NR: AP5009503

luminescence is the more efficient process for transforming the energy of the incident beam into luminescence, but that, owing to the low efficiency of light sources, the overall transformation of electrical energy into luminescence radiation is more efficiently performed by cathodoluminescence. Cathodoluminescence has the further advantage that in employing it higher excitation densities can be realized than are possible with conventional light sources. Orig.art.has: 4 formulas, 3 figures and 3 tables.

ASSOCIATION: Fizicheskiy institut im.P.N.Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, USSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: OP,SS

NR REF SOV: 003 OTHER: 003

Levshin, V.L.; Fridman, S.A.; Chikhachova, V.A.; Shchayenko, V.V.

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 3, 1965, 500-502

TOPIC TAGS: cathodoluminescence, zinc compound, sulfur compound, rare earth element, cadmium compound

The cathodoluminescence spectra were investigated for ZnS luminophores

ACCESSION NR: AP5009532

dopants can be used to obtain luminescence in narrow spectral regions in the green, yellow, or red. The decay of the luminescence was found to be complex and rapid. Curves are presented for four of the luminophors, for those the luminescence intensity decayed to 1% of its initial value in from 1 to 10 millisec. The luminophors prepared in an H_2 atmosphere exhibited some luminescence lines not present in those prepared in H_2S; they were also some 20% brighter and had sharper emission band edges than the materials perpared in H_2S. The addition of CdS to ZnS:Ho luminophors altered the relative intensities of the several luminescence bands but did not introduce any new ones. The cathodoluminescence intensity was maximum for [illegible], and a second smaller maximum (due principally to emission in the red) occurred at 48% CdS. Orig. art. has [illegible] figure and 2 tables.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: OP, SS

NR REF SOV: 002 OTHER: 000

L 10968-65 EWT(1)/EWT(m)/EWP(t)/EWP(b) Pi-4 IJP(c) JD/JG

ACCESSION NR: AP5009533 S/0048/65/029/003/0503/0506

AUTHOR: Voronov, Yu.V.; Levshin, V.L.

TITLE: Interaction of Sm, Eu, Tm, and Ag activators in the cathodoluminescence of [illegible] phosphors [Report, 12th Conference on Luminescence held in L'vov [illegible] Jan-5 Feb 1964]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 3, 1965, 503-506

TOPIC TAGS: cathodoluminescence, zinc compound, sulfur compound, rare earth, silver, activator interaction

ABSTRACT: The cathodoluminescence spectra of doubly activated ZnS phosphors were [illegible] at 133 and 293°K in order to investigate the effects of activator inter- [illegible] In every case the primary activator was [illegible], and the secondary activator was [illegible]. Rare earth activators were chosen for investigation because they [illegible] Rare earth activators [illegible] be readily [illegible] [illegible] and were [illegible] Obtained cathodoluminescence spectra are presented [illegible]

Card 1/2

L 49268-65
ACCESSION NR: AP5009533

The addition of the second activator was found to cause a redistribution of intensity in the luminescence spectrum at both temperatures and partially to quench the luminescence at the higher temperature. The details of the spectra are discussed at some length, and it is concluded that the high temperature quenching involves an electron-hole mechanism, and the redistribution of intensith is connected with some [illegible] resonance interaction between the ions of the two activators and with the [illegible] of complex centers. Orig. art. has: 3 figures and 1 table

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: OP, SS

NR REF SOV: 012 OTHER: 000

Card 2/2

LEVSHIN, V.L.

Characteristics of the various types of energy migration in solutions. Izv. AN SSSR. Ser. fiz. 29 no.8:1260-1265 '65. (MIRA 18:8)

L 58946-65 EWT(1) Pi-4 IJP(c)

ACCESSION NR: AP5010391 UR/0368/65/002/003/0283/0284

535.37(047)

AUTHOR: Levshin, V. L.

TITLE: 13th conference on luminescence (organic luminors and molecular luminescence)

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 3, 1965, 283-284

TOPIC TAGS: luminescence, organic luminor, molecular luminescence, scientific conference

ABSTRACT: The 13th conference on luminescence, devoted to the investigation of organic luminors and molecular luminescence, was held in Khar'kov on 25 June - 1 July 1964, and was attended by delegates from 108 organizations. Approximately 250 papers were delivered. The main topics were synthesis and properties of new organic luminors, [illegible] of luminors in the aggregate state, and use [illegible] various [illegible]

Card 1/4

L 58946-65
ACCESSION NR: AP5010391

19

[illegible] was reported by B. G. Brudzl, B. M. Krasovitskiy, V. V. [illegible] of molecules [illegible]

[illegible] was reported [illegible] M. [illegible] [illegible] was [illegible] molecules and matter in vari[illegible] was pai[illegible] [illegible], A. N. Pavlyu[illegible] [illegible]

effect with the aid of polari[illegible] symmetry of spectra Many papers were devoted to spectral variations: [illegible] spectra of solu- [illegible] E. Lutchenko et al.), [illegible] of E. V. Shpolskiy [illegible] paraffin [illegible]

vich, V. B. Tevstinov, [illegible] the solvent and the connection was paid to the influence [illegible] emission spectrum [illegible] excimers in [illegible], B. Bakrenlyev, [illegible] and the luminescence [illegible] paraffin quenching [illegible]

[illegible] 2/4

ACCESSION NR: AP5010391

of vapors in gases (N. A. Borisevich et al.). Threshold values for [illegible] of laser systems and luminescence properties under inverse [illegible]

[illegible] intokh et al. Rapid analysis and production of very [illegible] compounds was the subject of several papers. Luminescent flaw detection, by means of luminescent salts was discussed by V. K. Matveyev representing Institut organicheskoy khimii (Institute of [illegible] Chemistry) and was [illegible]

ASSOCIATION: None

ACCESSION NR: AP5010391

SUBMITTED:	00	ENCL:	00	SUB CODE:	OP
NR REF SOV:	00	OTHER:	00		

L 01278-66 EWT(1) IJP(c)

ACCESSION NR: AP5020778 UR/0048/65/029/008/1258/1259

AUTHOR: Levshin, V. L. 44,55

TITLE: Opening address /Report, 13th Conference on Luminescence held in Khar'kov 25 June to 1 July 1964/ 44,55

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1258-1259

TOPIC TAGS: luminescence, luminescent material, polarized luminescence, luminescence analysis, scintillator, rare earth element, laser optic material, chemiluminescence, physics conference

ABSTRACT: The speaker announces that the Thirteenth Conference on Luminescence will be devoted to organic luminophors and molecular luminescence, and that it will differ from previous conferences in that great attention will be given to the synthesis and application of new luminophors. The speaker then mentions a number of areas in the field of luminescence in which recent progress has been made and which contribute to the character of the conference. These include: the construction of large laboratories for the synthesis and investigation of organic luminophors; technical applications of luminescence, including the devel-

Card 1/3

L 01278-66

ACCESSION NR: AP5020778

6

opment of luminescent bleaches and dyes and organic scintillators; the use of luminescence in chemical analysis and its applications to biological, medical, geological, and other problems and to the accurate determination of rare earths; the application of luminescence to microscopy; the theoretical investigation of molecular luminescence, including study of energy transfer between luminescence centers in biological preparations as well as in organic and inorganic materials; the study of metastable molecular states in relation to the population inversion required for laser action; the investigation of molecular crystals by polarized luminescence methods; the investigation of rare earth elements in complex compounds, particularly in compounds of biological interest; the investigation of luminescent vapors; the investigation of chemiluminescence in the light of current knowledge concerning the processes involved in other methods of excitation; and other areas. The speaker finally thanks Provost Vladimir Feodorovich Lavrushin of Khar'kov State University for the opportunity of holding the Conference there, opens the Conference in the name of the Organizing Committee, and wishes it success.

Card 2/3

Card 3/3

L 17898-66

ACCESSION NR: AP5020779 UR/0048/65/029/008/1260/1265

29
26
B

AUTHOR: Levshin, V. L. 44,55

TITLE: On the characteristic features of different forms of energy migration in solutions [Report, 13th Conference on Luminescence held in Khar'kov 25 June to 1 July 1964]

44,55

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1260-1265

TOPIC TAGS: luminescence, solution property, excitation energy, energy transfer, luminescence quenching

21,44,55

ABSTRACT: The transfer of energy between luminescence and absorption centers in luminescent solutions is discussed in general terms. Two principal mechanisms of energy transfer are distinguished; inductive-resonance transfer, which occurs in the presence of a frequency overlap of the emission spectrum of the donor with the absorption spectrum of the acceptor, is effective over distances of 50 A and more, and can lead either to luminescence or quenching; and exchange transfer, wich involves overlap of the donor and acceptor wave functions, has a much shorter range, and usually leads to quenching. The effect of diffusion of the donor

Card 1/3

L 17898-66

ACCESSION NR.: AP502779

showing that diffusion and energy migration amoung the donor molecules before the transfer were not significant. The approximately linear increase of the energy transfer with acceptor concentration indicates that the quenching spheres of the acceptors did not significantly overlap at the concentrations investigated. "The author expresses his gratitude to V. V. Kirsanova for performing the measurements".

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: GC, OP

NO REF SOV: 020 OTHER: 009

jo

Card 3/3

LEVSHIN, V.L., doktor fiz.-matem.nauk

Kinetics of the luminescence of crystal phosphors; conference in Riga. Vest. AN SSSR 35 no.12:102-103 D '65. (MIRA 19:1)

L 22517-66 EWT(1)/EWT(m)/T/EWP(t) IJP(c) JD/AT

ACC NR: AP6010450 SOURCE CODE: UR/0368/66/004/003/0256/0260

AUTHOR: Goryunov, V. A.; Levshin, V. L.

