

ZELINSKIY, V.G., inzh.

Resistance of certain materials to corrosive wear caused by the flow of water through slits. Teploenergetika 6 no.2:63-69 F '59.

(MIRA 12:3)

1. Vsesoyuznyy teplotekhnicheskii institut.  
(Metals--Corrosion) (Feed water)

SAVITSKIY, I.V. [Savyts'kiy, I.V.]; ZELINSKIY, V.G. [Zelinsk'kiy, V.H.]

Inclusion of radiomethionine into serum protein fractions under  
the effect of X rays and thiophosphamide. Ukr. biokhim. zhur.  
36 no.1:14-21 '64. (MIRA 17:12)

1. Department of Biochemistry, Odessa Medical Institute.

ACCESSION NR: APL011376

S/0300/64/036/001/0014/0021

AUTHOR: Savy'ts'ky'y, I. V. (Savitskiy, I. V.); Zelins'ky'y, V. G. (Zelinskiy, V. G.)

TITLE: Incorporation of radiomethionine in the protein fractions of blood serum under the effect of X-ray irradiation and thiophosphamide radiation

SOURCE: Biokhimichnyy zhurnal, v. 36, no. 1, 1964, 14-21 Ukrayins'ky'y

TOPIC TAGS: X-ray, thiophosphamide, serum protein, methionine-S sup 35, gamma-globulin, blood serum, irradiation.

ABSTRACT: The combined effect of X-ray irradiation and thiophosphamide on blood serum proteins and the incorporation of methionine-S<sup>35</sup> in them was studied in experiments on rats. Already within 24 hrs. after irradiation with 600 r the total protein content of blood serum was reduced and the incorporation of methionine-S<sup>35</sup> in all fractions of serum protein increased. Administration of thiophosphamide in a dose of 15 mg/kg reduced to a small extent the protein content of the blood serum. Under the effect of thiophosphamide, the incor-

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ACCESSION NR: AP4014376

poration of methionine into serum proteins was lower vs. that observed on irradiation and higher than that for controls. Combined application of irradiation and thiophosphamide produced changes that differed from those produced by either: the decrease in total protein was the same as after irradiation alone, but the  $\gamma$ -globulin content was reduced to a much greater extent; the incorporation of methionine in all globulin fractions was reduced vs. that occurring on irradiation alone, although the activity of the total protein was higher vs. that for non-irradiated controls. The results obtained indicated that thiophosphamide may to a certain extent counteract the effects of radiation. Furthermore, they corroborated the view that on combined action of radiation and a chemical agent the effects of either may be enhanced or attenuated. Orig. art. has: 2 tables.

ASSOCIATION: Kafedra Biokhimii Odesskogo Meditsinskogo Instituta (Chair of Biochemistry, Odessa Medical Institute)

SUBMITTED: 18May63

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NO REF SOV: 009

OTHER: 004

Card 2/2

ZELINSKIY, V.G. [Zelins'kiy, V.H.]

Effect of 4-aminosalicylic acid and phthivazide on radiomethionine oxidation in the animal organism. Ukr. biokhim. zhur. 33 no.6:842-847 '61. (MIRA 14:12)

1. Department of Biochemistry of Odessa Medical Institute.  
(SALICYCLIC ACID) (ISONICOTINIC ACID)  
(METHIONINE)

137-58-6-11977

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 113 (USSR)

AUTHOR: Zelinskiy, V.I.

TITLE: A Combined Flotation-roasting-hydrometallurgical Method for Extraction of Molybdenum From Oxidized Ores of the Sor Deposits (Kombinirovannyy flotatsionno-obzhigo-gidro-metallurgicheskiy metod izvlecheniya molibdena iz okislennykh rud Sorskogo mestorozhdeniya)

PERIODICAL: Byul. tsvetn. metallurgii, 1957, Nr 9, pp 10-15

ABSTRACT: A presentation of results of testing of a new method for the extraction of Mo from oxidized concentrates obtained by soap flotation. The pilot-plant tests were carried out at the experimental concentration plant of the Sor Kombinat. The concentrate contained 0.32% Mo, 50.2% SiO<sub>2</sub>, 9.55% Fe, 21.1% Al<sub>2</sub>O<sub>3</sub>, 1.9% CaO, 2.7% Na<sub>2</sub>O, 1.36% S, 0.084% P, 0.12% Cu, and 0.07% As. The technology of extraction of Mo from the concentrate involved the following steps: a) calcination of moist concentrate with lime for a period of 20-30 minutes at a temperature of 800-850°C; b) leaching of the cinder with a solution of soda for a period of 1.5 to 2 hours at a 1:1 liquid-to-solid

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137-58-6-11977

A Combined Flotation-roasting-hydrometallurgical Method (cont.)

ratio and a temperature of 80-90°; c) filtration; d) repulping of the slurry with water followed by filtration in conjunction with washing in the filter. After leaching with soda, the solution contains 2.3-2.6 g/l of Mo. Up to 85-88% of Mo are extracted into solution. The Mo is separated from the solution in the form of an  $\text{MoS}_3$  precipitate obtained by the action of  $\text{Na}_2\text{S}$ . The  $\text{MoS}_3$  is heated to a temperature of 300°; the resulting final product contains 36.62% Mo, 0.68%  $\text{SiO}_2$ , 0.05% As, 0.006% P, and 53.27% S. The extraction of Mo into the final product amounts to 80-81%. A hydrometallurgical plant for processing of oxidized concentrate is being designed for the Sor Kombinat on the basis of the new technology.

N.P.

1. Arsenic ores--Processing 2. Arsenic--Separation 3. Alkaline solutions  
--Effectiveness 4. Alkaline-sulfide solutions--Effectiveness 5. Arsenic solvates  
--Processing

Card 2/2

ZELINSKIY, V.I.

ZELINSKIY, V.I.

Photoelectric torsion torsimeters. Izm. tekhn. no.1:37-38 Ja-F '58.  
(Photoelectric measurements) (MIRA 11:2)



S/194/62/000/012/028/101  
D201/D308

AUTHORS: Zelinskiy, V. M., Rukman, G. L. and Fedorov, A. V.

TITLE: A telecontrol system for deep pumps

PERIODICAL: Referativnyy zhurnal, avtomatika i radioelektronika,  
no. 12, 1962, 65, abstract 12-2-130 ye (Tr. Ukr. n.-1.  
in-ta organiz. i mekhaniz. shakhtn. str-va, no. 13,  
1962, 107-118)

TEXT: A description of telecontrol (TC) system of deep pumps of the water drainage system of the pits of the Yakovlev iron ore deposits. The TC is based on ste-by-step selectors (SS) and uses a single 2-wire communication line. TC makes it possible for the dispatcher to choose the output point (OP) and to remotely control the pump motors and also to measure the water level, pump output and motor loads. The dispatch control desk, designed for transmitting five commands to any of the 99 OP, has a signal coder in the form of a telephone disc number selector, 3 blocs of SS, duplicated for self-checking of the SS operations at the control OP arrangements,

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A telecontrol system ...

S/194/62/000/012/028/101.  
D201/D308

a set of relays, a signalling light panel, level meter, output meter, ammeter, ring-off button and a selenium rectifier. The pit control apparatus consists of three SS units, a set of relays and a selenium rectifier operated from the pump power supply circuit. By dialling a two-digit number of the OP two groups of pulses are transmitted along the line. When the first group is received, the SS of the 1st decade at all OP are shifted by the number of steps equal to that of received pulses and as the result the set is made ready to receive the SS pulses of the 2nd decade at all 10 control devices, while the receiving circuit for the 1st decade is opened. After the second group has been received by the control device, the number of which was called, the SS decoder circuit is made ready and connects the command execution circuits for the reception of the third group which carries the command made. Executive circuits in all other control devices remain disconnected. The type of pressure transducer to be chosen is discussed. A short description of the level meter developed for the purpose is given. The level meter is based on the action of a membrane, the motion of which changes the value of inductance in the arm of the bridge cir-

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A telecontrol system ...

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D201/D308

cuit. A short description of a tachometer-type output meter with rotating vane is also given. The parameters of transducers make it possible to transmit the indications to distances of the order of 10 km, with a microammeter as a secondary indicator. In an experimental set-up the load transducer was in the form of an inter-stage transformer, connected in the feeder current circuit of the pump meter. Calibrated curves of transducers are given. Experimental analysis of a 2-point telemetering system proved that the system, apparatus and transducers can operate satisfactorily.

[Abstracter's note: Complete translation.]

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ZELINSKIY, V.M.

NESTEROV, P.P.; FEDOROVA, Z.M.; ZELINSKIY, V.M.; SHUKATOVICH, kandidat  
tekhnicheskikh nauk, redaktor; ~~VUJEN, M.~~ tekhnicheskij redaktor

[Hoisting machinery for use in shaft sinking and tunneling] Pro-  
khodcheskie pod'emnye ustanovki. Kiev, Gos. izd-vo tekhn. lit-ry  
USSR, 1953. 312 p. (MLRA 7:9)  
(Hoisting machinery)

ZELINSKIY, V. M.

ZELINSKIY, V. M. - "Investigation of an air hoist for mine drilling equipment based on dimensionless characteristics." Khar'kov, 1955. Min Higher Education Ukrainian SSR. Khar'kov Mining Inst. (Dissertations for degree of Candidate of Technical Sciences.)

SO: Knizhnaya letopis', No 48 26 November 1955. Moscow.

NESTEROV, Pavel Petrovich, professor; FEDOROVA, L'oya Mikhaylovna, dotsent;  
ZELINSKIY, Vyacheslav Mikheylovich, kandidat tekhnicheskikh nauk;  
KOCHERGA, N., vedushchiy redaktor; GOLOVCHENKO, G., tekhnicheskii  
redaktor

[Ventilating, draining, and pneumatic apparatus for shaft sinking]  
Prokhodchieskie ventilatornye, vodootlivnye i pnevmaticheskie  
ustanovki. Kiev, Gos. izd-vo tekhn. lit-ry USSR, 1956. 371 p.

