

PROCESSES AND PROPERTIES INDEX

B-1-3

Destructive hydrogenation. P. V. Potomilov
 (Dokl. Akad. Nauk SSSR, 1957, 251-254). The
 liquid-phase hydrogenation of hydrocarbons at 450°/
 50-100 atm. in absence of catalyst, leads chiefly
 to dissociation of paraffin hydrocarbons. At higher
 pressures and in presence of catalyst the hydrogen-
 ation and dissociation of aromatic hydrocarbons are
 favored and dissociation of paraffin is suppressed.
 R. T.

METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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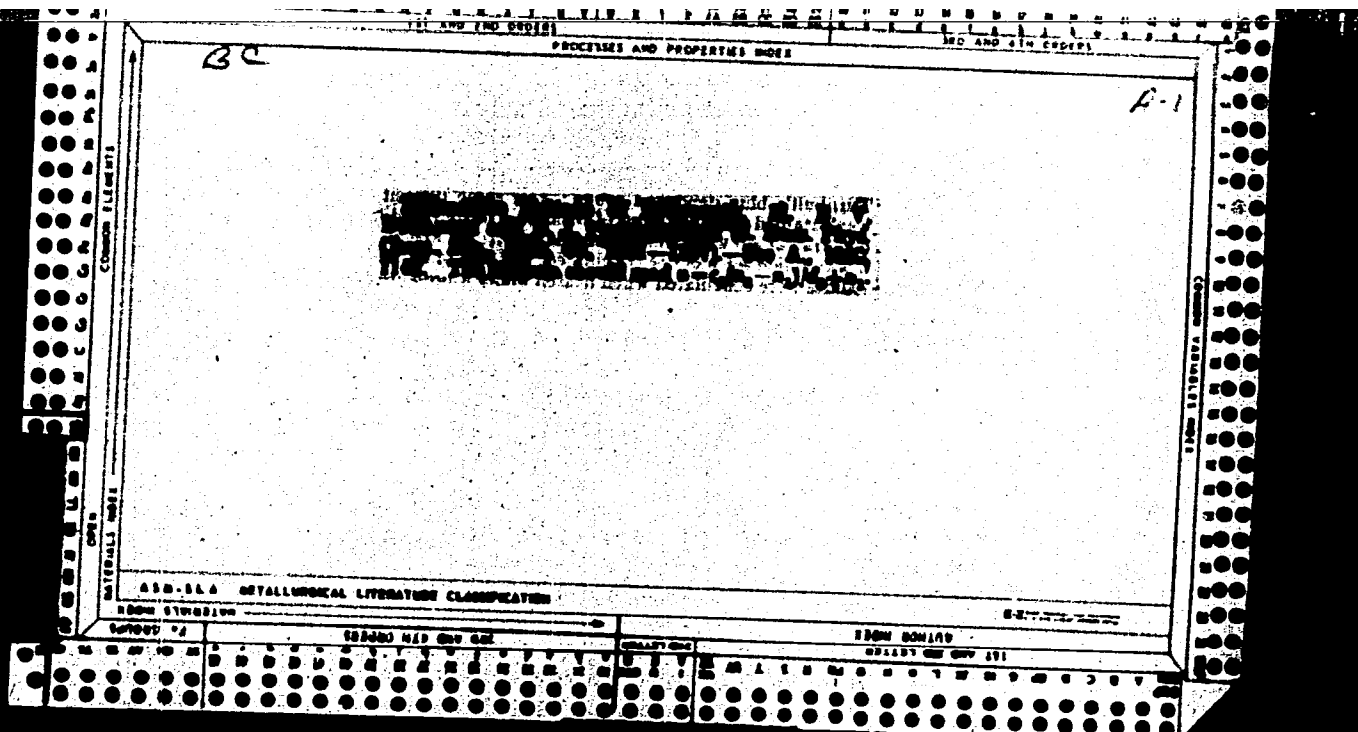
BC