ORG: none

87
B

TITLE: Investigation of electron redistribution over the trapping levels in excited ZnS single crystals exposed to infrared rays

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 3, 1966, 256-260

TOPIC TAGS: electron distribution, electron capture, single crystal, photoconductivity, heat conductivity, electron trapping, electron mobility, IR radiation, zinc sulfide

ABSTRACT: The paper deals with the application of thermal and photostimulated conductivity curves to the study of the migration of electrons exposed to infrared rays of 1.2 μ from deeper trapping levels to more shallow levels. An estimation was made of the changes in the repeated trapping effect on the value of stimulated photoconductivity with decreasing temperature was carried out. Orig. art. has: 4 figures. [Based on author's abstract] [NT]

SUB CODE: 20/ SUBM DATE: 06May65/ ORIG REF: 008/ OTH REF: 003/

Card 1/1 UDC: 537.53

L 26497-66 EWT(1)/EWT(m)/EWP(t) IJP(c) RM/JD

ACC NR: AP6013055 SOURCE CODE: UR/0048/66/030/004/0573/0580

AUTHOR: Arapova,E.Ya.; Levshin,V.L.; Mitrofanova,N.V.; Reshetina,T.S.; Tunitskaya,V.F.; Fridman,S.A.; Shchayenko,V.V.

ORG: Physical Institute im. P.N.Lebedev, Academy of Sciences SSSR (Fizicheskiy institut, Akademiya nauk SSSR)

58
55
B

TITLE: Luminescence mechanism and the band system of ZnS:Fe luminophors /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 573-580

TOPIC TAGS: crystal phosphor, luminescence, zinc sulfide, thermoluminescence, IR sensor

ABSTRACT: Although iron-activated zinc sulfide phosphors have been known since 1945, the nature of their luminescence mechanism is still obscure. The writers developed a synthesis procedure for ZnS:Fe phosphors in both powdered and sublimate form. The initial ZnS, containing less than 10^{-7} g/g iron, was mixed with the desired amount of Fe (none to 3×10^{-4} g/g) and heated at 1200° C for 90 min in a stream of HCl. Both the powdered and sublimated specimens proved to be sensitive to infrared. ZnS without Fe has one luminescence band peaking at 450 mμ; doping with Fe gives rise to another band peaking at 630 mμ; the intensity of this red band increases with the dopant concentration, while the blue band gradually weakens. Figures in the text show the lumin-

Card 1/2

L 26497-66

ACC NR: AP6013055

escence spectra at different Fe concentrations and the dependences of the intensities of the blue and red bands on the Fe content. Glow curves for the blue and red regions are also shown. Evaluations are made of the trap depth. The glow curve data are consistent with the results obtained in observing IR-stimulated flashes. A band scheme with two levels near the bottom of the conduction band and two levels or groups of levels near the valence band is proposed. Data on the infrared response are presented and discussed. It is suggested that the trapping levels responsible for IR-stimulated light flash may differ from the trapping levels responsible for the thermostimulated peak at 155°, even though both sets of levels are located at about the same depth, (0.06-0.07 eV). Aside from stimulation, infrared also proved to have a quenching effect, particularly in a certain frequency range. The authors are grateful to Z. M. Bruk, V. A. Minayeva and T. F. Filin for assistance in the work. Orig. art. has 9 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 008/ OTH REF: 002

Card 2/2

L 28324-66 EWT(m)/ETC(f)/EWG(m)/EWP(t)/ETI IJP(c) RDW/JD

ACC NR: AP6013089 SOURCE CODE: UR/0048/66/030/004/0713/0715

39
37
B

AUTHOR: Levshin, V.L.; Pirinchiyeva, R.K.

ORG: Physics Department, Moscow State University im. M.V.Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Investigation of the luminescence spectra of Er^{3+} in mixed Y_2O_3, In_2O_3 and Sc_2O_3 crystals /Report, Fourteenth Conference on Luminescence held in Riga 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 713-715

TOPIC TAGS: luminescence spectrum, mixed crystal, erbium, yttrium compound, indium compound, scandium compound

ABSTRACT: The work was undertaken in view of the fact that for studying luminescence centers and the factors that affect the luminescence spectrum it is of value to investigate the influence of the intracrystal fields acting in the vicinity of the centers. The intracrystal fields can be varied by introducing the activator into solid solutions with the same type of lattice but different values of the lattice constant. Specifically, the present work was devoted to detailed investigation of the effect of changes of the intracrystal field on the luminescence of Er^{3+} ions in mixed I_2O_3-In_2O_3 and Y_2O_3-Sc_2O_3 crystals. The spectrum of Er^{3+} in Y_2O_3 was investigated earlier by the

Card 1/2

L 28324-66

ACC NR: AP6013089

2

authors (Optika i spektroskopiya, In press, 1966) and was fully interpreted by P. Kislink, W.F.Krunke and J.B.Gruber (J.Chem.Phys., 40, 3606, 1964). Yttrium, indium and scandium oxides all crystallize in a body-centered cubic lattice of the Mn_2O_3 type. The lattice constant of mixed crystals varies in the range of 5% in the Y_2O_3-In_2O_3 system and in the range of 8.2% in the Y_2O_3-Sc_2O_3 system. X-ray diffraction studies indicated that continuous series of solid solutions form in these systems. The shift of the luminescence lines of Er^{3+} and the shifts of the corresponding levels in mixed crystals of the Y_2O_3-Sc_2O_3 system are shown in a figure. Another figure characterizes the variation of the line width of Er^{3+} as a function of the concentration of the second component in the Y_2O_3-Sc_2O_3 and Y_2O_3-In_2O_3 systems. Variation of the component concentration, in addition to shift and broadening of the lines, leads to change of the shape of the lines, i.e., development of strong asymmetry at concentrations of up to 10% of the second component. The number of lines in both the absorption and the luminescence spectrum remains unchanged, which means that under the given experimental conditions in the investigated crystals inversion centers do not disappear and the forbiddenness on the electric dipole transitions from C_{3i} sites is not removed. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 006/ OTH REF: 003

Card 2/2 CC

L 28325-66 EWT(1) IJP(c)

ACC NR: AP6013090 SOURCE CODE: UR/0048/66/030/004/0716/0718

AUTHOR: Kroitoru, S.G.; Levshin, V.L.

ORG: Physics Department, Moscow State University im. m.v.Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Concerning recombination luminescence of laminar phosphors /Report, Fourteenth Conference on Luminescence held in Riga 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 716-718

TOPIC TAGS: recombination luminescence, cadmium compound, crystal phosphor, phosphorescence

ABSTRACT: In earlier studies by A.F.Malysheva (Izv. AN SSSR, Ser. fiz., 18, 685, 1954), F.D.Klement and A.F.Malysheva (Trudy in-ta fiz. i ast. AN EstSSR, 1, 44, 1955), and the present authors (Optika i spektroskopiya, 17, 908, 1964 and Izv. AN MoldSSR, 7, 1963) it was shown that laminar CdI_2-$PbHal_2$ and $CdCl_2$-$PbHal_2$ phosphors emit short-persistence luminescence (fluorescence). However, in working with these luminophors, in addition to the fluorescence, the authors observed a persistent afterglow. Little is known regarding the phosphorescence of laminar phosphors, although E.P.Il'mas (Trudy in-ta fiz. i astron. AN EstSSR, No. 21, 83, 1962) inferred that the luminescence of $CdBr_2$:Pb is recombination emission. The purpose of the present work was to determine the nature of the phosphorescence of laminar phosphors, its properties, and the

Card 1/3

L 28325-66

ACC NR: AP6013090

conditions under which it is excited. The authors investigated the phosphorescence spectra, the glow curves, the variation of the decay with temperature, the dependence of the luminescence intensity on the excitation density of $CdCl_2$-$PbCl_2$ and CdI_2-PbI_2 phosphors. The specimens were prepared in the form of sublimates and powders by the same procedure as described in the references cited above. The present paper gives the results obtained for 99 $CdCl_2$ + 1 $PbCl_2$ phosphor prepared from a melt, followed by quenching. These specimens exhibited the brightest phosphorescence. However, analogous results were obtained for 99 CdI_2 + 1 PbI_2. In contrast to lead activated alkali halide phosphors, the phosphorescence of these phosphors is excited both in the region of the fundamental absorption and in all the activator absorption bands. All the present experiments were carried out with excitation in the absorption bands associated with the lead. Figures in the original text give the normalized luminescence (total emission) and phosphorescence spectra at different temperatures and the glow curves after excitation by light of different wavelengths. It would appear that the same centers are involved in the fluorescence and phosphorescence, but that the energy released incident to recombination is transferred primarily to the green emission centers. The blue luminescence centers at 20°C are already filled to an appreciable degree by electrons from the valence band. Measurements of the luminescence intensity as a function of the excitation density at 20°C showed that this dependence is nonlinear: for the blue band the emission tends to saturation, while for the green band the process of build-up of the luminescence is superlinear. On the basis

Card 2/3

L 28325-66

ACC NR: AP6013090

of analysis of all the experimental data it is concluded that the persistent afterglow is recombination phosphorescence. The same inference holds for CdI_2-PbI_2. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 009/ OTH REF: 000

Card 3/3

L 06253-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6031957 SOURCE CODE: UR/0051/66/021/003/0319/0321

AUTHOR: Levshin, V. L.; Pirinchiyeva, R. K.