(MIRA 10:1)

1. Khar'kovskiy gornyy institut (for Nesterov, Fedorova) 2. Nachal'-  
nik otdela mekhanizatsii Vsesoyuznogo nauchno-issledovatel'skogo  
instituta organizatsii i mekhanizatsii shakhtnogo stroitel'stva  
(for Zelinskiy) 3. Chlen-korrespondent Akademii nauk USSR (for  
Nesterov)

(Mining machinery) (Shaft sinking)

VITRIK, D.I., red.; BESSMERNYY, A.S., red.; DOROSHENKO, G.N., red.;  
ZELINSKIY, V.M., red.; KOKSHENEV, B.G., red.; SLAVUTSKIY, S.M.,  
red.; SHIGROV, Ye.L., red.; SHKABARA, M.N., doktor geolog.-  
mineral.nauk, red.; VOLOVICH, M.Z., red.izd-va; BEREZSLAVSKAYA,  
L.Sh., tekhn.red.; NADEINSEKAYA, A.A.; tekhn.red.

[Studies in mine construction] Issledovaniia po shakhtnomy  
stroitel'stvu. Moskva, Ugletekhizdat, 1958. 213 p. (MIRA 12:3)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut  
organizatsii shakhtnogo stroitel'stva.  
(Mining engineering)

*Zelinskiy, V.M.*

KRASTOSHEVSKIY, L.S.; DANCHICH, V.V.; AVDIYENKO, T.G.; ARKHANGEL'SKIY, A.F.;  
GAK, A.M.; YEPIFANTSEV, Yu.P.; ZELINSKIY, V.M.; IVANOV, P.S.; IVASHCHENKO,  
P.R.; KALININA, M.D.; KRAVCHENKO, A.G.; KOTLYAROVA, A.V.; KRUGLYAKOVA,  
M.D.; LEVIKOV, I.I.; LIBKIND, R.I.; NIKOLAYEVA, N.A.; NAUMENKO, V.F.;  
PRESHMAN, I.B.; PRISYAZHNIKOV, V.S.; POBEDINSKAYA, L.P.; POKALYUKOV,  
S.N.; POPOV, A.A.; SOLOMENTSEV, M.N.; TARASOV, I.V.; FILONENKO, A.S.;  
SHISHOV, Ye.L.; SHRAYMAN, L.I.; YAKUSHIN, N.P.; ZVORYKINA, L.N., red.  
izd-va; LOMILINA, L.N., tekhn.red.

[Horizontal mining in foreign countries] Provedenie gorizonta'nykh  
vyrabotok za rubezhom. Moskva, Ugletekhizdat, 1958. 342 p. (MIRA 12:4)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii  
i mekhanizatsii shakhtnogo stroitel'stva.  
(Mining engineering)



ZELINSKIY, V.M., kand.tekhn.nauk; SEREBRENNIKOV, V.V., inzh.; BYKOV, V.V.,  
inzh.

Equipment for automatic control of mine pumps. Shakht. stroi.  
no.5:17-21 '58.

(MIRA 11:6)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii i  
mekhanizatsii shakhtnogo stroitel'stva.  
(Mine pumps) (Automatic control)

BUBLIKOV, Ye.V., inzh.; ZELINSKIY, V.M., kand.tekhn.nauk; FEDOROV, S.V.,  
starshiy nauchnyy sotrudnik; BUNYAYEVA, A.I., tekhnik; TELEPNEV,  
D.Ya., starshiy nauchnyy sotrudnik; RATS, A.F., inzh.; BERKOVICH,  
M.A., inzh., glavnyy konstruktor; ZVORYKINA, L.N., red.izd-va;  
LOMILINA, L.N., tekhn.red.

[Low-speed winches for mining] Prokhodcheskie tikhokhodnye lebedki.  
Moskva, Ugletekhizdat, 1959. 7 p. (MIRA 12:10)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut organi-  
zatsii i mekhanizatsii shakhtnogo stroitel'stva. 2. Ukrainskiy  
nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii  
shakhtnogo stroitel'stva (for Bublikov, Zelinskiy, Fedorov,  
Bunyayeva, Telepnev). 3. Tsentral'nyy nauchno-issledovatel'skiy  
i proyektno-konstruktorskiy institut podzemnogo i shakhtnogo stroi-  
tel'stva (for Rats, Berkovich). 4. Nachal'nik sektora Ukrainskogo  
nauchno-issledovatel'skogo instituta organizatsii i mekhanizatsii  
shakhtnogo stroitel'stva (for Bublikov). 5. Nachal'nik Otdela gornoy  
elektromekhaniki Ukrainskogo nauchno-issledovatel'skogo instituta organizatsii  
i mekhanizatsii shakhtnogo stroitel'stva (for Zelinskiy). 6. Nachal'-  
nik Otdela gornoy elektromekhaniki Tsentral'nogo nauchno-issledovatel'-  
skogo i proyektno-konstruktorskogo instituta podzemnogo i shakhtnogo  
stroitel'stva (for Rats).

(Winches)

(Mining machinery)

KAMINSKIY, D.N., red.; FAIBISOVICH, I.L., red.; ZELINSKIY, V.M., red.;  
CHECHKOV, L.V., red. izd-va; PROZOROVSKAYA, V.L., tekhn. red.

[Handbook for mining engineers and technicians] Spravochnik me-  
khanika-shakhtostroitelia. Pod red. D.N.Kaminskogo, I.L.Faibiso-  
vicha, V.M.Zelinskogo. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry  
po gornomu delu, 1961, 1062 p. (MIRA 14:9)  
(Mining engineering)

ZELINSKIY, Vyacheslav Mikhaylovich, kand. tekhn. nauk; SLOBODKIN, Dmitriy Savvich, kand. tekhn. nauk; TARAN, Arseniy Grigor'yevich, inzh.; TVERDOKHLEBOV, Ivan Panteleyevich, inzh.; ZHUK, Boris Vasil'yevich, inzh.; BEBENIN, M.Ye., inzh., retsenzent; CHUMACHENKO, T.I., red.izd-va; BEREZOVYY, V.N., tekhn. red.

[Control of mine waters] Bor'ba s shakhtnymi vodami. [By] V.M.Zelinskii i dr. Kiev, Gostekhizdat USSR, 1963. 360 p.  
(MIRA 17:3)

ZELINSKIY, V.M., kand. tekhn. nauk; RUKMAN, G.L., inzh.; FEL'DMAN, G.B., inzh.;  
DENISENKO, S.A., inzh.; SMOLINA, Z.K., inzh.; KOSTOGRYZ, P.L., inzh.;  
IOFFE, I.M., tehnik

Experience in introducing remote control of pumps in drainage boreholes  
at the S.M.Kirov mine. Shakht. stroi. 9 no.10:27-28 0 '65. (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii i  
mekhanizatsii shakhtnogo stroitel'stva (for Zelinskiy, Rukman,  
Fel'dman). 2. Institut Avtomatuglerudprom zavoda "Krasnyy metal-  
list" (for Denisenko, Smolina, Kostogryz) 3. Yakovlevskoye stroitel'no-  
montazhnoye upravleniye tresta Soyuzshakhtoosusheniye (for Ioffe).

USSR/Diseases of Farm Animals - Diseases Caused by Bacteria  
and Fungi

R

Abs Jour : Ref Zhur Biol., No 5, 1959, 21394

Author : Zelinskiy, V.P.

Inst : Leningrad Scientific Research Veterinary Institute

Title : Therapy in Erysipelas of Swine

Orig Pub : Byul. nauchno-tekhn. inform. Leningr. n.-i. vet. in-ta,  
1958, vyp. 5, 19-22

Abstract : It was shown that in severe forms of erysipelas in  
n swine, penicillin (I) cannot be regarded as a safe sub-  
stitute for antierysipelas serum (AS). It is more effi-  
cient to combine (I) with AS. If erysipelas takes the  
course of urticaria in the swine, (I) as well as AS used  
separately produce the same therapeutic effect, thus ren-  
dering a combined application of these preparations inex-  
pediant. -- From the author's summary.

Card 1/1

ZUBRILOV, L.Ye., kand.tekhn.nauk; SHILIN, A.N.; ZELINSKIY, V.V., gornyy inzhener

"Annual output of mining and ore-dressing combines of the iron ore industry" by L.A.Mizernitskii. Reviewed by L.E.Zubrilov, A.N. Shilin, V.V.Zelinskii. Gor.zhur. no.5:13-17 My '61. (MIRA 14:6)

1. Gorno-geologicheskii institut Ural'skogo filiala Akademii nauk, Sverdlovsk (for Zubrilov).
2. Ural'skiy nauchno-issledovatel'skiy i proyektnyy institut mednoy promyshlennosti, Sverdlovsk (for Shilin).
3. Gosudarstvennyy nauchno-tekhnicheskii komitet Soveta Ministrov USSR (for Zelinskiy).

(Iron mines and mining)

(Ore dressing)

ZELINSKIY, V.V.

Strip mining in the U.S.A. (from "Mechanization," July, 1960). Ugol'  
Ukr. 5 no.7:43 J1 '61. (MIRA 15:1)  
(United States--Strip mining)



ZELINSKIY, V.V.

Intravenous administration of novocain in gynecological diseases.  
Akush. gin. no.3:66-67 May-June 1953. (GLML 25:1)

1. Of the First Women's Consultation Clinic (Head -- A. M. Aliyeva),  
Dzardzhikau.

ZELINSKIY, V.V.

Application of styptics in vaginal trichomoniasis. Akush. gin. no.6:  
62-64 Nov-Dec 1953. (GLML 25:5)

1. Of Dsandshikau First Women's Consultation Center (Head -- V. V.  
Zelinskiy).

100 AND 400 (CARET)

101 AND 100 (CARET)

PROCESSES AND PROPERTIES INDEX

3

*ca*

Fluorescent screens of high resolving power. V. V. Zelinsh. *Doklady Akad. Nauk S. S. R.* 40, 218 (1947) (*Compt. rend. acad. sci. U. R. S. S.* 40, 220 (1947) (in English).—Cellulose, cellulose acetate and polymethylmethacrylate (I) were found to be about equally well adapted as base material to which fluorescent material may be applied to make screens for rendering visible ultraviolet-light images. Screens having resolving power of 300 300 lines per mm. were obtained by immersing, at 60°, a ground plate of I in a soln. contg. 0.4% 3-aminophthalimide (II) and 0.4% of 3,6-diaminophthalimide (III) dissolved in a 3:2 mixt. of alc. and water. After 30 min., the plate was removed, dried at room temp. and sponged off with cotton moistened with alc. The dyed surface was removed from one side of the plate by grinding. The brightness of the screen was 24% of a uranyl potassium sulfate screen. Replacement of II with 4-amino-3-methylaminophthalimide or 4-methylaminophthalimide produced nearly the same result. Brightness was decreased by replacing III with Rhodamine 6G. An analysis of light absorption and emission by II, III and mixts. of II and III is given for the interval 3000-7000 Å.