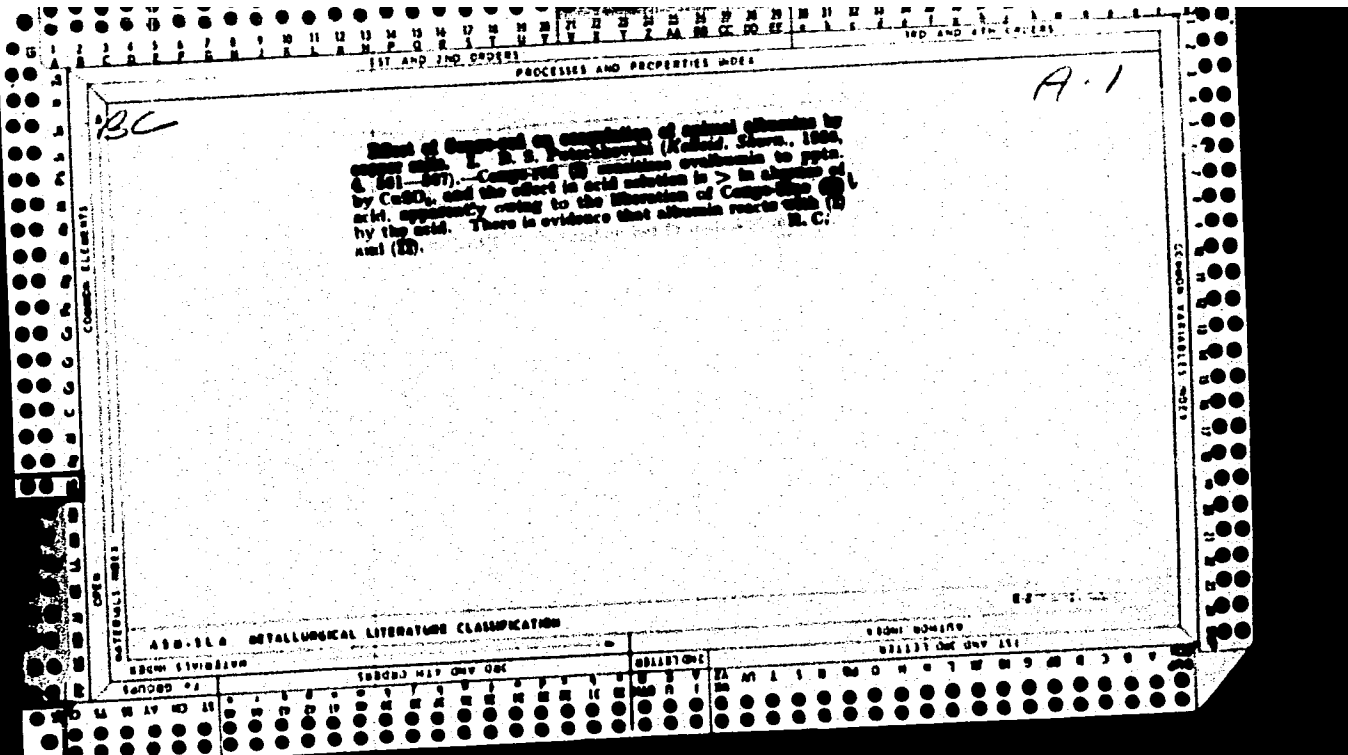
B-I-2

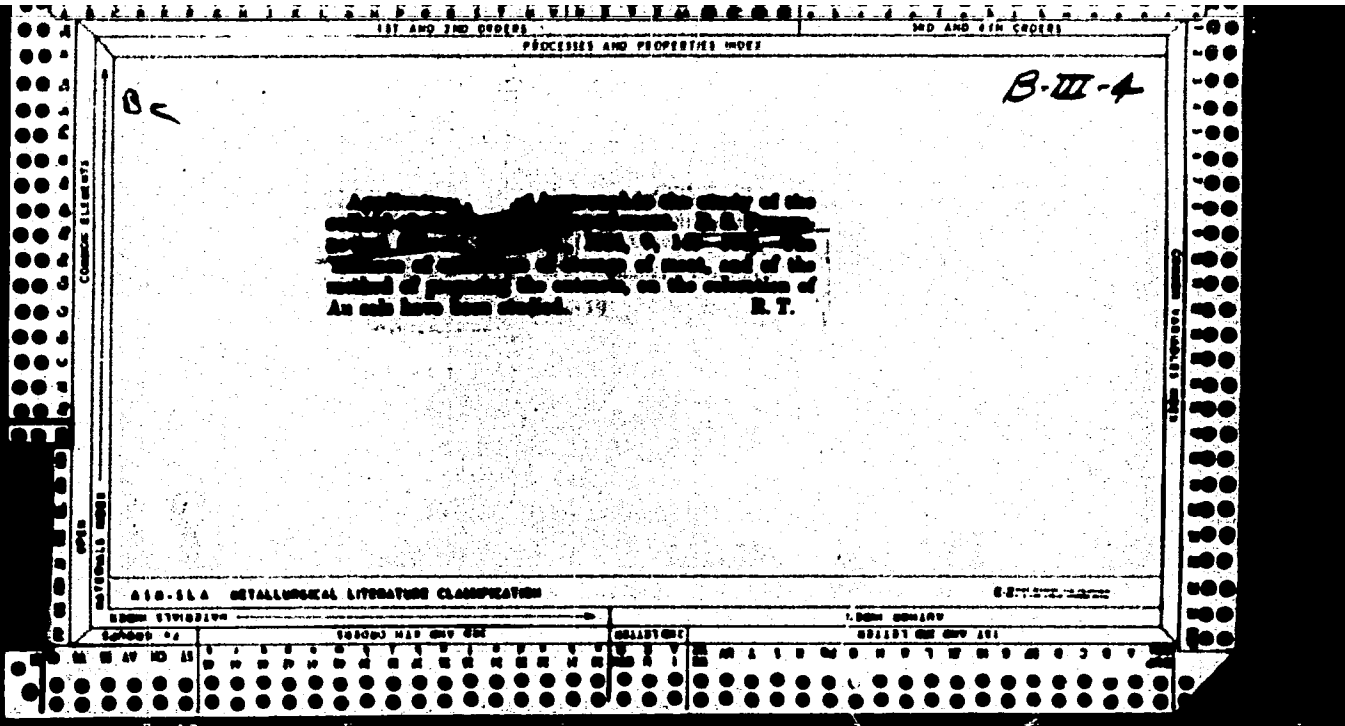
Low-temperature hydrogenation. P. V. Fyrenkov and A. F. Kuznetsov (Dokl. Acad. Sci. U.S.S.R., 1967, 171-186).—At 400–450°, with low H₂ pressure and small amounts of MoS₂ catalyst, hydrogenation leads chiefly to breakdown of paraffin hydrocarbons, while aromatic hydrocarbons and sulfides are not attacked to any great extent. At 300–400° and with high H₂ pressure (100–300 atm.) sulfides are preferentially hydrogenated, then aromatic, and then naphthene hydrocarbons; paraffin hydrocarbons are practically unattacked. R. T.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