ORG: none

35

B

TITLE: Effect of the concentration of Er^{3+} on its spectrum in Y_2O_3

SOURCE: Optika i spektroskopiya, v. 21, no. 3, 1966, 319-321

TOPIC TAGS: erbium, yttrium compound, line intensity, line width, emission spectrum, line broadening

ABSTRACT: The dependence of the line intensities and widths in the emission spectrum of Er^{3+} activator in Y_2O_3 on the Er^{3+} concentration (0.01 to 10 mole %) was studied; in particular, the effect of Er^{3+} concentration on three main groups of lines corresponding to transitions from $^2H_{9/2}$ level to $^4I_{13/2}$ level and from $^2H_{11/2}$ and $^4S_{3/2}$ levels to the ground level $^4I_{15/2}$ was examined at 77 and 295°K. Fig. 1 shows the Er^+ concentration versus the intensities of certain lines belonging to three emission groups: $^2H_{11/2} \rightarrow {}^4I_{15/2}$ - 5196 Å line; $^4S_{3/2} \rightarrow {}^4I_{15/2}$ - 5481.5 and 5511.5 Å lines, and $^2H_{9/2} \rightarrow {}^4I_{13/2}$ - 5625 Å line. Above 1 mole % Er^{3+}, considerable concentration quenching is observed whose course and magnitude is the same for all lines of the $^4S_{3/2} \rightarrow {}^4I_{15/2}$ group. The effect of activator concentration on transitions from different upper levels is different. A change in temperature from 77 to 295°K causes a decrease of line intensities in the $^4S_{3/2} \rightarrow {}^4I_{15/2}$ and $^2H_{11/2} \rightarrow {}^4I_{15/2}$ groups. A ris-

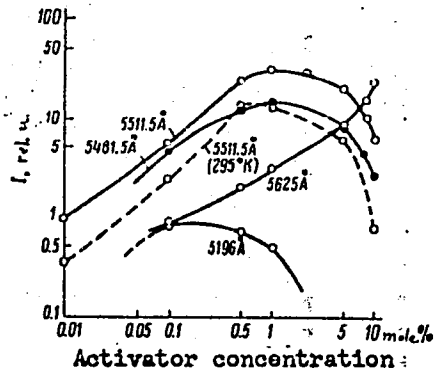
Card 1/2 UDC: 548.0:620.192

L 06253-67

ACC NR: AP6031957

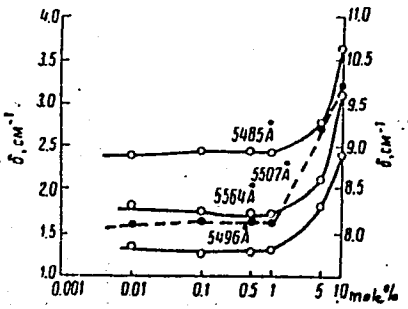
0

ing Er^{3+} concentration changes the half-widths δ of the emission lines. Fig. 2 shows these changes for four lines of the $^4S_{3/3} \rightarrow {}^4I_{15/2}$ group. Up to 1 mole % Er^{3+}, the line width does not change; above this concentration, a broadening which is different for different lines is observed. This broadening is thought to be governed by a resonance mechanism. From the concentration quenching and line broadening data it is concluded that 10 Å is the minimum distance between closest Er^{3+} at which an appreciable interaction between these ions begins to take place. Orig. art. has: 2 figures.



Activator concentration

Fig. 1



Activator concentration

Fig. 2

SUB CODE: 07,20/ SUBM DATE: 21Mar66/ OTH REF: 004

Card 2/2 egh

ACC NR: AP6036161 SOURCE CODE: UR/0188/66/000/005/0017/0021

AUTHOR: Levshin, V. L.; Pirinchiyeva, R. K.; Stankova, A. V.

ORG: Department of Optics (Kafedra optiki)

TITLE: Change in the optical characteristics of phosphors when the ratio of the components of the base is changed

SOURCE: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 5, 1966, 17-21

TOPIC TAGS: luminor, luminescence center, rare earth element, activated crystal, indium compound optic material, yttrium compound, phosphor

ABSTRACT: The authors have investigated the influence of a change in the lattice constant and in the width of the forbidden band on the luminescence centers of rare-earth ions in mixed crystals. For this purpose, a continuous series of $Y_2O_3 \cdot In_2O_3$ solid solutions activated with rare-earth elements, was synthesized. The synthesis procedure is described briefly. The activators were Er, Tu, Tb, and Eu. The width of the forbidden band was determined from the reflection spectra, using as the continuous spectrum source a xenon lamp (DKSSh-200). A spectrophotometer (SF-4) served as the monochromator. The reflection spectra were recorded point by point (with an FEU-18A photomultiplier, a dc amplifier, and a galvanometer) and normalized against chemically pure powdered MgO. With the increasing content of In_2O_3, up to 20 mol.%, the width of the forbidden band decreased rapidly, but with further increase of In_2O_3 concentration

Card 1/2 UDC: 535.373.1

ACC NR: AP6036161

it decreased with decreasing lattice constant more slowly and almost linearly. This behavior is similar to that observed in other solid solutions such as ZnS·CdS. The 2.94 ev width obtained for pure In_2O_3 is apparently lower than the value 3.5 ev quoted in the literature. The reason for the discrepancy is not yet clear. Variation of the lattice constant with increased content of In_2O_3 did not affect qualitatively the luminescence spectra, other than a change in the magnitude of the internal crystalline field (without change in its symmetry) and a slight shift of different lines, as well as a drop in the total intensity. The latter is due to the quenching action of the indium oxide. Orig. art. has: 4 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 09Apr65/ ORIG REF: 003/ OTH REF: 009

Card 2/2

ACC NR: AP7004982 SOURCE CODE: UR/0048/66/030/009/1490/1493

AUTHOR: Arapova,E.Ya.; Voronov,Yu.V.; Levshin,V.L.; Chikhacheva,V.A.; Shchayenko,V.V.

ORG: none

TITLE: Investigation of the ultraviolet luminescence of nonactivated zinc sulfide /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no.9, 1966, 1490-1493

TOPIC TAGS: luminescence, cathodoluminescence, zinc sulfide, luminescence spectrum, uv spectrum, crystal lattice vacancy, interstitial ion, luminescence center

ABSTRACT: The authors have investigated the ultraviolet cathodoluminescence of luminescence-pure ZnS that had been treated for 2 hours at 400° C and for 1.5 hours at 1200° in a stream of H_2S and then heated for 35 minutes at 1100° in evacuated sealed ampoules containing sometimes sulfur, sometimes zinc, and sometimes nothing in addition to the zinc sulfide. The purpose of this treatment was to produce materials in which the ratio of the number of zinc vacancies to the number of sulfur vacancies differed from specimen to specimen. The ultraviolet cathodoluminescence spectra were recorded at 89° K. There were three close peaks at about 335, 338, and 342 mμ, with an average separation of 325 cm^{-1}, which is in agreement with the frequency (349 cm^{-1}) of longitudinal vibrations of the sphalerite lattice. The luminescence was less

Card 1/2

ACC NR: AP7004982

intense when the specimen had been heated in the presence of either zinc or sulfur than when it had not. The results are regarded as supporting Williams' hypothesis that the structure of the luminescence band is due to the presence of dipole pairs of Zn and S vacancies. The intensity of the ultraviolet luminescence was very temperature dependent, decreasing by a factor of 1000 when the temperature was raised from 89 to 396° K. The luminescence decayed very rapidly following a complex hyperbolic law and decreasing in intensity by a factor of 1000 in 10 microsec. It is concluded that the centers responsible for this luminescence are donor-acceptor pairs. In addition to the luminescence discussed above, the specimens containing an excess of sulfur showed a second much weaker luminescence band at 395 mμ; this luminescence is ascribed to recombination of electrons and holes trapped at centers formed by zinc vacancies or interstitial sulfur ions. Results obtained with zinc sulfide heated in H_2S, NH_3, and H_2S + HCl atmospheres are presented very briefly. The specimen that contained chlorine had only a single strong luminescence band at 440 mμ. Orig. art. has: 4 figures and 1 table.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 005 OTH REF: 007

Card 2/2

ACC NR: AP7004983 (A) SOURCE CODE: UR/0048/66/030/009/1494/1499

AUTHOR: Levshin,V.L.; Fridman,S.A.: Chikhacheva,V.A.; Shchayenko,V.V.

ORG: none

TITLE: Investigation of the energy transfer from a ZnS host lattice to a rare earth activator /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no.9, 1966, 1494-1499

TOPIC TAGS: luminescence, zinc sulfide, rare earth element, luminescence center, luminescence quenching, luminescence spectrum

ABSTRACT: The authors investigated the luminescence of unactivated, holmium-activated and samarium-activated ZnS phosphors containing high and low concentrations of the blue luminescence centers in order to elucidate the role of the blue centers in the excitation of rare earth activator centers in ZnS phosphors, and in particular, to determine whether the extreme view that the rare earth centers can be excited only through the mediacy of the blue luminescence centers is tenable. Specimens with different concentrations of the blue centers were obtained by heating the specimens for different times in a stream of NH_3. Holmium and samarium were chosen for the study because it had previously been found that the hole level in excited Sm^{3+} centers

Card 1/2

ACC NR: AP7004983

lies somewhat above the level of the blue centers and the hole levels in the Ho^{3+} centers are very low and close to the valence band. The results of the present work were consistent with these earlier findings. The luminescence spectra of the different specimens were recorded at - 180° and + 20° C. From the differences in the intensities of the different luminescence bands from the different specimens it was possible to draw the following conclusions: 1) rare earth activators in ZnS phosphors are coupled directly to the lattice and usually receive energy from the lattice by electron-hole processes; 2) the blue luminescence centers can mediate the transfer of energy to the rare earth ions, but their presence is not necessary for the excitation of the rare earth ions; 3) the significance of the blue luminescence centers in the excitation of a rare earth activator depends strongly on the nature of the particular rare earth activator; 4) a rare earth activator that has appropriate electron levels can strongly quench the ultraviolet luminescence of unactivated ZnS; and 5) at certain temperatures and with appropriately disposed energy levels there can occur resonant transfer of energy from the ultraviolet and blue luminescence centers to rare earth ions, but this process is not the only or even the main mechanism for excitation of a rare earth ion in the ZnS lattice. Orig. art. has: 3 figures and 1 table.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 008

Card 2/2

ACC NR: AP7004984 (A) SOURCE CODE: UR/0048/66/030/009/1500/1503

AUTHOR: Kisil', I.I.; Levshin, V.L.; Sysoyev, L.A.; Fridman, S.A.; Shchayenko, V.V.