J. W. Perry

ASB-SEA RETAEOLOGICAL LITERATURE CLASSIFICATION

100 AND 400 (CARET)

101 AND 100 (CARET)

CA

One possible cause of the internal extinction of the fluorescence of complex organic molecules. V. V. Zelinskii. *Doklady Akad. Nauk S.S.S.R.* 56, 383-8 (1947); *Chem. Zentr.* (Russian Zone Ed.) 1940, I, 483; cf. *C.A.* 43, 7820a. — In addn. to the case of the absence of fluorescence discussed by Terenin (cf. *C.A.* 38, 5119<sup>a</sup>) and by Pečtilov (cf. *C.A.* 30, 4802<sup>a</sup>), there is a further possibility in the case of derivs. of aromatic hydrocarbons. Those groups which have a strong extinguishing action on fluorescence, such as NO, NO<sub>2</sub>, and the halogens, have a strong dipole moment with the pos. end on the benzene nucleus and the neg. end at the terminal atoms of the group. Conversely, groups, such as OH and NH, which do not extinguish fluorescence have the neg. end of the dipole toward, and the pos. end away

from, the ring. The existence of a 1st approximation of the Lewis model of an electron oscillator is assumed (cf. Lewis and Calvin, *C.A.* 34, 671<sup>a</sup>). During the absorption of light the energy of the electron cloud increases, and the resonance energy of those structures highest in energy also increases. These are the structures of internal ionization. With intensification of the resonance there is a reduction in the no. of valence linkages between the atoms and, consequently, of the distance between them. A change in the distance between atoms brings about a transition from energy of excitation into energy of oscillation, and results in the weakening or extinguishing of fluorescence. In the case of the NO<sub>2</sub>, NO, or halogen-substituted compds. the electron shift takes place easily toward O or halogen. The probability of the transition of energy of excitation into energy of oscillation is great, so that extinction of fluorescence results. In OH and NH, compds. the electron shift is toward the C atoms, which have slight affinity for electrons. Moreover, there are a change in linkage conditions, so that no marked extinction of fluorescence is observed in these cases. Similar considerations apply to the behavior of compds. contg. substituents of both the above types. In such cases, the strength of the dipole moments of the individual substituents is the decisive factor. The influence of the *o*-, *m*-, and *p*-positions is also to be considered.

M. G. Moore

CA

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PROCESSES AND PROPERTIES INDEX

Structure of the molecule and fluorescence. V. V. Zelinskii, *Izv. Akad. Nauk S.S.S.R., Ser. Fiz.* 13, 43-7 (1949).--All aromatic hydrocarbons with condensed rings fluoresce. The fluorescence is diminished by "diminofor" groups replacing the H-atom and, in most cases, enhanced by "auxofor" groups. The brightest fluorescence occurs when 2 auxofor groups are in *p*-position (minimum dipole moment); the dipole moment is increased and the fluorescence lowered if an auxofor group is added in *p*-position to a mol. with a diminofor group. In mols. contg. diminofors the neg. end of the dipole (O or Cl atoms) is directed towards the group. In mols. contg. auxofors the neg. charge is directed towards the 3 C atoms of the ring. This consideration is substantiated by comparison of the structure of hydroquinone (fluorescent) and phloroglucinol (nonfluorescent). The fluorescence is reduced when the probability of ionization of certain atoms is increased. In halides quenching increases from P to I; the homopolarity of the bond increases in the same direction. The fluorescence of PhOH and BzOH in alk. media is low because electrically charged structures are formed. However the *p*-hydroxybenzoic acid is fluorescent because the bond character is less subject to charge. The solvent can have a considerable action on the fluorescence if several auxofors and diminofors are present in the mol. S. Paksver

State Optical Inst.

ASH. S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

C-2

PROCESSES AND PROPERTIES INDEX

3

*CP*

Phosphors with ultraviolet emission. V. V. Zelinskii and I. V. Timofeeva. *Doklady Akad. Nauk S.S.S.R.* 66, 187-9(1949).—Ultraviolet phosphorescence is shown by phosphates activated by  $Ce^{+3}$  or  $Ce^{+4}$  salts. The efficiency decreases in the series of phosphates of Ca, Sr, Ba, Mg, Zn, and Cd. Introduction of  $MgCl_2$ ,  $MgF_2$ , or  $NaF$  increases the brightness. Particularly effective is  $MgCO_3$ , the optimum amt. of which varies with the basicity or acidity of the phosphate; thus, with  $Ca_3(PO_4)_2$ ,  $CaH_2PO_4$ , and  $CaH_4(PO_4)_2$ , the optimum amts. of  $MgCO_3$  were ~15, 30, and 35%, resp. With  $Ca_3(PO_4)_2$ , the brightness increased with the amt. of Ce up to about 5%, then remained const. between 5 and 9% Ce; with  $CaH_2PO_4$ , the brightness passed through a max. at about 6% Ce, with  $CaH_4(PO_4)_2$  at about 8% Ce. The best phosphor was obtained by pptg.  $CaCl_2$  with  $(NH_4)_2HPO_4$ , with both reagents purified with subacetic acid, mixing the Ca phosphate with  $MgCO_3$ , firing 1 hr. at  $1200^\circ$ , grinding with  $Ce(OH)_3$ , and firing 30 min. at  $1200^\circ$ . This phosphor emitted from about 320 m $\mu$ , with a max. at about 400 m $\mu$ . Its absorption curve has max. at ~270, 295, and 310 m $\mu$ ; its excitation curve has max. at about 290, 270, 300, and 310 m $\mu$ . Contrary to Froelich (*C.A.* 41, 2990),  $Ce^{+4}$  has no unfavorable effect. N. Thon

A 58-11.6 METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND COPIES

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CA

Some properties of phosphate phosphors. V. V. Zelinskii, P. M. Pekerman, T. V. Timofeeva, and B. I. Vainberg (State Optical Inst., Leningrad). *Zhur. Eksp. Teoret. Fiz.* 20, 395-400 (1950).—Absorption spectra of phosphates of Cd, activated with Mn and Pb, and of Ca, activated with Ce or Sb and Sb + Mn, lie in the short-wave ultraviolet and are detd. mainly by the activator. Thus, the absorption curve of  $\text{Ca}_2(\text{PO}_4)_2\text{Ce}$  represents a modified ultraviolet-absorption curve of Ce.  $\text{Ca}_2(\text{PO}_4)_2\text{Mn}$  has no absorption near the resonance line, and the low max. at 290 m $\mu$  is inactive in luminescence.  $\text{Ca}_2(\text{PO}_4)_2\text{Sb}$  has absorption bands from 320 m $\mu$  down.  $\text{Ca}_2(\text{PO}_4)_2(\text{Sb} + \text{Mn})$  has almost the same absorption spectrum; evidently, Sb acts as a sensitizer which transmits the absorbed energy to Mn. The host has no absorption of its own in the whole range 313-254 m $\mu$ . However, the nature of the host does have an influence on the absorption of the activator; thus, the absorption of  $\text{Sr}_2(\text{PO}_4)_2\text{Sb}$  is shifted to longer waves as compared with  $\text{Ca}_2(\text{PO}_4)_2\text{Sb}$ . The emission spectrum of  $\text{Ca}_2(\text{PO}_4)_2\text{Ce}$  extends from 320 to 450 m $\mu$ , with a max. at 390 m $\mu$ . The emission spectra of  $\text{Cd}_2(\text{PO}_4)_2\text{Mn}$  and  $\text{Cd}_2(\text{PO}_4)_2\text{Pb}$  are detd. by the activator, whereas the emission of  $\text{Cd}_2(\text{PO}_4)_2$  represents a combination of the two, the distribution of the emission energy between Mn and Pb depending

on the intensity of excitation: in weak excitation, the emission is due mainly to Pb. The emission of  $\text{Ca}_2(\text{PO}_4)_2\text{Sb}$  has a max. at 460 m $\mu$  which on addn. of Mn moves to longer waves, the farther the higher the amt. of Mn; at the same time, the intensity of the Sb band decreases progressively. Replacement of Ca by Sr in  $\text{Ca}_2(\text{PO}_4)_2\text{Sb}$ , with the activator unchanged, shifts the max. of emission from 460 to 520 m $\mu$ .  $\text{Cd}_2(\text{PO}_4)_2\text{Mn}$  has a very bright luminescence, whereas  $\text{Ca}_2(\text{PO}_4)_2\text{Mn}$  does not emit at all.  $\text{Ca}_2(\text{PO}_4)_2$  activated with Ce or Sb, and  $\text{Cd}_2(\text{PO}_4)_2\text{Pb}$  show very short luminescence of less than  $10^{-6}$  sec. The latter, moreover, shows a fairly long after-emission, decaying hyperbolically.  $\text{Cd}_2(\text{PO}_4)_2\text{Mn}$  decays exponentially with  $\tau \sim 10^{-2}$  sec., whereas in  $\text{Cd}_2(\text{PO}_4)_2(\text{Mn} + \text{Pb})$  that decay is followed by a long-

lived sky-blue afterglow due to Pb: its intensity, after 0.06 sec., is about 10% of the total emission intensity at excitation. The emission of  $\text{Ca}_2(\text{PO}_4)_2(\text{Sb} + \text{Mn})$  consists of 2 components, one short (of  $< 10^{-6}$  sec.) due to Sb and one long, decaying exponentially, due to Mn. Higher Mn content increases the brightness owing to coem. quenching. In terms of the temp., the brightness of  $\text{Cd}_2(\text{PO}_4)_2(\text{Pb} + \text{Mn})$  decreases linearly with rising temp. in the whole range 0-180°. In contrast to it, the brightness of  $\text{Ca}_2(\text{PO}_4)_2(\text{Sb} + \text{Mn})$  remains very nearly const. between -180 and +150° and then falls with further rising temp., to about half at 250°. N. Thou

ZELINSKII, V. V.