APPROD #/	APPROD HLP ONV DCE	RELITDCE	RELITDZ ON ONV DCE
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100







1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

BC

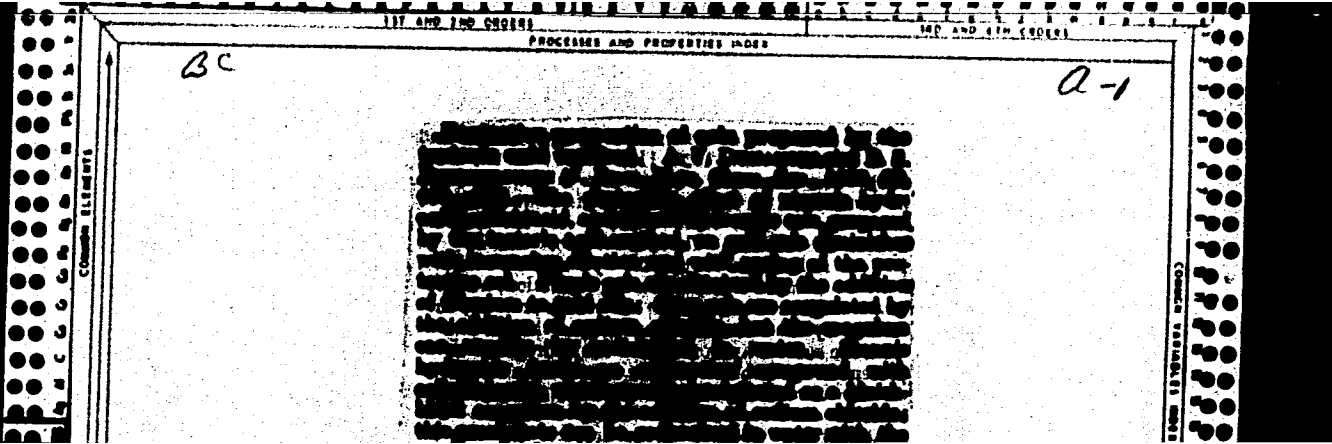
Influence of Congo-red on the coagulation of animal proteins by copper ions. H. H. A. Puzoshevski (Kokchetav, Kazakh. SSR). Contribution of protein-Congo-red-CuSO₄ mixtures can be used for differentiating between albumin and globulin. The coagulation need contained 0.01% of (NH₄)₂SO₄, but (NH₄)₂SO₄ did not affect the coagulation of Congo-red by CuSO₄. 0.1% CuSO₄ does not ppt. 0.007% globulin only, but 0.001% mixtures of 0.007% globulin and 0.001% Congo-red in lower concns. than analogous albumin mixtures. In slightly alkaline and slightly acidified H₂O globulin is pptd. by CuSO₄ less easily than albumin, but albumin-Congo-red mixtures are pptd. less readily than globulin-Congo-red mixtures. J. J. H.