ORG: none

TITLE: Preparation of rare earth activated zinc sulfide single crystals /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no.9, 1966, 1500-1503

TOPIC TAGS: luminescent crystal, ~~single crystal~~, zinc sulfide, thulium, luminescence center, SINGLE CRYSTAL GROWING

ABSTRACT: The authors prepared thulium-activated zinc sulfide single crystals and studied their luminescence. The investigations were undertaken mainly to develop a technique for preparing rare earth activated zinc sulfide single crystal phosphors. Hexagonal zinc sulfide single crystals with lengths of up to 10 cm and diameters of up to 3 cm were grown in a graphite crucible at 1800° in an argon atmosphere at a pressure of 200 atm by the technique described elsewhere by L.A.Sysoyev and N.M. Kraynyukov (Fizika tverdogo tela, 4, 3, 807 (1962)). Crystals grown from a mix containing 0.01% of thulium by weight exhibited thulium luminescence only after heating in a stream of H_2S, which treatment produces zinc vacancies. Heating the crystals in a stream of NH_3, which does not produce zinc vacancies, did not give rise to thulium

Card 1/2

ACC NR: AP7004984

luminescence. The relative intensities of the three main thulium luminescence bands varied with variations in the wavelength of the stimulating radiation and in the duration of the H_2S treatment; from this it is concluded that there are two different kinds of thulium luminescence centers. By breaking a crystal that had been heated in H_2S for 1.5 hour it was found that uniform activation of the 0.5 mm thick crystal had been achieved. Single crystal ZnS:Tm phosphors were also produced by heating ZnS single crystals in the mixture that is usually employed for preparing ZnS:Tm powder phosphors. The luminescence spectrum of these crystals was practically identical with that of ZnS:Tm powder phosphors. Orig. art. has: 3 figures and 1 table.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 002

Card 2/2

ACC NR: AP7005000 SOURCE CODE: UR/0048/66/030/009/1549/1551

AUTHOR: Goryunov,V.A.; Levshin,V.L.; Stankova,A.V.

ORG: Physics Department, Moscow State University im. M.V.Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Investigation of the redistribution of current carriers among traps under the influence of infrared irradiation in excited zinc sulfide phosphors /Report,Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.30, no.9, 1966, 1549-1551

TOPIC TAGS: luminescence, zinc sulfide, electron trapping, electron distribution, irradiation

ABSTRACT: The authors investigated the redistribution under the influence of monochromatic infrared irradiation of carriers among traps in ZnS single crystal and ZnS, ZnS:Mn, ZnS:Cu:Pb, ZnS:Ag, ZnS:In, ZnS:Cu:Co and other similar powder phosphors. All the investigated materials have two well-separated sets of traps of different depths. The transfer by infrared irradiation of electrons from the deeper to the shallower traps was investigated with the aid of glow curves, optical quenching of luminescence, and stimulated conductivity. Only the glow curve experiments are described, and some of the results obtained with ZnS:Mn are present graphically.

Card 1/2

ACC NR: AP7005000

In these experiments the phosphor was excited at a relatively high temperature at which the shallow traps were empty, and was subsequently cooled and infrared irradiated at a low temperature. The glow curve was then recorded, which revealed the relative populations of the deep and shallow traps. The infrared irradiation was conducted at different temperatures and with different wavelengths. It was found that prolonged infrared irradiation resulted in an equilibrium distribution of electrons between the deep and shallow traps, which was not changed by further irradiation. When an infrared irradiated phosphor was heated, so that its shallow traps were emptied, and was then cooled without further excitation and again infrared irradiated at the low temperature, there took place a further transfer of electrons from the deep to the shallow traps. For each infrared sensitive phosphor there could be found a wavelength whose effect on the trapped electrons was temperature independent; the quantum energy corresponding to this wavelength was directly proportional to the depth of the traps. Orig. art. has: 2 figures.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 002

Card 2/2

ACC NR: AP7005001 SOURCE CODE: UR/0048/66/030/009/1552/1554

AUTHOR: Levshin,V.L.; Mikhaylin,V.V.; Nizovtsev,V.V.

ORG: none

TITLE: Absorption, excitation and infrared-stimulated flash in calcium and strontium sulfide phosphors /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.30, no.9, 1966, 1552-1554

TOPIC TAGS: calcium compound, strontium compound, sulfide, absorption band, absorption edge, photoluminescence, irradiation, electron trapping

ABSTRACT: The authors investigated the infrared absorption of CaS films and the infrared absorption and luminescence excitation spectra and the infrared stimulated flash of different CaS and mixed CaS.SrS phosphors. The absorption spectra were recorded for photon energies from about 3 to 6 eV with 200 to 2000 Å thick films deposited by different techniques on LiF or fused quartz substrates. The CaS absorption in the long wavelength portion of the investigated range depended considerably on the presence and nature of impurities, but in the short wavelength part of the range it did not. The absorption edge, defined as the position of the greatest slope of the absorption curve, was 5.1± 0.3 eV. The absorption spectrum exhibited structure, and this structure was repeated in the luminescence excitation spectra.

Card 1/2

ACC NR: AP7005001

Addition of SrS to the CaS shifted the absorption edge toward lower photon energies, and the absorption peaks shifted toward shorter wavelengths with decreasing temperature at rates ranging for different specimens from 0.7 to 1.4 Å/degree. The infrared-stimulated flash in CaS.Srs:Ce:Sm phosphors was investigated at different temperatures. At - 196° C the phosphor was sensitive to infrared radiations with wavelengths as long as 2.85 μ, whereas at - 120° the infrared sensitivity did not extend even to 2 μ. The brightness of the infrared-stimulated flash was temperature dependent, having a minimum at - 150° C and a maximum at - 10° C for stimulation at a wavelength of 1.25 μ. The decrease in the flash brightness with increase of the temperature from - 196 to - 150° is ascribed to decrease of the light sum stored in shallow traps, and the increase in the flash intensity with increase of the temperature from - 150 to - 10° is ascribed to decrease in the probability for trapping of electrons in traps having a depth of 0.25 eV. Orig. art. has: 3 figures.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 004 OTH REF: 003

Card 2/2

L 41317-66 EWT(m)/EWP(t)/ETI IJP(c) JD/HW/JG

ACC NR: AP6019634 (A,N) SOURCE CODE: UR/0048/66/030/002/0367/0370 57 54 B

AUTHOR: Levshin, Ye.B.

ORG: Institute of Physics of the Academy of Sciences of the UkrSSR (Institut fiziki Akademii nauk UkrSSR)

TITLE: On deuteron breakup in interactions with nuclei /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 367-370

TOPIC TAGS: nuclear model, nuclear reaction, deuteron reaction, approximation calculation, ~~Born approximation~~, nuclear optical model

ABSTRACT: The author employs the optical model to calculate the differential cross section for the (d,np) reaction without excitation of the final nucleus in the plane wave Born approximation with the assumption of short range (δ-function) neutron-proton forces. A simple closed expression in terms of elementary functions is obtained for the cross section. Curves are presented showing the energy distributions of the emitted protons for several different proton and neutron emission angles and the angular distributions of the neutrons for several different proton emission angles in the (d,np) reactions of 26 MeV deuterons on Au^{197} and 13.6 MeV deuterons on Ni^{60}. From a brief discussion of these curves in connection with experimental data of

Card 1/2

L 41317-66

ACC NR: AP6019634

3

F. Udo and L.Koerts (Phys. Lett., 3, 181 (1963)) and O.Nemets, M.Sokolov, and B.Struzhko (Proc. International Confer. on Nuclear Physics, Paris, 1964) it is concluded that the plane wave approximation correctly gives the qualitative behavior of the cross section but cannot account for the positions and heights of the maxima. Distorted wave calculations are under way. The author thanks A.G.Sitenko for assistance and valuable advice, O.F.Nemets for making available his experimental data, and V.F. Kharchenko for valuable discussions. Orig. art. has: 12 formulas and 4 figures.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 002 OTH REF: 006

Card 2/2

L 2843-66 EWT(m)/T/EWA(m)-2

ACCESSION NR: AP5024124 UR/0185/65/010/009/0938/0951

29
23
B

AUTHOR: L'ovshyn, E. B. (Levshin, Ye. B.); Kharchenko, V. F.