3 4

Investigation of the spectra of substituted phthalimides in vapor and in solution. B. S. Nenorent, V. V. Zelinskii, and V. P. Klochkov. *Doklady Akad. Nauk. S.S.S.R.* 92, 927-30(1953) (Engl. translation issued as *U.S. Atomic Energy Comm. NSF-tr-216*, 6 pp.(1954)).—The fluorescence and absorption spectra of a series of mono- and disubstituted phthalimides were compared both in the vapor state and in soln. and at different temps. The relation between the fluorescence and absorption spectra, as well as the spectral widths, remained unchanged on transition from the gaseous state to the dissolved state; the soln. spectrum positions were displaced toward longer wave lengths. As the intra-mol. interaction increased, on going through the series investigated, the influence of solvent on the mol. decreased, with corresponding decrease in the displacement of the soln. spectrum with respect to the vapor spectrum. A. J. Mabjs



ZELINSKIY, V.V.

USSR/Chemistry - Spectral analysis

Card 1/1 Pub. 43 - 93/97

Authors : Neporent, S. K.; Zelinskiy, V. V.; and Klochkov, V. P.

Title : Comparative investigation of spectra of complex organic compounds in vapors and solutions

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, page 297, Mar-Apr 1954

Abstract : It was assumed that the continuous spectra of complex organic compounds are due to the overdistribution of oscillatory energy within the molecule. In order to verify this assumption the authors investigated the fluorescence and absorption spectra of nine phthalimide derivatives in gaseous and dissolved states. The results obtained are briefly summarized. One USSR reference (1947 and 1951).

Institution : .....

Submitted : .....

*L-PL/INS/FLY V. V.*  
USSR/Physical Chemistry, Photo Chemistry, Radiation Chemistry,  
Theory of Photographic Process.

B-10

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22449.

Author : N. A. Borisevich, V. V. Zelinskiy, B. S. Neporent.

Inst : Not given

Title : Yield of Vapor Fluorescence and of Replaced Phthalimide Solutions.

Orig Pub : Dokl. A.N. USSR, 1954, 94, No 1, 37-39.

Abstract : No abstract.

Card 1/1

-150-

ZELINSKIY, V. V.

USSR/Physics - Luminescence

Card 1/1 Pub. - 12/51

Authors : Zelinskiy, V. V. and Kolobkov, V. P.

Title : ~~Ratio of quantum yields of phosphorescence and fluorescence of phthalimides~~  
Ratio of quantum yields of phosphorescence and fluorescence of phthalimides

Periodical : Dok. AN SSSR 101/2, 241-244, Mar 11, 1955

Abstract : Experiments intended to determine ratios of quantum yields of phosphorescence and fluorescence of various phthalimides are described. The results obtained are listed and summarized. Five references: 4 USSR and 1 USA (1940-1952). Tables.

Institution : .....

Presented by: Academician A. N. Terenin, August 26, 1954

*Zelinskiy, V.V.*

USSR / Optics

K

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10407

Author : Zelinskiy, V.V., Kolobkov, V.P.

Inst : Not Given

Title : Increase in Quantum Yields of Phosphorescence Under the Influence of Potassium Iodide.

Orig Pub: Optika i spektroskopiya, 1956, 1, No 4, 560-570

Abstract: The authors determine the absolute quantum yields of phosphorescence of alcohol solutions 4-acetylamino-N-methylphtamide, 3,6-diacetylamino-N-methylphtalimide,  $\beta$ -acetylamino-phtaline,  $\beta$ -naphthylamine, and  $\alpha$ -acetylamino-naphthaline at the temperature of liquid air. An investigation is made of the effect of potassium iodide, which is a fluorescence quencher, on the phosphorescence yield. It is shown that addition of potassium iodide to the solution leads to an increase in the phosphorescence yield with simultaneous decrease in the fluorescence yield. The authors believe

Card : 1/2

USSR / Optics

K

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10407

that a mechanism of quenching of fluorescence by potassium iodide and similar substances consists of increasing the probability of the transition of the excited molecules from the singlet state into the triplet state. The experimental procedure is described in detail.

Card : 2/2

ZELINSKIY, V.V.

AUTHORS: Zelinskiy, V.V., Kolobkov, V.P. and Pikulik, L.G. <sup>51-3-23/24</sup>

TITLE: Dependence of the fluorescence and absorption spectra on the solvent for certain phthalimide derivatives.  
(Zavisimost' spektrov fluorestsentsii i pogloshcheniya ot rastvoritelya u nekotorykh proizvodnykh ftalimida).

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy), 1957, Vol.2, No.3, pp.402-405 (U.S.S.R.)

ABSTRACT: The effect of the solvent on the fluorescence and absorption spectra of phthalimide derivates consists of a displacement of the spectral band without alteration of its shape. This paper presents experimental results at room temperature for the 4-derivates (8 compounds such as 4-aminophthalimide), 3-derivatives (12 compounds such as 3-acetylamino-N-methylphthalimide) and 3,6-derivates (10 compounds such as 3,6-diacetylamino-N-methylphthalimide) of phthalimide. The maximum frequency of fluorescence or absorption is plotted against the solvent (23 solvents were used, e.g. water, glycerin, methanol, pyridine, acetone, CCl<sub>4</sub>, etc). The solvents are given places on the abscissa in such a way that distances are proportional to the spectral displacement produced by that particular solvent on a standard substance which is 4-amino-N-methylphthalimide. For the fluorescence

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Dependence of the fluorescence and absorption spectra on the solvent for certain phthalimide derivatives. (Cont.)  
spectral displacement sets of straight lines are obtained, <sup>51-3-23/24</sup>  
for the absorption spectra the dependence is more complex. The effect of the solvent could not be correlated with its dielectric constant or its dipole moment and further work, e.g. on variation of the spectral displacement with temperature, is suggested.  
There are 3 figures and 8 references, 7 of which are Slavic.

SUBMITTED: October 22, 1956.

AVAILABLE:

Card 2/2

AUTHORS: Zelinskiy, V.V., Kolobkov, V.P. and Pikulik, L.G. 51-3-24/24  
TITLE: An attempt at construction of a unidimensional model of potential curves for certain derivatives of phthalimide. (Popytka postroyeniya odnomernoy modeli potentsial'nykh krivyykh dlya nekotorykh proizvodnykh ftalimida).

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy), 1957, Vol.2, No.3, pp. 405-408 (U.S.S.R.)

ABSTRACT: Starting from the absorption and fluorescence spectra, the authors construct unidimensional potentials for complex molecules. It is assumed that electron transitions do not violate the Franck-Condon principle. The transitions from various points of a potential curve are taken to be equally probable. The distribution of molecules in various vibration levels at a given temperature is taken to be the same for different molecules and for both the ground and excited states. The method of construction of these potentials is described and potential curves are shown for the ground and excited states of 4-amino-N-methylphthalimide solutions in methyl alcohol and pyridine, and of 3,6-diacetylamino-N-methylphthalimide solutions in ethyl alcohol and benzene. When the absorption and fluorescence spectra are mirror-symmetrical, the potentials for the ground and excited states are identical,

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An attempt at construction of a unidimensional model of potential curves for certain derivatives of phthalimide, (Cont.)  
but, in general, displaced with respect to one another. This displacement is shown to be related to the displacement of the absorption and fluorescence spectra in opposite directions when a solvent is changed. For substances which do not possess spectral mirror symmetry the excited-state potential is narrower than the ground-state potential. There are 2 figures and 7 references, 4 of which are Slavic.

SUBMITTED: October 22, 1956.

AVAILABLE:

Card 2/2

*Zelinskiy, V. V.*

AUTHORS: Zelinskiy, V. V., Kolobkov, V. P., 20-3-16/52  
Kondaraki, N. I.

TITLE: On the Connection Between the Degree of Efficiency of Some Fluorescence Quenchers and the Position of the Fluorescence Spectrum (O svyazi effektivnosti deystviya nekotorykh tushiteley fluorestsentsii s polozheniyem spektra fluorestsentsii)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 391-394 (USSR)

ABSTRACT: The present paper carries out a qualitative investigation of the connection between the influence exercised by foreign admixtures upon the duration of the excited state and the position of the fluorescence spectrum. The degree of efficiency of the quencher (tushitel') is here characterized by the quantity

$$k = (\tau_1 - \tau_2) \eta / \tau_1 \tau_2 c$$

Here  $\tau_1$  denotes the duration of the excited state with the quencher lacking,  $\tau_2$  - the duration after a quencher has been added, with given concentration of the quencher,  $c$  - the concentration of the in mol/l,  $\eta$  - the viscosity of the

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On the Connection Between the Degree of Efficiency of Some  
Fluorescence Quenchers and the Position of the Fluorescence  
Spectrum 20-3-10/52

solvent in poises. The quantity which is directly measurable is the difference of the phases of the modulated fluorescence light of the illuminated and not illuminated solutions. The process used here increases the accuracy of the determination of the degree of efficiency of the quenchers considerably. As foreign quenching bodies iodine triethylamine, potassium iodide, aniline, and diethylaniline are used. The authors investigated the effect of these admixtures upon the duration of the fluorescence of some 3-, 4- and 3.6 derivatives of the phthalimide of several of the solvents mentioned here. The individual results of these investigations are shown in form of a table. 2 diagrams illustrate the dependence of the degree of efficiency of the quenchers on the position of the fluorescence spectrum of the respective solution for various derivatives of the phthalimide. In certain cases the degree of efficiency increases with increasing frequency of the maximum of the fluorescence spectrum. A dependence of the degree of efficiency on the position of the spectrum does not only exist, but it

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On the Connection Between the Degree of Efficiency of Some  
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is even essential: The influence of the other properties of the solvent upon the degree of efficiency is, however, of less importance. These rules, however, do not hold good with respect to the degree of efficiency of the action of the potassium oxide on the fluorescences of aqueous solutions. The behavior of individual derivatives is then discussed. There are 2 figures, 2 tables, and 3 references, all of which are Slavic.