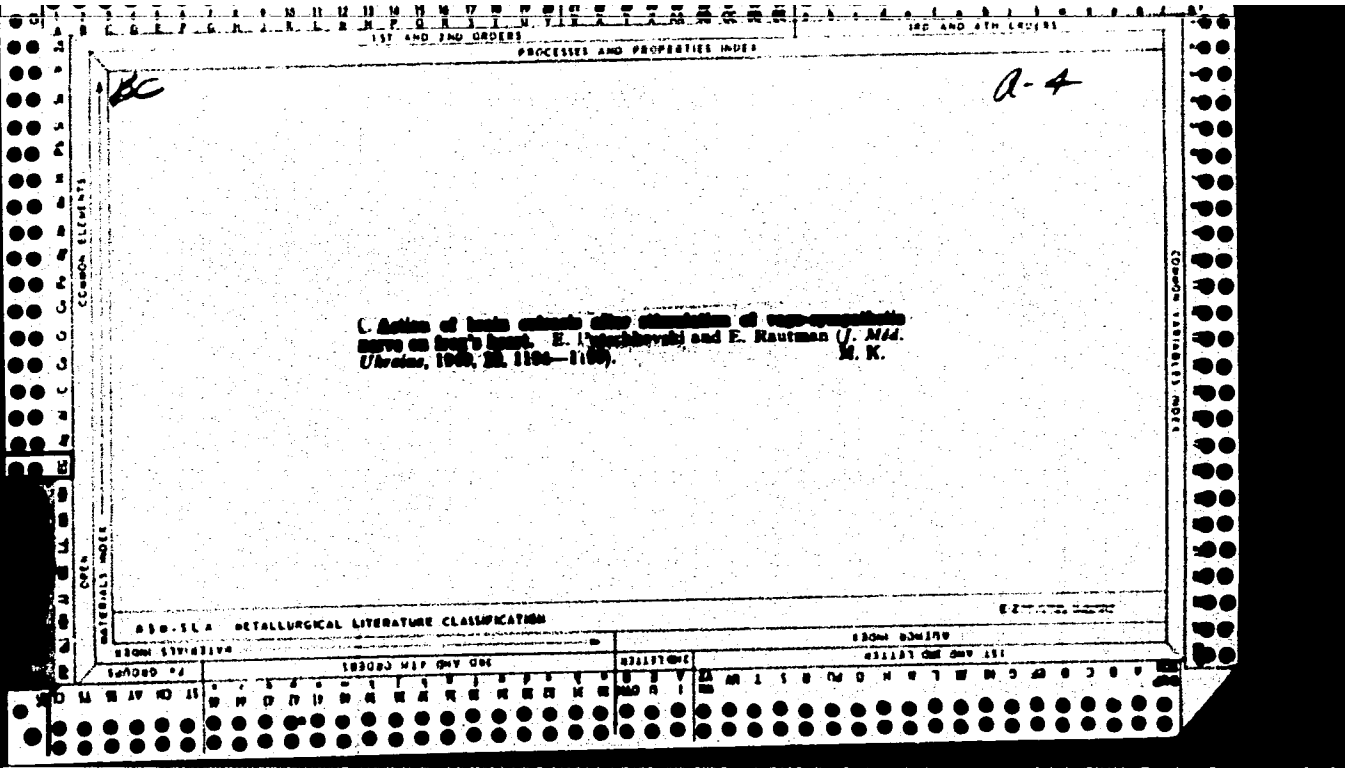
ASIA-35A METALLURGICAL LITERATURE CLASSIFICATION

COMMON SYMBOLS

EXPLANATION

COMMON SYMBOLS





1ST AND 2ND ORDERS 3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

A-1

SC

The present index is the first of its kind in the field of metallurgy. It is a comprehensive index of the processes and properties of metals and alloys. It is the result of a long and arduous task, and it is hoped that it will be of great value to all those concerned with the metallurgical literature. The index is arranged in alphabetical order of the processes and properties, and it is hoped that it will be of great value to all those concerned with the metallurgical literature. The index is arranged in alphabetical order of the processes and properties, and it is hoped that it will be of great value to all those concerned with the metallurgical literature.

A 50-55A METALLURGICAL LITERATURE CLASSIFICATION

FROM STAINLESS	FROM COPPER	FROM ALUMINUM	FROM IRON
L 0 0 0 0	L 0 0 0 0	L 0 0 0 0	L 0 0 0 0

PUTS, I.; VIRNIK, I.

Unloading of large motortrucks in the Chelyabinsk grain milling combine.
Muk.-elev. prom. 28 no.6:12-13 Ja '62. (MIRA 15:7)

1. Director Chelyabinskogo mel'nichnogo kombinata (for Puts).
 2. Glavnyy inzhener Chelyabinskogo mel'nichnogo kombinata (for Virnik).
- (Chelyabinsk -Grain milling) (Chelyabinsk -Grain handling)

KONOVALOV, Ivan Antonovich; ~~PUTS, Mikhail Ivanovich~~; KAPLUNOVSKIY,
Yevgeniy Petrovich [Kaplunovs'kiy, I.E.P.]; TOCHENIY, P.A.
[Tocheniy, P.A.], red.; LIMANOVA, M.I. [Lymanova, M.I.],
tekhn. red.

[Give constant attention to the collective farm economy]
Povsiakdenno vnykaty v ekonomiku. Kharkiv, Kharkivs'ke
knizhkovye vyd-vo. 1962. 41 p. (MIRA 16:6)

(Collective farms)

PUTSAR', V. (Novocherkassk)

Exchange of experience. Radio no.1:42 Ja '65.

(MIRA 18:4)

PUTSAY, S.A.; LEVINA, R.M.

Mental disorders in influenza during the spring-winter
period of 1962. Vrach. delo no.10:150-151 0 '63.