TITLE: Optic model for deuterons, taking into account the tensor spin-orbit interaction

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 9, 1965, 938-951

TOPIC TAGS: deuteron scattering, deuteron interaction, nucleon interaction, optic model, elastic scattering, scattering cross section, deuteron beam

ABSTRACT: The optic model is useful for the description of nucleon-interactions in a wide range of energies. The model has been used earlier for the description of elastic scattering of compound particles (deuterons, He^3 nuclei, α-particles, etc.) on nuclei. The present paper gives the derivation of formulas for the analysis of elastic deuteron scattering based on the optic model taking into account all possible types of spin-orbit interaction and the existence of nondiagonal matrix elements of the optic potential. The experimentally measured quantities (such as the differential cross section, polarization components, and the total reaction cross sections) are all expressed in terms of partial phase shifts. The incident deuteron beam is assumed polarized in an arbitrary manner. "The

Card 1/2

BVK

Card 2/2

[illegible] Trud. Azerbaycan. Univ., Ser. Khim. (Proc. Azerbaycan. Univ., Ser. Chem.), 1956, 3, 78-87; abstr. in Ref. Zh. Khim. (Proc. Azerbaycan. Univ., 1956, (17), 55741), [illegible]

KULIYEV, A.M.; ORUDZHEVA, I.M.; ZAYNALOVA, G.A.; LEVSHINA, A.M.

Multipurpose AzNII-8 additive for truck and tractor oils. Azerb. neft.khoz. 35 no.7:32-33 Jl '56. (MLRA 9:12)
(Lubrication and lubricants)

LEVSHINA, A.M.

KULIYEV, A.M.; ZEYNALOVA, G.A.; ORUDZHEVA, I.M.; LEVSHINA, A.M.

Improving output factors of diesel engines operating on sulfurous fuels. Azerb.neft.khoz.35 no.12:44-46 D '56. (MLRA 10:3)
(Diesel engine) (Diesel fuels)

KULIYEV, A.M.; ORUDZHEVA, I.M.; ZEYNALOVA, G.A.; AKHMED-ZADE, D.A.; ATAL'YAN, A.A.; LEVSHINA, A.M.; SADYKHOV, K.I.

Studies in the synthesis and use of additives for lubricating oils. Sbor.trud.AzNII NP no.2:207-224 Ag '58. (MIRA 12:6)

(Lubrication and lubricants--Additives)

KULIYEV, A.M.; LEVSHINA, A.M.; ALIYEV, M.I.

Investigating the synthesis of depressants and studying their effect on different oils and on hydrocarbon groups derived from them. Sbor.trud.AzNII NP no.2:225-243 Ag '58. (MIRA 12:6)

(Lubrication and lubricants--Additives)
(Hydrocarbons)

3

26198
S/081/61/000/012/026/028
B103/B202

15.6600
11.9700

AUTHORS: Kuliyev, A. M., Orudzheva, I. M., Zeynalova, G. A., Atal'yan, A. A., Akhmed-Zade, D. A., Levshina, A. M., Sadykhov, K. I., Abdinova, A. B.

TITLE: Synthesis of organic compounds containing various functional groups and their applications to improve the quality of lubricating oils

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 12, 1961, 530, abstract 12M225. (Tr. 1-y Konferentsii zakavkazsk. un-tov. Baku, Azerb. un-t, 1959, 111-123)

TEXT: The authors present the results of research work which has been conducted for many years in the Azerbaydzhanskaya SSR concerning the synthesis and the choice of additives to lubricating oils. The following compounds were synthesized and their properties were studied: mono-, di-, and trialkyl derivatives of benzene, naphthalene, tetraline, anthracene, and phenanthrene; alkyl benzene-, alkyl naphthalene-, alkyl phenol-, and alkyl tetraline sulfonates of Ca, Ba, Sr, Pb, and Cu; mono- and dialkyl phenols; mono- and

Card 1/2

26198
S/081/61/000/012/026/028
B103/B202

Synthesis of organic compounds ...

disulfides of alkyl phenols and their Ba and Ca salts; tri-(alkylphenol)-phosphites and their mono- and disulfide derivatives; mono- and dialkyl ureas; condensation products of urea with aldehydes and alkyl phenols. The depressor Азнии (Aznii) (dialkyl naphthalene, in which alkyls originate from chlorinated paraffin) from the year 1947, detergents for motor oils Aznii-4 from the year 1949 and Aznii-5 (both sulfanates) were industrially used. The multifunctional additives to the motor oils Aznii-7 and Aznii-8 (both salts of the alkyl phenol sulfides) and an additive stabilizing the mineral oil obtained by condensation of urea with aldehyde and alkyl phenol, were recommended for introduction into industry. [Abstracter's note: Complete translation.]

Card 2/2

36551
S/081/62/000/006/087/117
B167/B101

11.9700

AUTHORS: Kuliyev, A. M., Levshina, A. M.

TITLE: Study of the effect of additives containing different functional groups on oil fractions and oils

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 541, abstract 6M261 (Sb. "Prisadki k maslam i toplivam". M., Gostoptekhizdat, 1961, 159-168)

TEXT: A study of the effect of various Aznii-7 and Aznii-6 additives, prepared from alkyl phenols with alkyl groups of different lengths (C_7, C_{11}, C_{13}, and C_{16}), on the corrosiveness (according to Pinkevich) and the stability to oxidation (according to Aznii) of mineral oils (AK-10 (AK-10) and Diesel oil from Buzovny naphtha). All the additives studied had a marked effect on corrosiveness, but gave a worse oxidation stability, the latter effect increasing with the length of the alkyl group. As regards solubility, additives containing C_{11}-C_{12} alkyls are recommended. Also studied was the effect of (1%) additions to mineral oil of $(C_6H_5)_2S$ and $(C_6H_5)_2Se$, of some of their hydroxy and/or alkyl

Card 1/2

derivatives, and of $(CH_3C_6H_4O)_3PS$ and $(CH_3C_6H_4O)_3PSe$, on the thermal stability (according to Papok) of the oil and on the above properties. The Se compounds were found to improve the oil more effectively than the S analogs: The only exception was the corrosiveness of the thio- and the selenophosphate. The depressor properties of several mono-, di-, and trialkyl benzenes, naphthalenes, tetralins, and other aromatic compounds with various alkyl substituents (C_7, C_{16}, and C_{24}) were measured on the oil АК-15 (AK-15): The most effective was the dialkyl naphthalene with a C_{24} alkyl group (Aznii depressor). Differences in the susceptibility of various oils and fractions to the action of the Aznii depressant, antioxidant additives (phenyl-α-naphthylamine, p-hydroxydiphenylamine, α-naphthol, 2,6-di-tert-butyl-4-methyl phenol, and Santolyub-394), and of the Aznii-7 additive were demonstrated on oils from different sources and on their fractions (naphtheno-paraffinic, aromatic hydrocarbon, and tar fractions). [Abstracter's note: Complete translation.]

X

KULIYEV, A.M.; SADYKHOV, Z.A.; LEVSHINA, A.M.

Polymerization of isobutylene and copolymerization of isobutylene and styrene in the presence of a metallo-organic catalyst. Azerb. neft.khoz. 41 no.3:33-36 Mr '62. (MIRA 15:8)
(Propene) (Polymerization)

34892

S/081/62/000/003/073/090
B171/B102

11.9700

AUTHORS: Kuliyev, A. M., Sadykhov, Z. A., Levshina, A. M.

TITLE: Low-temperature copolymerization of isobutylene with styrene in the presence of aluminum chloride

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 493, abstract 3M226 (Azerb. khim. zh. no. 3, 1961, 17-24)

TEXT: The low-temperature copolymerization of isobutylene (I) with styrene (II) in isooctane and in the presence of $AlCl_3$ has been investigated in order to obtain viscosity improvers that would be stable under the working conditions to which the oils with additives are subjected in engines. The reaction was carried out in a glass reactor, using a mixer, at a temperature of -105°C. The ratios of (I) and (II) were varied from 95:5 to 85:15 for reaction durations from 2 min to 3 hours. 0.1 to 1.5% of the catalyst were used. Under the above conditions, copolymers with molecular weights of about 6200 to 13,000 were obtained. It has been shown that an addition of 3% of various samples of synthetic polymers increases the viscosity index of the MK-8 (MK-8) oil from 56 to 130-145, and its

Card 1/2

SOURCE: Uch. zap. Azerb. un-t. [illegible]

TOPIC TAGS: polymer, absorption spectrum, IR spectrum

TRANSLATION: The structures of a polymer of isobutylene and a copolymer of isobuty- [illegible] shown

catalysts molecules of polymers are

ENCL: 00

SUB CODE: OP, OC

L 39519-66 EWT(m)/T DJ

ACC NR: AR6014585 (A) SOURCE CODE: UR/0081/65/000/021/S043/S043

35
34
B

AUTHORS: Kuliyev, A. M.; Levshina, A. M.; Sadykhov, Z. A.; Vedeneyeva, L. Ya.

TITLE: Investigation of the synthesis of viscosity additives from oleic esters

SOURCE: Ref. zh. Khimiya, Abs. 21S264

REF SOURCE: Uch. zap. Azerb. un-t. Ser. khim. n., no. 3, 1964, 79-83

TOPIC TAGS: organic synthetic process, viscosity additive, catalytic polymerization, depolymerization, condensation reaction, oleic acid, ethylene glycol, lubricating oil / MK-8 lubricating oil, AzNII-8 viscosity additive

ABSTRACT: Polyesters (PE) were synthesized from ethylene glycol and methyl oleate dimer (D), and the products were tested as additives for lubricating oils increasing the latter's viscosity. D was prepared by heating methyl oleate for 10—15 hours at 300C in the presence of 0.1—0.3% of anthraquinone. D was distilled at 178—180C/1—1.2 mm Hg. Molecular weight of D approximated the calculated one, acid number 12—25 mg KOH. Yield of D was 20—30%, based on the original ester. Condensation of D with 10% ethylene glycol was conducted in an N_2 atmosphere first at 120—130C, then at 200—225C for 40—45 hours in the presence of 0.1—1.5% (with respect to D) of p-toluene-sulfonic acid. The yield of the condensation product is 100%—based on D, molecular weight 1000—3000 (determined cryoscopically in benzene). Addition of 10% of PE to MK-8 increased the latter's viscosity from 2.76 to

Card 1/2

L 06464-67 EWP(j)/EWT(m) RM/FDN

ACC NR: AP6029341 SOURCE CODE: UR/0316/66/000/002/0085/0090

17
13

AUTHOR: Kuliyev, A. M.; Farzaliyev, V. M.; Levshina, A. M.