PRESENTED: June 6, 1957, by A. N. Terenin, Academician

SUBMITTED: May 28, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Zelinskiy, V.V. and Kolobkov, V.P.

SOV/51-5-4-10/21

TITLE: On the Effect of Temperature on Fluorescence Spectra of Phthalimide Derivatives (K voprosu o vliyani temperature na spektry fluorestsentsii proizvodnykh ftalimida)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 4, pp 423-427 (USSR)

ABSTRACT: The fluorescence spectra of solutions of various phthalimide derivatives, obtained at  $-196^{\circ}\text{C}$  were compared with the  $20^{\circ}\text{C}$  spectra. Figs 1 and 2 show the dependence of the maximum frequency on solvent at  $20^{\circ}\text{C}$ ; these dependences are given by straight lines I-VIII. The spectral maxima at  $-196^{\circ}\text{C}$  are shown by points joined by dashed lines: Ia-VIIIa. The substances studied were: I - 4-amino-N-methylphthalimide; II - 4-acetylamino-N-methylphthalimide; III - 3-amino-N-methylphthalimide; IV - 4-oxy-N-methylphthalimide; V - 3-methylacetylamino-6-acetylamino-N-methylphthalimide; VI - 3,6-diacetylamino-N-methylphthalimide; VII - 4-dimethylamino-N-methylphthalimide; VIII - 3-oxy-N-methylphthalimide. The solvents were divided into two groups. The first group consisted of "glassy" solvents: 1 - glycerin; 2 - tertiary butyl alcohol; 3 - methyl alcohol with 10% of water; 4 - ethyl alcohol; 5 - acetic anhydride; 6 - O-formic ether; 7 - propyl acetate; 8 - triethylamine;

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On the Effect of Temperature on Fluorescence Spectra of Phthalimide Derivatives

SOV/51-5-4-10/21

9 - diisocamyl ether; 10 - toluene. The second group consisted of ice-like solvents; 1\* - water; 2\* - acetic acid; 3\* - methyl alcohol; 4\* - benzaldehyde; 5\* - menthol; 6\* - thymol; 7\* - ethyl acetate; 8\* - pyridine; 9\* - acetone; 10\* - nitromethane; 11\* - chloroform, 12\* -  $\alpha$ -chloronaphthalene; 13\* - dioxane; 14\* - anisole; 15\* - diethyl ether; 16\* - propyl bromide; 17\* - chlorobenzene; 18\* - benzene; 19\* - carbon tetrachloride; 20\* - n-hexane. It was found that the sequence of the effect of solvents on the fluorescence spectra, determined by the chemical nature of the solvent, which was observed at 20°C, was not obeyed at -196°C. This is ascribed to several factors, primarily to the compression or expansion with lowering of temperature and the change in densities of the substances studied. There are 2 figures and 5 Soviet references.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S.I. Vavilova (State Optical Institute imeni S.I. Vavilov)

SUBMITTED: October 7, 1957.

Card 2/2 1. Phthalimides--Spectra 2. Phthalimides--Fluorescence  
3. Phthalimides--Temperature factors

SOV/51-5-4-19/21

AUTHORS: Golikova, L.Ye., Zelinskiy, V.V. and Kolobkov, V.P.

TITLE: Dependence of the Ratios of the Yields of Phosphorescence and Fluorescence on the Position of the Fluorescence Spectrum (Zavisimost' otnosheniy vykhodov fosforesstentsii i fluorestsentsii ot polozheniya spektra fluorestsentsii)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 4, pp 480-482 (USSR)

ABSTRACT: Zelinskiy and Kolobkov (Ref 1) measured the ratios ( $\delta$ ) of the quantum yields of phosphorescence and fluorescence of certain phthalimide derivatives at  $-196^{\circ}\text{C}$ . Comparison of  $\delta$  with the frequency of maxima in the fluorescence spectra ( $\nu_{fl}^{\max}$ ) has shown that in all the compounds dealt with in Ref 1 there is a definite relationship between  $\delta$  and  $\nu_{fl}^{\max}$ . The present paper reports similar relationships between  $\delta$  and  $\nu_{fl}^{\max}$  obtained at  $-196^{\circ}\text{C}$  for four phthalimide derivatives and for six other substances. Luminescence was excited with a mercury lamp using 365 or 313 m $\mu$  lines. Generally the same value of  $\delta$  was obtained whether 365 or 313 m $\mu$  excitation was employed; the only exception was phenanthrene in ethyl alcohol. The results obtained are shown in a figure on p 480 and a table on p 481. The Roman numbers I-X used in the figure and the table on pp 480 and 481 represent the following substances: (I) 3-dimethylamino-6-methylacetylamino-phthalimide;

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SOV/51-5-4-19/21

## Dependence of the Ratios of the Yields of Phosphorescence and Fluorescence on the Position of the Fluorescence Spectrum

(II) 3-amino-6-nitro-phthalimide; (III) 3-dimethylamino-6-nitro-phthalimide; (IV) 3-diphenylamino-N-methyl-phthalimide; (V) para-aminobenzoic acid; (VI) paradimethylaminobenzoic acid; (VII) methyl paradimethylaminobenzoate; (VIII)  $\alpha$ -naphthol; (IX)  $\beta$ -naphthol; (X)  $\beta$ -naphthylamin. The Arabic numerals 1-16 represent the following solvents: (1) water; (2) benzene; (3) carbon tetrachloride; (4) acetic acid; (5) propyl acetate; (6) acetone; (7) methyl alcohol; (8) chloroform; (9) ethyl alcohol; (10) iso-octane; (11) pyridine; (12) butyl alcohol; (13) glue No. 234; (14) n-octane; (15) propyl formate; (16) iso-amyl formate. An increase of  $\phi$  with increase of  $\nu_{fl}^{max}$  was also observed in phenanthrene and fluorescein. Existence of a definite relationship between  $\phi$  and  $\nu_{fl}^{max}$  indicates that in all the substances studied there is no radiationless de-activation of the metastable level in the majority of solvents at

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SOV/51-5-4-19/21

Dependence of the Ratios of the Yields of Phosphorescence and Fluorescence on the Position of the Fluorescence Spectrum

-196°C. In most of the cases the solvent effect, observed in media containing Br (Ref 5), which intensifies transitions to the metastable state is also absent. There are 1 figure, 1 table and 5 references, 3 of which are Soviet, 1 American and 1 translation.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S.I. Vavilova (State Optical Institute imeni S.I. Vavilov).

SUBMITTED: March 28, 1958

Card 3/3    1. Phthalimides--Phosphorescence    2. Phthalimides--Fluorescence  
              3. Phthalimides--Spectra

24(7)

AUTHORS: Zelinskiy, V. V., Bakhshiyev, N. G. SOV/48-22-11-25/33

TITLE: Discussion of the Lecture Held by N. G. Bakhshiyev  
(Preniya po dokladu N. G. Bakhshiyeva)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958,  
Vol 22, Nr 11, pp 1390-1390 (USSR)

ABSTRACT: V. V. Zelinskiy made the following remarks: There is every indication to assume that the influence of the solvent upon the structure of the molecule not only results in a displacement of the frequency of the electron transition, but also in a modification of the equilibrium distances. Next he criticises the adoption of the transition frequency as a criterion of the modifications of the spectra. He points to his own lecture, in which he said that the transition frequency may remain unchanged even if the dielectric constant is greatly modified. Hence the transition frequency is not influenced by  $\epsilon$ .

N. G. Bakhshiyev answered as follows: It is ostensible that the action of the solvent is not limited to a displacement of the transition frequency, and this is substantiated by

Card 1/2

Discussion of the Lecture Held by N. G. Bakhshiyev

SOV/48-22-11-25/33

the information presented. The study of solvent action upon spectra is firstly to be directed toward an investigation of the electron level displacement, which is caused by intermolecular interactions of a dielectric nature. As it is demonstrated by the results of numerous papers those interactions are prevailing in solutions which effect spectral displacements in dissolved molecules.

Card 2/2

AUTHORS: Zelinskiy, V. V., Kolobkov, V. P. 20-119-5-22/59

TITLE: Phosphorescence and Fluorescence Quantum Yield Ratios as Related to the Position of the Fluorescence Spectrum (Svyaz' otnosheniy kvantovykh vykhodov fosforestsentsii i fluorestsentsii s polozheniyem spektra fluorestsentsii)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 5, pp. 922-925 (USSR)

ABSTRACT: First the authors shortly report on some previous works dealing with the same subject. Only a limited number of objects is suited for the dependence of this ratio  $q_{\text{phos}}/q_{\text{fl}}$  of the quantum yields of phosphorescence and fluorescence on the position of the fluorescence spectrum. The ratios  $q_{\text{phos}}/q_{\text{fl}}$  were investigated with some derivatives of phthalimide. The method for the determination of this ratio had been developed in an earlier work by the same author (reference 7). The fluorescence spectrum was determined from the standardized spectrum of the total

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Phosphorescence and Fluorescence Quantum Yield Ratios 20-119-5-22/59  
as Related to the Position of the Fluorescence Spectrum

radiation of the standardized phosphorescence spectrum. The results of the measurements of  $q_{\text{phos}}/q_{\text{fl}}$  with the derivatives of phthalimide are shown by three diagrams and are compared to the frequencies of the maxima of the corresponding fluorescence spectra. Greatest measuring accuracy is obtained when the ratio  $q_{\text{phos}}/q_{\text{fl}}$  is of the order 0,2 to 1.

The just mentioned 3 diagrams show the following:  
diagram 1:  $q_{\text{phos}}/q_{\text{fl}}$  in dependence of the frequency

$\nu_{\text{fl}}^{\text{max}}$  of the maxima of the corresponding fluorescence spectra at  $-196^{\circ}$  for 3-methylacetyl-amino-6-acetyl-amino-N-methylphthalimide in 26 media of different chemical nature. 2: The dependences of  $q_{\text{phos}}/q_{\text{fl}}$  on  $\nu_{\text{fl}}^{\text{max}}$  at  $-196^{\circ}$  for 3,6-diacetyl-amino-N-methylphthalimide and 4-hydroxy-N-methylphthalimide. The curves corresponding to these substances have the same character and are almost identical. 3: The third diagram shows the same ratios for 3-hydroxy-N-methylphthalimide and 3-hydroxyphthalimide. The data

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Phosphorescence and Fluorescence Quantum Yield Ratios  
as Related to the Position of the Fluorescence Spectrum

20-119-5-22/59

obtained in this show the following: in most of the media the ratios  $q_{\text{phos}}/q_{\text{fl}}$  do not at all depend on the nature of the medium or on its state but are fully dependent on the position of the spectrum of radiation. Obviously there is actually a connection between  $q_{\text{phos}}/q_{\text{fl}}$  and the position of the fluorescence spectrum, which points at a corresponding change of the probability of the transition into the metastable state in the case of a change of the position of the fluorescence band. There are 3 figures and 8 references, 8 of which are Soviet.