(MIRA 17:2)

1. Chernigovskaya oblastnaya psikhonevrologicheskaya
bol'nitsa.

AKULOV, I.I.; BARZHIN, V.Ya.; VALITOV, R.A.; GARMASH, Ye.N.;
KUCHIN, L.F.; NAYDEROV, V.Z.; PUTSENKO, V.V.;
SEMEHOVSKIY, V.K.; SIMONOV, Yu.L.; TARASOV, V.L.;
TEREKHOV, N.K.; SHEVYRTALOV, Yu.B.; YUNDENKO, I.N.;
CHISTYAKOV, N.I., prof., otv. red.; KOKOSOV, L.V., red.

[Theory and design of basic radio circuits using
transistors] Teoriia i raschet osnovnykh radiotekhnicheskikh skhem na tranzistorakh. Moskva, Sviaz', 1964.
454 p. (MIRA 18:8)

AKULOV, I.I.; BARZHIN, V.Ya.; VALITOV, R.A.; GARMASH, Ye.N.; KUCHIN,
L.F.; NAYDEROV, V.Z.; PUTSENKO, V.V.; SEMENOVSKIY, V.K.;
SIMONOV, Yu.L.; TARASOV, V.L.; TERZAKOV, N.K.; SHEVYRTALOV,
Yu.B.; YUNDENKO, I.N.; CHISTYAKOV, N.I., *otv. red.*; KOKOSOV,
L.V., *red.*; TRISHINA, L.A., *tekh.n.red.*

[Theory and design of principal radio circuits using transistors]
Teoriia i raschet osnovnykh radiotekhnicheskikh skhem na transi-
storakh. [By] I.I.Akulov i dr. Moskva, Sviias'izdat, 1963. 452 p.
(MIRA 16:8)

(Transistor circuits) (Electronic circuits)

KUCHIN, L.F. (g.Khar'kov); FILONENKO, S.N. (g.Khar'kov); PUTSENKO, V.V.
(g.Khar'kov)

Concerning the terminology in the field of transistor electronics.
Izv. vys. ucheb. zav.; radiotekh. 4 no.1:106-110 Ja-F '61.

(MIRA 14:4)

(Transistors---Terminology)

PUTSEYKO, Ye.K.

Effect of electron-acceptor admixtures on the optical and photo-electrical properties of magnesium phthalocyanine. Dokl. AN SSSR 148 no.5:1125-1128 F '63. (MIRA 16:3)

1. Predstavleno akademikom A.N.Tereninym.
(Phthalocyanine--Absorption spectra) (Photochemistry)

FUTILIN, A.P.

Toxicity of *Lepidium coronopifolium* Fisch. Bot.zhur. 44
no.11:1665-1666 N '59. (MIRA 13:4)

1. Novocherkasskiy sooveterinarnyy institut.
(Poisonous plants) (Peppergrass)

PUTS, I., VIRNIK, I.

Reinforced concrete slabs are used for covering lower galleries and mechanical ventilation of grain in storages. Muk.-elev. prom. 28 no.12:22-23 D '62. (MIRA 16:1)

1. Direktor Chelyabinskogo mel'nichnogo kombinata (for Puts).
2. Glavnyy inzh. Chelyabinskogo mel'nichnogo kombinata (for Virnik).

(Granaries—Ventilation) (Concrete slabs)

PUTSEKH'YAN, V.; LISETSKIY, N.; GUREVICH, N.

Gifts of a plant celebrating its anniversary. Mashinostroitel'
no.2:37-39 F '65. (MIRA 18:2)

PUTSEYKO, O.K., kand. med. nauk

Function test with dynamometry in coronary insufficiency according to electrocardiographic data. Kardiologiya 4 no. 4:
79 JI-Ag ' 64 (MIRA 19:1)

1. 2-ya kafedra vnutrennikh bolezney (zav. - dotsent
G.R. Britanishkiy) Gosudarstvennogo ordena Lenina instituta
usovershenstvovaniya vrachey imeni S.M. Kirova, Leningrad.

L 10838-63

EWP(j)/EWT(m)/BDS--AFFTC/ASD--Pc-l--RM

ACCESSION NR: AP3001488

8/0195/63/004/002/0307/0311

62
59

AUTHOR: Markevich, N. N.; Putseyko, Ye. K.

TITLE: The effect of oxygen from the air on the adsorption of dyes by zinc oxide

SOURCE: Kinetika i kataliz, v. 4, no. 2, 1963, 307-311

TOPIC TAGS: oxygen, polyvinylbutyrl, adsorption of dyes, zinc oxide

ABSTRACT: The effect of oxygen from the air with an admixture of polyvinylbutyrl on the adsorption of acid and basic dyes was investigated on the sensitive micro-crystals of zinc oxide. It was found that in contrast to the principal dyes which affect the character of the adsorption isotherms of acidic dyes with zinc oxide, oxygen from the air also affects the adsorption. On the basis of these experiments, the conclusion was drawn that the centers responsible for the adsorption of acidic dyes which sensibilized the photoeffect of these dyes and of zinc oxide, are the chemisorbed particles containing oxygen in their composition. The admixture of polyvinylbutyrl not only lowers the adsorption on the zinc oxide, but also changes the direction of the adsorption isotherm. Apparently the observed effects are due to the fact that molecules of polyvinylbutyrl are adsorbed on the surface of zinc oxide causing a partial displacement of oxygen.