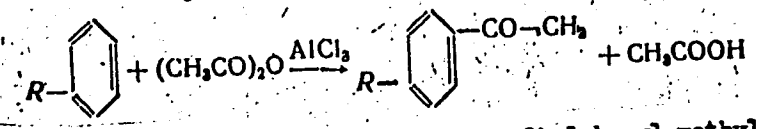
ORG: Institute of Chemistry of Additives, AN AzerbSSR (Institut khimii prisadok AN AzerbSSR)

TITLE: Synthesis of p-alkyl styrenes

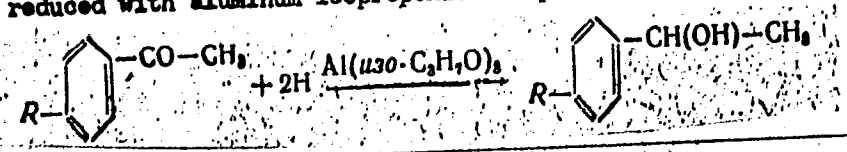
SOURCE: Azerbaydzhanskiy khimicheskiy zhurnal, no. 2, 1966, 85-90

TOPIC TAGS: styrene, alkyl benzene, CHEMICAL SYNTHESIS

ABSTRACT: Alkyl styrenes with alkyl radicals from C_3 to C_{10} located in the para position were synthesized from alkyl benzenes. Acetylation of the latter with acetic anhydride in the presence of $AlCl_3$ produced p-alkyl acetophenones



which were then reduced with aluminum isopropoxide to p-alkylphenyl methyl carbinols

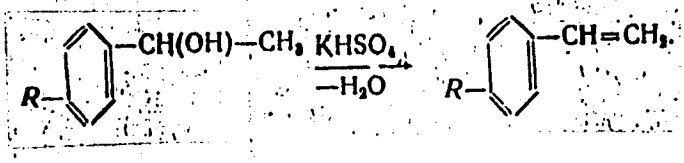


Card 1/2

L 06464-67

ACC NR: AP6029341

Dehydration of the latter with potassium bisulfate under reduced pressure yielded the corresponding p-alkyl styrenes:



Orig. art. has: 3 tables.

SUB CODE: 07/ SUBM DATE: 03Jan66/ ORIG REF: 002/ OTH REF: 013

Card 2/2 MRE

L 10340-67 EWT(m) DJ

ACC NR: AP6029904 (A) SOURCE CODE: UR/0413/66/000/015/0069/0069

INVENTORS: Kuliyev, A. M. O.; Levshina, A. M.; Mamedov, F. N. O.; El'ovich, I. I.; Mushailov, A. Ye.; Farzaliyev, V. M. O.

40

ORG: none

TITLE: A method for obtaining a lubricating compound. Class 23, No. 184385 [announced by Institute of Petrochemical Processes, AN Azerbaidzhan SSR (Institut neftekhimicheskikh protsessov AN Azerbaydzhanskoy SSR)]

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 69

TOPIC TAGS: polymer, lubricant, lubricant additive, transmission gear, nonstructural mineral product

ABSTRACT: This Author Certificate presents a method for obtaining a lubricating compound by thickening a mineral base with polymers and by adding a stabilizer. To make this lubricating compound usable in gear transmissions, a mixture of high viscosity and low viscosity components with a quaternary ammonium salt used as a stabilizer is employed as the mineral base.

SUB CODE: 11/ SUBM DATE: 12Feb65 UDC: 621.892.8

Card 1/1 mle

LEVSHINA, I. P.

Совместное заседание с секцией распространения радиоволн

А. В. Фрезик,
В. Ф. Губский

Некоторые вопросы теории разностного приема при рассеянии распространения УКВ.

А. В. Фрезик,
Г. И. Слободкин,
И. П. Левшина

Экспериментальное исследование разностного приема при дальнем тропосферном распространении УКВ.

(с 12 до 16 часов)

В. Ф. Пастуро

Об интегральном методе обнаружения импульсного сигнала на фоне шума.

И. А. Лошиной

Погрешности, возникающие в измерителе импульсно-шумовой помехи.

8 июня
(с 18 до 22 часов)

С. М. Дядюшев (Чехословакия)

Резонансные преобразования и некоторые их применения.

Л. Г. Дорфман

Расчет частотных характеристик некоторых симметричных многополюсников.

Л. Е. Бонков

К расчету переходных процессов при частотной модуляции.

10 июня
(с 10 до 16 часов)

Л. Л. Масленов

Атомно-лучевые радиометры щелочных металлов.

В. К. Шейнгальтер,
Г. С. Массинович

Двухрезонаторные и многорезонаторные пролетные усилители.

Я. М. Туровер

К вопросу об использовании принципа параметрического усиления электромагнитных колебаний.

Report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORIE), Moscow, 8-12 June. 1959

LEVSHINA, K. V. Cand. Chem. Sci.

Dissertation: "Alpha-(5 Nitronaphthyl-1)- Acrylic Acid and its Transformations (Investigation of the Possibility for the Synthesis of New Anesthetics)". All-Union Sci Res Chemicopharmacentic Inst imeni S Ordjhonikidje---VNIKHFI, 2 Dec 47.

SO: Vechernyaya Moskva, Dec, 1947 (Project #17836)

CA

Anesthetic substances in the naphthalene series. V. Esters and alkylaminoalkylamides of 5-amino-1-naphthaleneacrylic acid. S. I. Sergievskaya and K. [illegible] Levshina (All-Union Chem.-Pharm. Research Inst., Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 1030–42(1950); cf. C.A. 39, 1158g.—Gradual addn. of 10 g. 1-$C_{10}H_7CHO$ to 50 ml. HNO_3 (d. 1.47) at −5° to −0° and stirring 30 min. until room temp. was reached gave, upon filtration, 25% *5-nitro-1-naphthaldehyde* (I), m. 130–7° (from pyridine); dilu. of the mother liquor with ice gave 17.8% *8-nitro isomer*, m. 123–4° (from EtOAc); yields of 20% and 22%, resp., are obtained when the entire mixt. is quenched with ice and the mixt. recrystd. from pyridine. Heating 4 g. I, 4 g. malonic acid, and 10 ml. AcOH 12 hrs. at 85–90° gave 3.9 g. (*5-nitro-1-naphthylmethylene*)*malonic acid*, m. 250–2° (from 70% AcOH). Heating this 4 hrs. to 200° gave a 70% yield of *5-nitro-1-naphthaleneacrylic acid* (II), m. 257–8° (from EtOH), which is generally poorly sol.; it is also obtained by refluxing I and $CH_2(CO_2H)_2$ with pyridine, or by the Perkin reaction with Ac_2O-NaOAc in 6 hrs. at 137–40°. II warmed with $SOCl_2$ yields the *chloride* (III), m. 132–3.5° (from C_6H_6). Stirring III with concd. NH_4OH at room temp. yields the *amide*, m. 227–8.5° (from EtOH). II heated with MeOH in the presence of H_2SO_4 8 hrs. gave the *Me ester*, m. 120–1° (from MeOH); EtOH similarly gives the *Et ester*, m. 104–5° (from EtOH). Treatment of II with KOH in EtOH, addn. of $Cl(CH_2)_3Br$, and refluxing 7 hrs. gave the *3-chloropropyl ester*, m. 82.5–4.0° (from EtOH). Heating III with cyclohexanol in C_6H_6 3 hrs. gave the *cyclohexyl ester*, m. 85.5–6.5° (from EtOH). Stirring the Et ester (1.3 g.) in 50 ml. EtOH at 57–60° with 0.2 ml. concd. HCl and 1 g. Fe filings added over 1 hr., heating 6 hrs., and treating the crude product with Ac_2O gave *Et 5-acetamido-1-naphthaleneacrylate*, m. 171.5–2.0° (from EtOH). Refluxing 3 g. II 5 hrs. with 1.1 g. $Me_2NCH_2CH_2OH$ in C_6H_6 gave the *dimethylaminoethyl ester*, m. 64° (from abs. EtOH)[*HCl salt*, m. 198.9° (from EtOH)]; this reduced with Fe-HCl in EtOH as above gave *2-dimethylaminoethyl 5-amino-1-naphthaleneacrylate-HCl*, m. 194–4.5° (from EtOH), which hydrolyzes on standing in dil. aq. solns. The *2-diethylaminoethyl ester*, m. 193–194° (from EtOH), was prepd. similarly from the intermediate *nitro analog*, m. 199–200° (from EtOH). Treatment of II with KOH in EtOH and heating the resulting K salt with $Et_2N(CH_2)_3Cl$ 4 hrs. at 80–5° gave *3-diethylaminopropyl 5-nitro-1-naphthaleneacrylate-HCl*, m. 214.5–16° (from 98% EtOH), reduced by Fe-HCl in EtOH to the *5-amino analog*, m. 212–12.5° (from EtOH). III in C_6H_6 and $Me_2NCH_2CH_2CHMeNH_2$ warmed 4 hrs. on a steam bath gave the corresponding *N-(3-dimethylamino-1-methylpropyl)amide*, m. 114–5° (from EtOH), converted by Fe-HCl in EtOH to the *5-amino analog*, isolated as the *citrate (monohydrate)*, m. 120–8° (from EtOH-Et_2O). Similarly, III gave the *N-(4-diethylamino-1-methylbutyl)amide*, m. 130–1°, converted to the corresponding *5-amino deriv.*, isolated as the *citrate (monohydrate)*, m. 133–5° (from EtOH-Et_2O). Hydrogenation of 5,1-$O_2NC_{10}H_6CH{:}CHCO_2CH_2CH_2NEt_2$-HCl over Raney Ni in EtOH gave the *corresponding ester of the 5-amino acid*, isolated as the *HCl salt*, m. 150.5–60° (from abs. EtOH). None of the amides gave complete anesthesia (rabbit cornea test), while the dimethylamino- and diethylaminoethyl esters of the 5-amino acid had *weak anesthetic properties* but caused tear formation and hyperemia; the diethylaminopropyl ester had somewhat better properties. G. M. K.