PRESENTED: November 23, 1957, by A. N. Terenin, Member, Academy of Sciences, USSR

SUBMITTED: November 4, 1957

Card 3/3

AUTHORS: Zelinskiy, V. V., Kolobkov, V. P., Reznikova, I. I. SOV/20-121-2-33/53

TITLE: The Influence of the Structure of Organic Molecules on the Probability of Their Transition Into the Metastable State (Vliyaniye struktury organicheskikh molekul na veroyatnost' perekhoda v metastabil'noye sostoyaniye)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 2, pp. 315 - 318 (USSR)

ABSTRACT: The authors of the present papers give a report on investigations on mainly various N-methyl phthalimides; it turns out that the structure of these compounds has a clear influence on the amount of  $\delta$  ( $\delta$  is the ratio between the quantum yield of phosphorescence and of fluorescence) and thus on the position of  $\lambda_{fl}^{max}$  ( $\lambda_{fl}^{max}$  is the maximum in the spectrum of fluorescence). The following compounds were investigated: 3-hydroxy-N-methyl phthalimide, 4-hydroxy-N-methyl phthalimide, 3-acetyl amino-N-methyl phthalimide, 4-acetyl amino-N-methyl phthalimide, 3-methyl-acetyl amino-N-methyl phthalimide, 3-acetyl amino-6-amino-N-methyl phthalimide, 3-acetyl amino-6-dimethyl amino-N-methyl

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SOV/20-121-2-33/53

The Influence of the Structure of Organic Molecules on the Probability of  
Their Transition Into the Metastable State

phthalimide, 3-diphenyl amino-N-methyl phthalimide, 3,6-di-acetyl amino-N-methyl phthalimide, and others as well as N-methyl phthalimides which contain a nitro group; furthermore phenyl-anthranilic acid and anthranilic acid,  $\beta$ -naphthylamine and phenyl- $\beta$ -naphthylamine. The relation between  $\delta$  and  $\nu_{fl}^{max}$  for the various examined compounds is reproduced and compared in 4 diagrams.  $\nu_{fl}^{max}$  varies between 20000  $cm^{-1}$  and 26000  $cm^{-1}$ , the  $\delta$ -values of the various compounds differ very much between the different compounds (e.g. between 3-hydroxy-N-methyl phthalimide and 4-hydroxy-N-methylphthalimide at  $\nu_{fl}^{max} = 24-25 \cdot 10^3 cm^{-1}$  for the 20- to 30-fold).

There are 4 figures and 5 references, 0 of which is Soviet.

PRESENTED:

March 31, 1958, by A. N. Terenin, Member, Academy of Sciences, USSR

Card 2/3



The Influence of the Structure of Organic Molecules on the Probability of  
Their Transition Into the Metastable State

SOV/20-121-2-33/53

SUBMITTED: March 18, 1958

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ZELINSKY, V.V.

24(6) PHASE I BOOK EXPLOITATION SOV/2809  
 Akademiya nauk SSSR, Otdeleniye khimicheskikh nauk

Termodinamika i stroyniye rastvorov; trudy soveshchaniya... of the  
 (Thermodynamics and Structure of Solutions; Transactions... of the  
 Conference Held January 27-30, 1958) Moscow, Izd-vo AN SSSR,  
 1959. 295 p. 3,000 copies printed.

Ed.: M. I. Zhukharov, Doctor of Chemical Sciences; Ed. of Publishing  
 House: M. G. Yegorov; Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for physicists, chemists, and  
 chemical engineers.

COVERAGE: This collection of papers was originally presented at the  
 Conference on Thermodynamics and Structure of Solutions sponsored  
 by the Section of Chemical Sciences of the Academy of Sciences,  
 USSR, and the Department of Chemistry of Moscow State University,  
 and held in Moscow on January 27-30, 1958. Officers of reports  
 conference are listed in the Foreword. A list of the reports  
 also read at the conference, but not included in this book,  
 are given. Among the problems are: precise measurement dielectric  
 electrolytic solutions, spectroscopic measurement dielectric  
 and thermodynamic properties of various mixtures, spectro-  
 scopic analysis, etc. References accompany individual articles.

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SOV/51-6-3-23/28

AUTHORS: Zelinskiy, V.V., Kolobkov, V.P. and Krasnitskaya, N.D.

TITLE: On the Problem of Temperature Quenching of Fluorescence  
(K voprosu o temperaturnom tushenii fluorestsentsii)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 3, pp 417-419,  
(USSR)

ABSTRACT: The authors discuss the increase of the fluorescence yield which occurs in certain phthalimide and aminomaleinimide and derivatives on lowering of temperature from +20 to -180°C. They show that apart from "freezing" of the motion of various parts of a fluorescing molecule, this increase is due to weaker temperature quenching (redistribution of molecules at the excited vibrational levels), as well as to changes in the mutual positions of the potentials of the ground (Fig.2, curve 3) and excited (Fig.2, curves 1 and 2 at +20 and -180°C respectively) states of the molecule which occur on lowering of temperature. The point of intersection of the ground and excited potential is much further away from the excited curves minimum at low Card 1/2 temperatures, and this makes the excited-to-ground transition

SOV/51-6-3-23/28

On the Problem of Temperature Quenching of Fluorescence

more difficult. There are 2 figures and 4 Soviet references.

SUBMITTED: June 28, 1958

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24(7), 5(4)

AUTHORS:

Zelinskiy, V. V., Kolobkov, V. P., Reznikova, I. I.

SOV/48-23-10-38/39

TITLE:

An Interrelation Between the Probability of the Transition of Complex Organic Molecules Into a Metastable State and Spectral Composition of Radiation

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1269-1272 (USSR)

ABSTRACT:

Whereas all other articles published in this number of the periodical are publications of lectures held at the 12. All-Union Spectroscopy Conference (November 19-26, 1958), the present paper is a reproduction of a lecture delivered at the 11. All-Union Conference for Theoretical Spectroscopy (Moscow, December 2 - 10, 1957). In the introduction the results obtained by two earlier papers (Refs 1, 3) are discussed, which dealt with the investigation of the interrelation between transition probabilities into a metastable state and the position of the fluorescence bands. Among others, the fluorescence spectra of phthalimide derivatives in 37 different media had been investigated and the ratios of the phosphorescence- and fluorescence yields  $q_{phos}/q_{fl}$  had been determined in dependence of the fluorescence maximum  $\nu_{fl}^{max}$

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SOV/48-23-10-38/39

An Interrelation Between the Probability of the Transition of Complex Organic Molecules Into a Metastable State and Spectral Composition of Radiation

(cf. Fig 1). This ratio increases exponentially with increasing  $\nu_{fl}^{max}$ . In this respect a number of further investigations

was made. Figure 2 shows the same diagram for  $\alpha$ - and  $\beta$ -naphthols and anthrazyl acid. The former was investigated in four different media, the latter in 17. Most of the measuring points are located on an (exponential) curve.

$\nu_{fl}^{max}$  varied from 21,200 to 25,900  $cm^{-1}$ , the corresponding yield ratio only from 0.01 to 0.2. These results are then discussed. The transition probability into a metastable state was investigated according to three methods: by means of the spectral dependence of  $q_{fl}$  at  $20^{\circ}$ , of  $q_{phos}/q_{fl}$  at  $-196^{\circ}$ , and by means of the dependence of the k-value at  $20^{\circ}$  on

$\nu_{fl}^{max}$ . These functions are shown by figure 3. The details resulting from the diagrams for 4-amino-N-methyl phthalimide, 4-acetyl-amino-N-methyl phthalimide, and 3-methyl-acetylamino-6-acetylamino-N-methyl phthalimide are discussed. All three methods gave results which were in qualitative agreement as

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SOV/48-23-10-38/39

An Interrelation Between the Probability of the Transition of Complex Organic Molecules Into a Metastable State and Spectral Composition of Radiation

to the spectral dependence of the transition probabilities.  
There are 3 figures and 6 Soviet references.

ASSOCIATION: Gos. opticheskiy institut im. S. I. Vavilova  
(State Optical Institute imeni S. I. Vavilov)

Card 3/3

67925  
SOV/20-129-5-35/64

5.3100  
~~5(4), 5(3)~~  
AUTHORS:

Zhmyreva, I. A., Zelinskiy, V. V., Kolobkov, V. P.,  
Krasnitskaya, N. D.