Card 1/2

L 10838-63
ACCESSION NR: AP3001488

3

The authors express their gratitude to A. N. Terenin for his interest in this work and for valuable discussions, and also to D. P. Dobychin for his valuable advice. Orig. art. has: 3 figures.

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

SUBMITTED: 01Feb62

DATE ACQD: 10Jun63

ENCL: 00

SUB CODES: 00

NO REF SOV: 012

OTHER: 007

ch/cv

Card 2/2

AKIMOV, I.A.; PUTSEYKO, Ye.K.

Photoelectric sensitivity spectra of semiconductors as determined
by various methods. Fiz. tver. tela 4 no.6:1542-1548 Je '62.
(MIRA 16:5)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova,
Leningrad.

(Semiconductors) (Photoelectricity)

L 12982-63

EPF(c)/EWP(j)/EWT(m)/BDS

Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3000522

S/0020/63/150/002/0313/0316

62

AUTHOR: Putseyko, Ye. K.

7 61

TITLE: Spectral photopotential distribution in layers of phthalocyanin and chlorophyll on contact with electrolyte

SOURCE. AN SSSR. Doklady, v. 150, no. 2, 1963, 343-346

TOPIC TAGS: spectral sensitivity, hole conduction mechanism, phthalocyanin, chlorophyll, electrolyte

ABSTRACT: Work was done to investigate the spectral sensitivity and photopotential sign in layer of non-metallic- and of Mg phthalocyanin immersed in aqueous media and electrolytes with oxidizing and reducing molecules. The spectral difference between a sublimed pigment layer and a darkened electrode was compared with monochromatic light, frequency 150 hertz, in the range of 400 to 1500 m μ the photopotential varied from 10 sup-7 to 10 sup-3 v, dependent on the sample thickness and surrounding medium. The positive sign is believed to be linked to the hole conduction mechanism. There were sharp photopotential differences for phthalocyanin in air and in electrolyte free of air (phenomenon is reversible - after air was re-introduced, the original potential reappeared). With absorption of an electron acceptor - chloranil, quinone - the photopotential magnitude was intensified but

Card 1/2

L 12982-63

ACCESSION NR: AP3000522

the spectral distribution curve did not change. With reducing agents - ascorbic acid, hydroquinone - the photopotential was reduced 20 times. The same general results were obtained with Mg phthalocyanin. The spectral curves in vacuum for the amorphous, and in air for the more stable crystalline Beta form of Mg phthalocyanin, showed the characteristic $840m\mu$ maximum for the latter. "In conclusion, I would like to express my gratitude to Academician A. N. Terenin for his constant interest in this work and valuable advice." Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 17Jan63

DATE ACQ: 12Jun63

ENCL: CO

SUB CODE: CH, PH

NO REF SOV: 013

OTHER: 007

Card 2/2

MARKEVICH, N.N.; PUTSEYKO, Ye.K.

Effect of binding agents on the photoconductivity kinetics of zinc oxide. *Fiz.tver.tela* 5 no.4:1189-1193 Ap '63. (MIRA 16:4)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova, Leningrad.

(Zinc oxide)

(Photoconductivity)

PUTSEYKO, Ye.K.

Spectral distribution of photopotential in phthalocyanin
and chlorophyll layers at the area of contact with the
electrolyte. Dokl. AN SSSR 150 no.2:343-346 My '63.

(MIRA 16:5)

1. Predstavleno akademikom A.N.Terenyeva.
(Phthalocyanins—Electric properties)
(Spectrometry)

(Photochemistry)

MARKEVICH, N.N.; PUTSEYKO, Ye.K.

Effect of atmospheric oxygen on the adsorption of dyes
by zinc oxide. Kin.i kat. 4 no.2:307-311 Mr-Ap '63.

(MIRA 16:5)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova.
(Dyes and dyeing) (Zinc oxide) (Oxygen)

PUSHENKO, Ye.S.

Some water birds of southern Meshchera and the middle course of the Oka
River. Ornithologia no.4:269-275 '62. (MIRA 16:4)
(Oka Valley—Water birds) (Meshchera—Water birds)

FUTSILLO, M.V., kand.med.nauk; ROSTOTSKAYA, V.I., kand.med.nauk

Resection of the corpus callosum in animals with experimental
hydrocephalus. Probl.sovr.neirokhir. 4:36-43 '62. (MIRA 16:2)
(HYDROCEPHALUS) (BRAIN—SURGERY)

FUTSILO, M.V., kand.med.nauk; ROSTOTSKAYA, V.I., kand.med.nauk

Results of perforation of the corpus callosum in hydrocephalus
in children. Probl.sovr.neirokhir. 4:25-35 '62. (MIRA 16:2)
(HYDROCEPHALUS) (CEREBROSPINAL FLUID) (BRAIN—FUNCTURE)

PUTSYKIN, G.G.; PASHKOV, P.P.; VEYTSEL', M.Ya.