CA LEVSHINA, K.V.

10

Methods of preparation of 1-naphthaleneacrylic acid and its ethyl ester. S. I. Sergievskaya, K. V. Levshina, and E. N. Petrova (S. Ordzhonikidze All-Union Chem.-Pharm. Inst., Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 1478-80(1950).--A convenient synthesis of 1-$C_{10}H_7CH$:-$CHCO_2H$ (I) is given as follows: Dry EtOAc (80 ml.) and 4 g. powd. Na cooled rapidly to 0° are treated with 1 ml. abs. EtOH, then with 20 g. 1-$C_{10}H_7CHO$ at 0-5°, stirred 3 hrs., treated with 20 ml. AcOH, the ppt. dissolved by adding 60 ml. H_2O, and the soln. extd. with EtOAc, giving 21 g. (72%) I *Et ester* bp 170-92°; this allowed to stand in abs. EtOH with 4.2 g. NaOH overnight gave the Na salt, which with HCl gave 83% of the *free* I, m. (crude) 280-7°, (pure) m. 298-10° (from EtOH or MeOH). The yield of pure product is 43.7% (based on the aldehyde). If the Et ester is redistd. and allowed to stand, it solidifies and m. 37-8.5° (from EtOH), bp 189-7°; the yield of pure ester is 33% (based on the aldehyde). G. M. K.

8,

10

CA

5-Nitro-1-naphthalenepropiolic acid and its transformations. S. I. Sergievskaya and K. V. Levshina (S. Ordzhonikidze All-Union Chem.-Pharm. Inst., Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 1481-6(1950). Bromination of 2 g. 5,1-$O_2NC_{10}H_6CH{:}CHCO_2Et$ with 1.8 g. Br in $CHCl_3$ over 3 days gave 78% *dibromide*, m. 147-8° (from EtOH). This (2.8 g.) in 75 ml. EtOH, treated at 35-40° with 2.8 g. KOH in 12 ml. EtOH and allowed to stand 12-16 hrs., gave a ppt. of A *5-nitro-1-naphthalenepropiolate*, which with dil. H_2SO_4 gave 0.65 g. *free acid* (I), decomp. 182-1° in a preheated bath (from $CHCl_3$); it sublimes partly at 155°; heating with EtOH and H_2SO_4 8 hrs. yields the *Et ester*, m. 121-2° (from EtOH), which on reduction in EtOH-HCl with Fe and treatment with AcCl, yields *Et 5-acetamido-1-naphthylacetylene*, m. 150-7° (from EtOH), 4.0° (from EtOH). I heated with pyridine 4 hrs. to 100 yields *5-nitro-1-naphthylacetylene*, m. 150-7° (from EtOH). Warming I with excess $SOCl_2$ on a steam bath, removing the $SOCl_2$ *in vacuo*, and treating the residue with Et_2N-CH_2CH_2OH in C_6H_6 (3 hrs.) gave 1-2 *diethylaminoethyl ester*, isolated as the *HCl salt*, yellow solid, m. 180-2° (from abs. EtOH); reduction with Fe in EtOH-HCl at reflux temp. yielded the *5-amino analog*, isolated as the *citrate*, gray powder, fusing at 80°, liquefying at 90°, and forming a clear fluid at 135-40° (from abs. EtOH). The product was devoid of *anesthetic values*. G. M. K.

10

CA

The preparation of 1-naphthaleneacrylic acid and its ethyl ester. S. I. Sergievskaya, K. V. Levshina, and E. N. Petrova. *J. Gen. Chem. U.S.S.R.* 20, 1539–41(1950)(Engl. translation).—See *C.A.* 45, 2458*d*. R. M. S.

CA

5-Nitro-1-naphthalenepropiolic acid and its transformations. S. I. Sergievskaya and K. Ya. Levshina. *J. Gen. Chem. U.S.S.R.* 20, 1543-8(1950)(Engl. translation).—See *C.A.* 45, 2158*f*. R. M. S.

LEVSHINA, K.V.; SERGIYEVSKAYA, S.I.

Synthesis of 1,1-phenylcyclopentanecarboxylic acid and 1,1-phenylcyclopentanethiocarboxylic acid and some of their derivatives. Zhur. Obshchei Khim. 22, 2189-93 '52. (MLRA 6:2)
(CA 48 no.2:584 '54)

1. S.Ordzhonikidze All-Union Chem. Pharm. Inst., Moscow.

LEVSHINA, K. V.

USSR/Chemistry

Card 1/1

Authors : Levshina, K. V.; and Sergievskaya, S. I.

Title : Derivation of aliphatic-aromatic N-bis-(ethyl chloride)-amines

Periodical : Zhur. Ob. Khim. 24, Ed. 5, 905 - 909, May 1954

Abstract : The derivation of new aliphatic-aromatic compounds, namely benzyl-N-bis-(ethyl chloride)-amines with alkoxy groups in the aromatic nucleus is described. Certain other analogous compounds were also synthesized. The most suitable method in the synthesis of benzyl-N-bis-(ethyl chloride)-amines is the one in which aromatic chloromethylated compounds ($ArCH_2Cl$) were the basic substances. The success of the synthesis depends to a greater extent upon the availability of the basic chloromethylated compound and its properties. New data are presented on the methods of obtaining certain basic substances. Six references (all English and German). Tables.

Institution : The Ordzhonikidze All-Union Scientific-Research Chemical-Pharmaceutical Institute, Moscow, USSR

Submitted : December 3, 1953

LEVSHINA, K.V.

3

Preparation of some naphthylpropionic acids. K. V. Levshina (S. Ordzhonikidze All-Union Sci. Research Chem. Pharm. Inst., Moscow). *Zhur. Obshchei Khim.* 25, 128-30; *J. Gen. Chem.* (U.S.S.R.) 25, 115-6(1955)(Engl. translation).—A mixture of 15 g. 1-$MeOC_{10}H_7$, 4.8 g. paraform, and 180 ml. dry C_6H_6 was satd. with HCl at 0°, the C_6H_6 soln. filtered, washed with H_2O, dried with K_2CO_3, freed of some C_6H_6 *in vacuo* without heating, and the residual soln. added to a soln. of 17 g. $CH_2(CO_2Et)_2$, 50 ml. dry EtOH, and 2.1 g. Na below 30°; after 12 hrs. at room temp. and 6 hrs. heating, the mixt. was concd., dild. with H_2O and extd. with Et_2O, the ext. concd., heated 4 hrs. with EtOH-KOH, treated with H_2O, and acidified, yielding a crude intermediate, m. 150-3°. This (2 g.) heated with 12 ml. pyridine to 100° until CO_2 evolution ceased, gave *3-(4-methoxy-1-naphthyl)propionic acid*, m. 164-7° (from C_6H_6). This (1 g.) refluxed 3 hrs. with 32 ml. HBr (d. 1.47) and 20 ml. AcOH gave 0.6 g. *3-(4-hydroxy-1-naphthyl)propionic acid*, m. 125-6° (from H_2O); *Me ester*, m. 102.5-3.5°; *Et ester*, m. 71.5-3°. Hydrogenation of 20 g. 1-$C_{10}H_7CH:CHCO_2H$ (20 g.) in 170 ml. 10% Na_2CO_3 with 30 g. Raney Ni at 20-30° gave 16 g. *1-$C_{10}H_7CH_2CH_2CO_2H$*, m. 154-5°. Hydrogenation of 2-$C_{10}H_7CH:CHCO_2H$ in EtOH over Raney Ni gave *2-$C_{10}H_7CH_2CH_2CO_2H$*, m. 131-2°.

G. M. Kosolapoff

MST

SOV/79-28-7-24/64

AUTHORS: Sergiyevskaya, S. I., Levshina, K. V., Chizhov, A. K., Gavrilova, A. I., Kravchenko, A. I.