TITLE: A Universal Scale of the Effect of Solvents on the Electron  
Spectra of Organic Compounds

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 5, pp 1089-1092  
(USSR)

ABSTRACT: The authors give a short survey on the publications dealing with this subject and mention the papers by A. I. Kipriyanov (Ref 1), V. V. Zelinskiy, V. P. Kolobkov and L. G. Pikulik (Ref 2), V. V. Zelinskiy, V. P. Kolobkov and I. I. Resnikova (Ref 5). They suggest 4-amino-N-methyl-phthalimide as standard substance by means of which they construct the scale mentioned in the title. If the fluorescence spectra frequencies are plotted on the ordinate and the various solvents on the abscissa (at distances which correspond to the differences between the standard substance) the frequencies of the maxima of the fluorescence spectra of most of the organic substances for a certain solvent are on a straight line. Figure 1 shows such diagrams for some phthalimide derivatives. In the absorption

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## A Universal Scale of the Effect of Solvents on the Electron Spectra of Organic Compounds

spectra the points are on a curve. The reason for the different effect of the solvent on the fluorescence- and absorption spectrum will be dealt with by the authors at another place. Figure 2 shows the position of the maxima of the fluorescence spectra in different solvents for o-methoxybenzoic acid, aminonaphthaminophenazine and its derivatives, malimide derivatives, acridine and 2-aminoacridine. The authors set up a scale for 79 solvents in which zero is the position of the spectrum of 4-amino-N-methyl-phthalimide vapor, 100 - the position of the spectrum of this substance in water (Table 1). Certain rules governing the order of the solvents on this scale are found: the maxima  $\nu_{fl}^{max}$  of the fluorescence spectra are in all solvents containing hydroxyl groups between 16000 and 19000  $\text{cm}^{-1}$  where the alcohols form a subgroup between 17600 and 19600  $\text{cm}^{-1}$ . For the esters  $\nu_{fl}^{max}$  is between 18800 and 21600  $\text{cm}^{-1}$ , for ether between 21700 and 22050  $\text{cm}^{-1}$ , for aromatic hydrocarbons between

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SOV/20-129-5-35/64

A Universal Scale of the Effect of Solvents on the Electron Spectra of Organic Compounds

22000 and 22500  $\text{cm}^{-1}$ , and for saturated aliphatic hydrocarbons }  
↓<sub>fl</sub><sup>max</sup> is 24400  $\text{cm}^{-1}$ . Differences in the state of aggregation do not influence the position of the spectrum, which was proved with menthene, stearic acid, solid and liquid diethyl oxalate. There are 2 figures, 1 table, and 7 references, 3 of which are Soviet. ✓

PRESENTED: July 15, 1959, by A. N. Terenin, Academician

SUBMITTED: July 6, 1959

Card 3/3

S/051/60/008/03/027/038

E201/E191

AUTHORS: Zhmyreva, I.A., Zelinskiy, V.V., Kolobkov, V.P.,  
Kochemirovskiy, A.S., and Reznikova, I.I.

TITLE: On the Problem of the Effect of Solvents on the Electronic Spectra of Organic Molecules

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 3,  
pp 412-414 (USSR)

ABSTRACT: Bakhshiyev (Refs 7, 8) derived relationships between the effect of solvents on the electronic spectra of organic compounds and the refractive indices and dielectric constants of the solvents. According to Bakhshiyev the experimental results fit excellently the formulae derived by him. Unfortunately if one substitutes into Bakhshiyev's formulae the values of  $A$  and  $\Delta\nu_{\nu}$  for a wider range of solvents than those investigated by him, the experimental and theoretical dependences no longer agree; such disagreement can be seen clearly in Fig 1 which shows the dependence of  $\Delta\nu_{\nu}$  on  $A$  for 4-aminophthalimide. Here  $\Delta\nu_{\nu}$  is the frequency shift due to a solvent and

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S/051/60/008/03/027/038  
E201/E191

On the Problem of the Effect of Solvents on the Electronic Spectra  
of Organic Molecules

$$A = \frac{2\varepsilon - 1}{2\varepsilon + 2} + p \frac{2n^2 - 1}{2n^2 + 2}$$

where  $\varepsilon$  is the dielectric constant and  $n$  is the refractive index of the solvent. Experimental data also disagree with a theoretically predicted inverse proportionality between the effect of solvents on the spectra and the molecular radii of the solvents (Fig 2). The authors follow earlier workers (Refs 9-13) and suggest that it is wrong in principle to attempt description of the effect of solvents on the spectra using macro-properties of these solvents, since such effect is primarily due to short-range intermolecular interactions governed by micro-properties of the solvents. A semblance of the relationship between the shift in the electronic frequencies and the dielectric constant is due to the fact that the dielectric constant is governed by the micro-properties of the solvents. There are 2 figures and 13 references, of which 6 are Soviet, 1 English, 2 Japanese and 4 German.

Card  
2/2

SUBMITTED: August 12, 1959

ZHMYREVA, N.A.; ZELINSKIY, V.V.; KOLOBKOV, V.P.; KOCHENIROVSKIY, A.S.;  
REZNIKOVA, I.I.

Current status of the problem of the effect of the solvent  
on the spectra of complex organic molecules. Izv.AN SSSR.Ser.  
fiz. 24 no.5:596-600 1/2 '60. (MIRA 13:5)  
(Spectrum, Molecular)

BORGMAN, V.A.; ZHMYREVA, I.A.; ZELINSKIY, V.V.; KOLOBKOV, V.P.

Basic processes in the deactivation of excited states of complex organic molecules. Izv.AN SSSR.Ser.fiz. 24 no.5:  
601-606 My '60. (MIRA 13:5)  
(Molecules)

ZELINSKIY, V.V.; REZNIKOVA, I.I.

Effect of structure on the luminescent characteristics of complex organic molecules. *Izv.AN SSSR.Ser.fiz.* 24 no.5:607-609  
Mv '60. (MIRA 13:5)

(Fluorescence)

S/020/60/131/04/018/073  
B013/B007

AUTHORS: Borgman, V. A., Zhmyreva, I. A.,  
Zelinskiy, V. V., Kolobkov, V. P.

TITLE: The Influence Exerted by Heavy Halogens on the Probability of  
Transition to the Metastable State and the Probability of  
Deactivation of This State

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 4, pp 781-784 (USSR)

TEXT: The present paper is intended to show more clearly than was hitherto done that the action of extinguishers of the halide type on the fluorescence of organic compounds results in a higher probability ( $r$ ) of transition of the excited molecule to the metastable state and to show the influence exerted by these extinguishers on the probabilities  $q_2$  and  $\kappa$  respectively of transitions from the metastable state to the ground state with and without emission. Besides the salts of hydriodic acid, the authors used bromides as extinguishers.  $q_2$  is less increased by weak bromide extinguishers. In order to obtain a higher  $q_{\text{phosph}}$  in some cases and clearer extinction in others, higher concentrations of iodides were used. Table 1 contains the absolute yields  $q_{\text{fluor}}$  and  $q_{\text{phosph}}$  of fluorescence and phosphorescence, as well as the rates of damping  $\nu^*$  of fluorescence at certain concentrations of the salts of bromides and iodides in

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The Influence Exerted by Heavy Halogens on the  
Probability of Transition to the Metastable State  
and the Probability of Deactivation of This State

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B013/B007

solutions of organic substances in methyl alcohol. The damping of phosphorescence was carried out by means of a device developed by B. Ya. Sveshnikov and P. I. Kudryashov, and short-time recordings were carried out by means of the  $\tau$ -meter designed by N. A. Tolstoy and P. P. Feofilov. Different salts of one and the same halogen hydracid have the same effect: At the same molar concentration they have the same effect on the yield of fluorescence and the duration of phosphorescence. Next, the authors describe an attempt made to prove that there are no further complicating circumstances and errors in measurement. The use of bromides and higher concentrations of iodides made it possible to illustrate clearer cases of increase in  $q_{\text{phosph}}$  under the action of extinguishers. ✓

Details are described. In all cases the duration of phosphorescence decreases considerably with increasing  $q_{\text{phosph}}$ . A qualitative comparison of the yield of

luminescence and the duration of phosphorescence shows in some cases that also the presence of iodine in the solution increases  $\kappa$  considerably. Halogens have a particularly strong effect on  $\kappa$  if bromine and iodine are contained in the phosphorescent molecule. The deactivation of only 30 per cent of all adsorbing molecules falls to the portion of radiationless processes. Introduction of

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The Influence Exerted by Heavy Halogens on the  
Probability of Transition to the Metastable State  
and the Probability of Deactivation of This State

S/020/60/131/04/018/073  
B013/B007

iodine into the molecule of the luminescent substance increases  $\kappa$  considerably. This holds also for 3-acetyl-N-methyl phthalimide.  $q_2$  is usually smaller than  $\kappa$ . Introduction of iodine into the solution increases  $q_2$  in most cases to such an extent that the extinction on the metastable level reduces not only  $q_{rad.sum}$  but also  $q_{phosph}$ . When using a less active extinguisher - bromine and high concentrations of iodine - one obtains good examples for the increase of  $q_{phosph}$  and, consequently, of  $q_{rad.sum}$  under the action of the extinguisher. The authors thank B. Ya. Sveshnikov, P. I. Kudryashov, V. A. Arkhangel'skaya, and T. K. Razumova for having put the necessary instruments at their disposal and for their valuable help. There are 1 table and 8 references, 2 of which are Soviet.

PRESENTED: October 26, 1959, by A. A. Lebedev, Academician

SUBMITTED: October 7, 1959

Card 3/3

35535  
S/020/62/142/006/007/019  
B104/B108

5.4-10

AUTHORS: Zelinskiy, V. V., and Kolobkov, V. P.  
TITLE: Applicability of the dielectric constant as a criterion of interaction in solutions  
PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 6, 1962, 1272-1275

TEXT: The interaction between the molecules of a solvent and a solute takes place via charges localized at the ends of the molecules of the solute and their close environment. The forces acting between the molecules are estimated. The overall effect on a molecule is determined chiefly by the charge of the atom of the solvent molecule which is closest to the pole of the molecule. The total dipole moment of two liquids and their dielectric constants may differ very much although the microfields of all atoms in the solvent molecules are completely equal. Consequently,  $\epsilon$  is no true criterion for the interaction forces between neighboring molecules. This can only be the case when there is sufficient spacing between the molecules. Detailed computation shows that the effect of

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Applicability of the dielectric...

S/020/62/142/006/007/019  
B104/B108

molecules at a greater distance is less than that of neighboring molecules. The effect of large molecular aggregates of the solvent on a molecule of the solute is always less than the electrostatic effect of a neighboring molecule of the solvent. Reference is made to Ya. I. Frenkel' (Sobr. izbr. soch., 3, Izd. AN SSSR, 1959, p. 217). There are 19 references: 9 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: N. Bailiss, J. Chem. Phys., 18, 292 (1950); V. Ooshika, J. Phys. Soc. Japan, 2, 594 (1954); N. Mataga, Y. Kaifu, M. Kouzumi, Bull. Chem. Soc. Japan, 29, 115, 165 (1956); E. Kosower, J. Am. Chem. Soc., 80, 3253 (1958).

PRESENTED: February 27, 1961, by A. A. Lebedev, Academician

SUBMITTED: February 16, 1961

Card 2/2

L 18735-63 EPF(c)/EWT(m)/BLS Pr-4 RM/WW/MAY  
ACCESSION NR: AT3002191 S/2941/63/001/000/0028/0036

AUTHORS: Zelinskiy, V. V.; Kolobkov, V. P.; Saganenko, A. A.