Analysis of the directional crystallization process in "Magnico"
- type alloys. Fiz.met.1 metalloved. 15 no.4:529-533 Ap '63.
(MIRA 16:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektromekhaniki.
(Iron-nickel-aluminum alloys--Magnetic properties)
(Crystallization)

L 13407-63 EWP(q)/BDS/EWT(1)/EWT(m) AFETC/ASD IJP(C)/JD

ACCESSION NR: AP3000095

S/0126/63/015/004/0529/0533

58
57

AUTHOR: Putsykin, G. G.; Pashkov, P. P.; Veytsel', M. Ya.

TITLE: Analysis of the directed crystallization process in "Magniko" type alloy

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 4, 1963, 529-533

TOPIC TAGS: directed crystallization, "Magniko" alloy, criterium of directed solidification

ABSTRACT: The influence of solidification conditions upon the crystalline structures of castings was studied. The process which leads to the formation of magnets with a columnar structure was investigated theoretically and experimentally. The data obtained for the relation between the directed solidification coefficient K and the casting mold temperature are presented. The experiments showed that the melted alloy solidification proceeded in the direction of the main temperature gradient and also away from the walls of the molds. The values of K represent the speeds of crystallization fronts moving in both directions. The Se values were calculated on the basis of temperature gradients and thermal conductivity. They were also obtained experimentally for molds heated to different temperatures and for various cooling speeds. The authors concluded that K increases considerably if

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L 13407-63

ACCESSION NR: AP3000095

the crystallization process takes place in a mold furnace provided with bottom refrigeration. A considerable increase in K is achieved by heating molds to the temperature of the alloy crystallization. The results obtained are substantiated by photographs showing magnet structure (longitudinal section) formed at 1410C. The specimen produced had maximum magnetic energy 7 - 8 times $10 \text{ sup } 6$ gauss-ergs. Orig. art. has: 8 formulas and 5 figures.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut electromekhaniki
(All-Union Scientific Research Institute of Electromechanics)

SUBMITTED: 15Jan62

DATE ACQ: 12Jun63

ENCL: 00

SUB CODE: 00

NO REF SOV: 002

OTHER: 004

Card 2/2

PUTSYH, D.P.

Standard prefabricated elements made of reinforced concrete.
Standartizatsiia 24 no.2:27-29 F '60. (MIRA 13:5)
(Reinforced concrete construction)

PUTYRSKAIA, G.V. (Budapest XIV, Hungaria korut 114); CHERNOVA, A.N. (Budapest XIV, Hungaria korut 114); MATUSH, L. (Budapest XIV, Hungaria korut 114)

Direct quantitative determination of free radicals formed at the radiolysis of water with the use of stable free radicals; a preliminary communication. In Russian. Acta chimica Hung. 21 no.3:289-291 '59.
(KRAI 9:5)

1. Central Research Institute for Chemistry, Hungarian Academy of Sciences, Budapest.

(Radicals (Chemistry)) (Radiochemistry) (Water)

PUTSENİK, V., zootekhnik

Will and determination succeed. Sov.profsciuzu 8 no.2:10-12
Ja '60. (MIRA 13:2)

1. Predsedatel' rabochkoma sovkhoza im.Klary TSetkin, Ryazanskoy oblasti.
(Ryazan Province--Stock and stockbreeding)

PUTSEYKO, E., AKIMOV, I. and TERENIN, A.

"Energy Transfer in Systems of Connected Organic Molecules,"
paper presented at a meeting of the Faraday Society in Nottingham, England,
14-16 April 1959

Angewandte Chemie, 21 June 1959

BARVINOK, M.S.; VARSHAVSKIY, Yu.S.; PUTSEYKO, L.K.

Infrared spectra of some compounds of copper with aniline. Zhur.
neorg.khim. 6 no.5:1125-1128 My '61. (MIRA 14:4)

(Copper compounds--Spectra) (Aniline)

PUZAKOV, N.A.

Refining the establishment of climatic zones to be considered
in planning highways. Avt.dor. 23 no.1:27-28 Ja '60.
(MIRA 13:5)

(Climatology) (Road construction)

PUZANOV, V.V.

Characteristics of vibrations caused by cut-in grinding.
Stan.i instr. 31 no.2:21-23 P '60. (MIRA 13:5)
(Grinding--Vibration)

FUTSEYKO, Ye.

Photoelectric sensitivity of chlorophyll and its analogs in various states. Dokl. AN SSSR 124 no.4:796-799 F '59. (MIRA 12:1)

1. Predstavleno akademikom A.N. Tereninym.
(Chlorophyll) (Photoelectricity)

PUTSEYKO, Ye. K.