TITLE: N-Di(Ethyl Chloride) Amines of the Alicyclic Series. I(N-Di (khloretil) aminy alitsiklicheskogo ryada. I)

PERIODICAL: Zhurnal obshchey khimii, Vol 28, Nr 7, pp. 1839 - 1845 (USSR) - 1958

ABSTRACT: The authors discuss the synthesis and some properties of the dichloroalkylamines of the cyclopentane-, cyclohexane- and cycloheptane series. They synthetized the compounds of two types: In the one (Formula I) the di(chloroalkyl) amino group is directly bound to the carbon of the nucleus, and in the other to the carbon of the side chain (II). The compounds of type (II) are alicyclic derivatives of methyl-N-bis (ethyl chloride) amine which is of importance for medicine. The two methods used most were employed for the synthesis of N-di(ethyl chloride) amine: according to the one [=(a) of Table 1] the ethylene oxide reacts with the amino compounds, according to the other [=(b) of Table 1] the compounds containing halogens are caused to react with diethanol amine. The final stage, i.e. the substitution of the hydroxyl groups by chlorine is the same

Card 1/3

N-Di(Ethyl Chloride) Amines of the Alicyclic Series. I SOV/79-28-7-24/64

for both methods, according to the specific characteristic features of the N-di(oxyethyl-)amines. The synthesis of the dichloro-alkyl amines of type (I) had to be carried out according to method (a). The necessary alicyclic amines as initial products had been obtained in the cyclopentane- and cycloheptane series by the reduction of the ketone oximes, and in the cyclohexane series by the catalytic hydration of the aromatic amino compounds. The chloro-methyl derivatives of the same alicyclic hydrocarbons served as initial products for the synthesis of the compounds of type (II). The chloro-methyl cycloalkanes were obtained according to the reaction scheme mentioned. Thionyl chloride served as chlorination agent (I and II)(substitution of hydroxyl by chlorine).There are 2 tables and 8 references, 2 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S.Ordzhonikidze (All-Union Scientific Chemical and Pharmaceutical Institute imeni S. Ordzhonikidze)

Card 2/3

N-Di(Ethyl Chloride) Amines of the Alicyclic Series. I SOV/79-28-7-24/64

SUBMITTED: February 7, 1957

1. Dichloroalkylamines--Synthesis 2. Dichloroalkylamines--Properties
3. Cyclic compounds--Molecular structure 4. Ethyl chloride amines
--Chemical properties

Card 3/3

SOV/79-28-7-25/44

AUTHORS: Sergiyevskaya, S. I., Levshina, E. V., Gavrilova, A. I., Chizhov, A. K.

TITLE: N-Di (Chloro-Ethyl) Amines with Alicyclic and Aromatic Radicals in the Molecules. II (N-di(khloretil)aminy s alitsiklicheskimi i aromaticheskimi radikalami v molekulakh. II)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 7, pp. 1845-1849 (USSR)

ABSTRACT: The aim of the present investigation was the synthesis of the N-di(chloro-ethyl)amines which simultaneously have an aromatic and an alicyclic radical in the molecule. The structures of these compounds may be seen from the reaction scheme: the compounds (I) and (II) appear as arylated analogs of some N-di(chloro-ethyl)amines of the alicyclic series already earlier described by the authors (Ref 1). The compounds (III) differ from (I) and (II) by the fact that the aromatic radical is not a component of the alicyclic radical. The corresponding cyanogen compounds served as initial products, viz., the nitriles AR-CN for the types (I) and (II), and the nitrile

Card 1/5

SOV/79-28-7-25/64

N-Di (Chloro-Ethyl) Amines With Alicyclic and Aromatic Radicals in the Molecules. II

R-CH-CN, for type (III), where R denotes an alicyclic radical.
|
C_6H_5

All these nitriles are easily obtained by the condensation of the cyanobenzilen with 1,4-dibromobutane, 1,5-dibromopentane and bromocyclohexane in the presence of sodium amide. The reduction of the nitriles to primary amines was carried out either catalytically with hydrogen or by means of lithium-aluminum hydride. The transition from amines to their N-di-(ethyloxy)-derivatives and from these to the N-di(chloroethyl) amines took place according to reference 1. In the purification of the hydrogen chloride salts of the above mentioned amines the solvents had to be selected carefully. The authors synthesized the hitherto not described N-di(chloroethyl) amines and some other compounds of the cyclopentane- and cyclohexane series. There are 1 table and 5 references, 3 of which are Soviet.

Card 2/3

SOV/79-28-7-25/64

N-Di (Chloro-Ethyl) Amines With Alicyclic and Aromatic Radicals in the Molecules. II

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze (All-Union Scientific Chemical and Pharmaceutical Research Institute imeni S. Ordzhonikidze)

SUBMITTED: February 7, 1957

1. Ethyl chloride amines--Molecular structure 2. Ethyl chloride --Synthesis 3. Cyclic compounds--Chemical properties

Card 3/3

5(3)

AUTHORS: Levshina, K. V., Chizhov, A. K., Sheynker, Yu. N., Sergiyevskaya, S. I.

SOV/79-29-4-31/77

TITLE: Sulfonic Esters of the Cyclohexane Diols and the 1,4-Butane Diol (Sul'fonovyye efiry tsiklogeksandiolov i 1,4-butandiola)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 4, pp 1184-1188 (USSR)

ABSTRACT: Some alkyl sulfonic esters of aliphatic diols proved to be useful active agents against some kinds of cancer. The authors had to decide whether the amount and structure of the radical of sulphur had any effect on the biological properties of the sulfonic esters of 1,4-butane diol, and whether the diol necessarily belonged to the aliphatic series. Alkyl sulfonic esters of 1,4-butane diol with the radicals C_2H_5, C_3H_7, cyclo-C_6H_{11} and alkyl sulfonic esters of the isomeric cyclohexane diols (1,2;1,3;1,4) were synthesized. All these compounds were obtained through a transformation of the corresponding sulfochlorides with the diols in water-free benzene and in the presence of triethyl amine. The synthesis of the sulfochlorides was carried out according to references 2 and 3. The initial

Card 1/3

Sulfonic Esters of the Cyclohexane Diols and the 1,4-Butane Diol

SOV/79-29-4-31/77

cyclohexane diols were prepared by catalytic hydrogenation of the corresponding bivalent phenols. Particular interest was caused by the alkyl sulfonic esters of the 1,4-cyclohexane diol, since they are structurally closest to the highly active esters of 1,4-butane diol. For this reason not only methane, but also ethane and propane sulfonates were obtained. The mixture of stereo-isomeric 1,4-cyclohexane diols was separated by recrystallization into cis- and trans-compounds. Starting from the cis- and trans-diols two series of alkyl sulfonates were obtained. The assumed cis- and trans-forms, however, had identical melting points and physicochemical properties. Their infrared absorption spectra were identical as well, while those of the initial 1,4-diols and the isomeric alkyl sulfonates of the 1,2- and 1,3-cyclohexane diol were different (Figs 1,2). Thus it was proved that only one product forms by the reaction of the corresponding alkyl sulfochlorides with cis- and trans-1,4-cyclohexane diols, and that, consequently, an inversion of the less stable form into the stabler one takes place in the course of the reaction. Since the change of the alkyl group in

Card 2/3

Sulfonic Esters of the Cyclohexane Diols and the 1,4-Butane Diol SOV/79-29-4-31/77

the synthesized 1,4-alkyl sulfonates of the cyclohexane (methyl-, ethyl, propyl sulfonates) does not cause any sizable changes in the spectrum (Fig 3), it may be assumed that various alkyl sulfonates exhibit the very same configuration, and that the form in question is the stable trans-form. The biological properties of the compounds obtained generally correspond to those of "milerane" (Mileran). There are 3 figures, 1 table, and 8 references, 3 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze (All-Union Scientific Chemopharmaceutical Research Institute imeni S. Ordzhonikidze)

SUBMITTED: February 10, 1958

Card 3/3

LEVSHINA, K.V.; GAVRILOVA, A.I.; SERGIYEVSKAYA, S.I.

Bis (β-chloroethyl) amines of bicyclic compounds. Part 1: Bis (β-chloroethyl) amines of the indan series. Zhur. ob. khim. 30 no.11:3634-3639 N'60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni. S.Ordzhonikidze.
(Amines) (Indan)

LEVSHINA, K.V.; KOLODKINA, I.I.

Bis (β-chloroethyl) amines of bicyclic compounds. Part 2: 4-methoxy-1-bis (β-chloroethyl) aminoindan and the cyclization of o-methoxyphenylpropionic acid. Zhur. ob. khim. 30 no.11: 3692-3695 N'60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S.Ordzhonikidze.
(Indan) (Propionic acid)

CHIZHOV, A.K.; LEVSHINA, K.V.; SERGIYEVSKAYA, S.I.

Bis (β-chloroethyl) aminomethyl derivatives of azobenzene. Part 1: Method of synthesizing bis (β-chloroethyl) amines of 4-substituted-4'-methylazobenzene. Zhur. ob. khim. 30 no.11:3695-3700 N'60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S.Ordzhonikidze.
(Azobenzene)

CHIZHOV, A.K.; LEVSHINA, K.V.; SERGIYEVSKAYA, S.I.

Bis (β-chloroethyl) amines of bicyclic compounds. Part 3: Some derivatives of benzocycloheptane with substituents in position 7 of the bicyclic compound. Zhur. ob. khim. 30 no.11:3700-3702 N'60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze.
(Cycloheptabenzene)

LEVSHINA, K.V.; SERGEYEVSKAYA, S.I.

Bis(β-chloroethyl)amines of bicyclic compounds. Part 4: Synthesis of benzo- and methoxybenzo-5-cycloheptylamines and some of their derivatives. Zhur. ob. khim. 31 no.1:156-160 Ja '61. (MIRA 14:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze.
(Cycloheptabenzene)

CHIZHOV, A.K.; LEVSHINA, K.V.; SERGIYEVSKAYA, S.I.

Bis (β-chloroethyl) aminomethylazobensenes and some analogous compounds. Zhur. ob. khim. 31 no.4:1288-1297 Ap '61. (MIRA 14:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze.
(Azobenzene)

LEVSHINA, K.V.; KOLODKINA, I.I.; SERGIYEVSKAYA, S.I.

N-bis(chloroethyl)amines of bicyclic compounds. Part 5: Some new derivatives of indan, tetrahydronaphthalene, and benzocycloheptane. Zhur.ob.khim. 32 no.2:464-467 F '62. (MIRA 15:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S.Ordzhonikidze.

(Indan)
(Naphthalene) (Benzocycloheptane)