TITLE: Relation between luminescence and spectral characteristics of xanthene dyes

SOURCE: Optika i spektroskopiya; sbornik statey. v. 1: Lyuminestsentsiya. Moscow, Izd-vo AN SSSR, 1963, 28-36

TOPIC TAGS: luminescence, fluorescence, transition, stationary state, spectrum, spectroscopy

ABSTRACT: The absolute quantum yields of luminescence and the absorption and emission spectra of a set of arbitrary fluoresciens have been measured in solid alcohol solutions at -196C. Main features of the measurement technique are given by V. V. Zelinskiy and V. P. Kolobkov (Opt. i Spectr., 1, 560, 1956). It is shown that the change in fluorescent yield in the transition state from one body to another is uniformly connected with the corresponding change in the position of the electronic spectra. The authors conclude that in xanthene dyes (as well as in other organic compounds) the effect of the molecular structure on the

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L 18735-63

ACCESSION NR: AT3002191

0

probability of a radiationless deactivation is governed primarily by mutual change in position and form of potential surfaces in corresponding electronic states. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 12Jan62

DATE ACQ: 19May63

ENCL: 00

SUB CODE: PH

NO REF SOV: 017

OTHER: 008

Card 2/2

KOROTKEVICH, V.T.; ZELINSKIY, V.V.; BORISEVICH, N.A.

Electron spectra of vapors of N-methylphthalimides. Izv. AN SSSR.  
Ser.fiz. 27 no.4:576-579 Ap '63. (MIRA 16:4)  
(Phthalimides—Spectra)

ZELINSKIY, V.V.; KOLOBKOV, V.P.

Separation of specific and universal interactions in solutions.  
Part 1. Opt. i' spektr. 16 no.2:345-351 F '64. (MIRA 17:4)



L 01274-66 EWT(1)/ENT(m)/EPF(c)/ENP(j)/EWA(c) LJP(c)/RFL JH/RM

ACCESSION NR: AP5020783

UR/0048/65/029/008/1278/1283

AUTHOR: Viktorova, Ye. N.; Zelinskiy, V. V.

H9  
B

TITLE: Investigation of the fluorescence yield of some nitro-compound 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, 1278-1283

TOPIC TAGS: luminescence, solution property, organic nitro compound, luminescence spectrum, electron transition, activation energy

ABSTRACT: The fluorescence yields of the following nitro-compounds in 14 different solvents were measured at 20°C by a method that has been described elsewhere (V. V. Zelinskiy and V. P. Kolobkov, Optika i spektroskopiya, I, 560, 1965).

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L 01274-66

ACCESSION NR: AP5020783

lay on a smooth curve which had a maximum. The position and height of the maximum varied from compound to compound. When the fluorescence yields were plotted against the Stokes shift, many points from all the phosphors lay close to a single common curve. The points that fell off this curve were those for solutions on the descending portion of the curve of yield versus frequency of the luminescence band. Similar results were obtained by plotting the probability for radiationless deactivation against the Stokes shift: the deactivation probability was an exponential function of the Stokes shift. All the investigated phosphors in all the solvents had narrow luminescence bands of

figures.

ASSOCIATION: 00

SUBMITTED: 00

ENCL: 00

SUB CODE: GC, OP

<sup>2/3</sup> Card NO REF SOV: 017

OTHER: 008

LQ255-66 EWT(l)/EWT(m)/EPP(c)/EWP(j)/EWA(c) IJP(c) RM

ACCESSION NR: AP5020800

UR/0048/65/029/008/1362/1368

AUTHOR: Zelinskiy, V. V.; Obyknoennaya, I. Ye.

TITLE: Investigation of the luminescence spectra of complex organic compounds in mixed solvents /Report, 13th Conference on Luminescence held in Khar'kov 25 June

TOPIC TAGS: luminescence spectrum, solution property, solvent action, hydrocarbon, aliphatic alcohol.

ABSTRACT: The authors have observed the luminescence spectra of derivatives of 4-amino-phthalimide dissolved in decalin containing small quantities of propyl alcohol in order to investigate the influence of the solvent on luminescence. These materials were chosen for study because the frequency shift of the luminescence spectrum in passing from saturated hydrocarbon to alcohol solvents is very great (of the order of  $5000\text{ cm}^{-1}$ ). The materials were very sensitive to small quantities of alcohol in the solvent. The most sensitive of the compounds studied was 4-amino-N-methylphthalimide. Substitution in the imide ring (4-amino-N-cyclohexylphthalimide) had very little effect on the alcohol sensitivity of the

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LQ255-66

ACCESSION NR: AP:5920800

compound. For 4-amino-N-methylphthalimide, these shifts were 1900 and 2000  $\text{cm}^{-1}$ , respectively. Orig. art. has: 1 formula, 4 figures, and 1 table.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: OP, GC

NO REF SOV: 008

OTHER: 002

Card

3/3

L 39647-66 GI-2

ACC NR: AP6002417

SOURCE CODE: UR/0020/65/165/005/1033/1036

AUTHOR: Viktorova, Ye. N.; Zelinskiy, V. V.

8  
5  
B

ORG: none

TITLE: Relation between the probability of emissionless deactivation and the spectral characteristics of complex organic compounds

SOURCE: AN SSSR. Doklady, v. 165, no. 5, 1965, 1033-1036

TOPIC TAGS: excited state, spectrum analysis, quantum yield, chemical compound, ground state

ABSTRACT: A comparison of values for probabilities of emissionless deactivations of a great number of various substances, in a variety of solvents at 20°C, is made in this paper. The values are calculated according to the formula

$$(q + r) = (1 - B^{\text{Quantum fluorescence}}) / \tau$$

where q- is the probability of the process of direct, emissionless conversion of excited molecules in a ground state; r- is the probability of transfer to a metastable level, and  $\tau$  is the average duration of the excited state. The comparison of the values is made by means of formulas and illustrated by curves. A direct proportion was observed between the value  $B^{\text{Quantum fluorescence}}$  and  $\tau$ . The absolute quantum yields were

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UDC: 535.371

L 39617-66

ACC NR: AP6002417

3

measured according to a method, previously described by the authors (Optika i spektroskopiya, 1, 560, 1956), using a FEU-38 photomultiplier in the capacity of a received of radiation.  $\tau$  was determined on a phase fluorometer at the Institute of Molecular Biology of the AN SSSR, in L. A. Tumerman's laboratory. The authors conclude that the relation between the value of the barrier and the spectral characteristics is determined by the fact that both are functions of one and the same variable, the change of which characterizes the changes in the relative distribution of potential surfaces. The authors thank L. A. Tumerman for the possibility of conducting measurements on the fluorometer and A. N. Surova for carrying out the measurements. Orig. art. has: 7 formulas and 4 figures.

SUB CODE: 07 / SUBM DATE: 09Apr 65/ ORIG REF: 007/ OTL REF: 002

Card 2/2 4/5

I. 37005-66 EWT(m)/EWP(1) RM

ACC NR: AP6018593

SOURCE CODE: UR/0379/66/002/002/0227/0233

AUTHOR: Aktorova, Ye. N.; Zelinskiy, V. V. 43  
BORG: State Optical Institute im. S. I. Vavilov, Leningrad (Gosudarstvennyy opticheskiy institut)TITLE: Study of the relationship between the probabilities of processes of nonradiative deactivation and the spectral characteristics of complex organic compounds

SOURCE: Teoreticheskaya i eksperimental'naya khimiya, v. 2, no. 2, 1966, 227-233

TOPIC TAGS: nonradiative transition, fluorescence spectrum, transition probability, organic compound

ABSTRACT: The probabilities of nonradiative deactivation of excited molecules on the singlet level in the fluorescence of a series of complex organic compounds were compared with the spectral characteristics in various solvents at 20°C. Values of these probabilities were calculated from the formula

$$(q + r) = \frac{1 - \frac{\text{quant}}{B_{fl}}}{\tau}$$

where q is the probability of the process of direct nonradiative conversion of excited

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L 37005-66

ACC NR: AP6018593

0

molecules to the ground state,  $r$  is the probability of transition to the metastable level,  $\tau$  is the mean duration of the excited state, and  $E_{quant}$  is the absolute quantum yield of fluorescence. The values obtained were compared with the corresponding Stokes shifts and electron transition frequencies, and the relationship was found to be exponential. Expressions were obtained relating the change in the magnitude of the energy barrier determining the nonradiative deactivation process to the change in the spectral characteristics. Both the energy barrier and the spectral characteristics are functions of the same variables, the variations of which characterize the changes in the relative arrangement of the potential surfaces. It is concluded that the study of the spectral dependence of the probabilities of nonradiative transitions may be useful as a method for studying the configuration and relative arrangement of the potential surfaces of molecules of complex organic compounds. Orig. art. has: 4 figures and 7 formulas.

SUB CODE: 0720/SUBM DATE: 30Jun65/ ORIG REF: 010/ OTH REF: 001

Card

2/2

80

L 16128-66 EWT(m)/EMP(j) RM

ACC NR: AP6004179

SOURCE CODE: UR/0076/66/040/001/0094/0099

AUTHOR: Viktorova, Ye. N., Zelinskiy, V. V.; Neznayko, N. F.

ORG: none

TITLE: Effect of phenyl groups on the fluorescence yield of aminophthalimides

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 1, 1966, 94-99

TOPIC TAGS: fluorescence, quantum yield, organic nitrogen compound, absorption spectrum, electron spectrum, cyclic group

ABSTRACT: The effect of phenyl groups introduced into the amino group of 4-amino-N-methylphthalimide, 3-amino-N-methylphthalimide, 3-diphenylamino-N-methylphthalimide, 4-diphenylamino-N-methylphthalimide, and 4-monophenylamino-N-methylphthalimide on the fluorescence of these compounds was studied by determining the absorption spectra and quantum fluorescence yields in various solvents at 20C. The electron spectra showed the presence of conjugation between the electron-acceptor phenyl group introduced into the phthalimide ring, as indicated by a substantial bathochromic shift.

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fluorescence yields versus corresponding

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