24(4) ПІАДР I ПОД.К. СОВ.3140
 Akademiya nauk Ukrainy SSR, Institute Fiziki
 Fotoelektricheskiye i optiko-ekivye zavleniya v poluprovodnikakh i opticheskim yavleniyam v poluprovodnikakh, S. Kiyev, 20-26 noyabrya 1957 g. (Photoelectric and Optical Phenomena in Semiconductors; Transactions of the First Conference on Photoelectric and Optical Phenomena in Semiconductors...) Kiyev, 1959. 403 p. 4,000 copies printed.
 Additional Sponsoring Agency: Akhemiya nauk SSSR, Prezidium. Komitaya po poluprovodnikam.
 Ed. of Publishing House: I. V. Kisina; Tech. Ed.: A. A. Matveychuk; Resp. Ed.: V. Ye. Lashkarev, Academician, Ukrainian SSR, Academy of Sciences.

PURPOSE: This book is intended for scientists in the field of semiconductor physics, solid state spectroscopy, and semiconductor devices. The collection will be useful to advanced students in universities and institutes of higher technical training specializing in the physics and technical application of semiconductors.

COVERAGE: The collection contains reports and information bulletins (the latter are indicated by asterisks) read at the First All-Union Conference on Optical and Photoelectric Phenomena in Semiconductors. A wide scope of problems in semiconductor physics technology are considered: photoconductivity, photoelectro-oxidation, the action of light on photoelectric cells and photoresistors, the properties of thin films and complex semiconductor systems, etc. The materials were prepared for publication by E. I. Mashov, O. V. Snitko, K. D. Tolpygo, A. F. Luschenko, and M. K. Sheynkman. References and discussion follow each article.

SOV/3140

Photoelectric and Optical Phenomena (Cont.)	290
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Akimov, I. A., and Ye. I. Putseya. The Sign of Photoelectric Current Carriers and the Polarization of Photoconductivity in Thallium and Silver Iodides Sensitized by Organic Dyes	314
Putseya, Ye. I. Sensitization of Photoelectric Effect in Inorganic Semiconductors by Organic Dyes (Theses)	316
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card 12/16

PUTSEYKO, O.K.; RIKKEN, L.A.

Influence of radon baths on hypertension patients as shown by electrocardiographic data. Vop. kur., fizioter. i lech. fiz. kul't. 24 no. 4:301-305 J1-Ag '59. (MIRA 13:8)

1. Iz kardiologicheskogo sanatoriya na Kirovskikh ostrovakh v Leningrade (glavnyy vrach V.N. Vvedenskiy, nauchnyy rukovoditel' - prof. M.I. Khivilivitskaya). (RADON--THERAPUTIC USE) (HYPERTENSION)

FUTSEYKO, O. K.

"Dynamic Electrocardiography During Hypertension in Relation to Physical Methods of Treatment (Clinical Electrocardiographic Observations)." Cand Med Sci, State Order of Lenin Inst for the Advanced Training of Physicians imeni S.M. Kirov, Leningrad, 1955. (KL, No 14, Apr 55)

SO: Sum. Nol 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

17(3)

SOV/20-124-4-18/67

AUTHOR:

Putseyko, Ye.

TITLE:

The Photoelectric Sensitivity of Chlorophyll and Its Analogues in Various States (Fotoelektricheskaya chuvstvitel'nost' khlorofilla i yego analogov v razlichnykh sostoyaniyakh)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp 796-799 (USSR)

ABSTRACT:

The present paper forms part of the investigations of the optical sensitization of semiconductors by pigments carried out by the author; it deals with the photoelectric properties of chlorophyll and its analogues which are in different states of aggregation and are applied to semiconductors and some metals. Determination and measurement of the photoelectric effect from the spectrum was carried out with pulverulent semiconductors and pigments according to the condenser method and on the basis of the variation of the diffusion-dependent photoelectromotive force. Parallel with the condenser method also the usual method of photoconductivity was employed. The sensitization spectra obtained by these two methods agree with each other. The first part of the present paper deals with the independent and the sensitized

Card 1/3

SOV/20-124-4-18/67

The Photoelectric Sensitivity of Chlorophyll and Its Analogues in Various States

photoelectric effect of the phthalocyanides. All data determined are indicative of the fact that the sensitization of the photoelectric effect on ZnO is due to individual magnesium-cyanide molecules and not to the sensitivity of the pigment itself in the aggregated state. The second part of the paper then deals with the independent and the sensitized photoelectric effect of chlorophyll and its analogues. The author investigated the photoelectric properties of thin layers of chlorophyll, pheophytin and ethyl chlorophyllide on a platinum base. The photoelectric effect of the chlorophyll layers (in contact with platinum) was determined by the condenser method and with continuous illumination by light with the frequency of 150 cycles. Thin chlorophyll layers in contact with platinum show a low degree of photoelectromotive force of the order of 10^{-5} - 10^{-6} v already in air when subjected to the action of light with the wavelength of 680 m μ . Pumping out of air to 10^{-4} mm increased the photoelectromotive force by several times its amount. The sensitizing capacity of chlorophyll (which has a hole-conductivity with respect to electron-semiconductors of the type of ZnO) cannot be ascribed to the transfer of an electron from the

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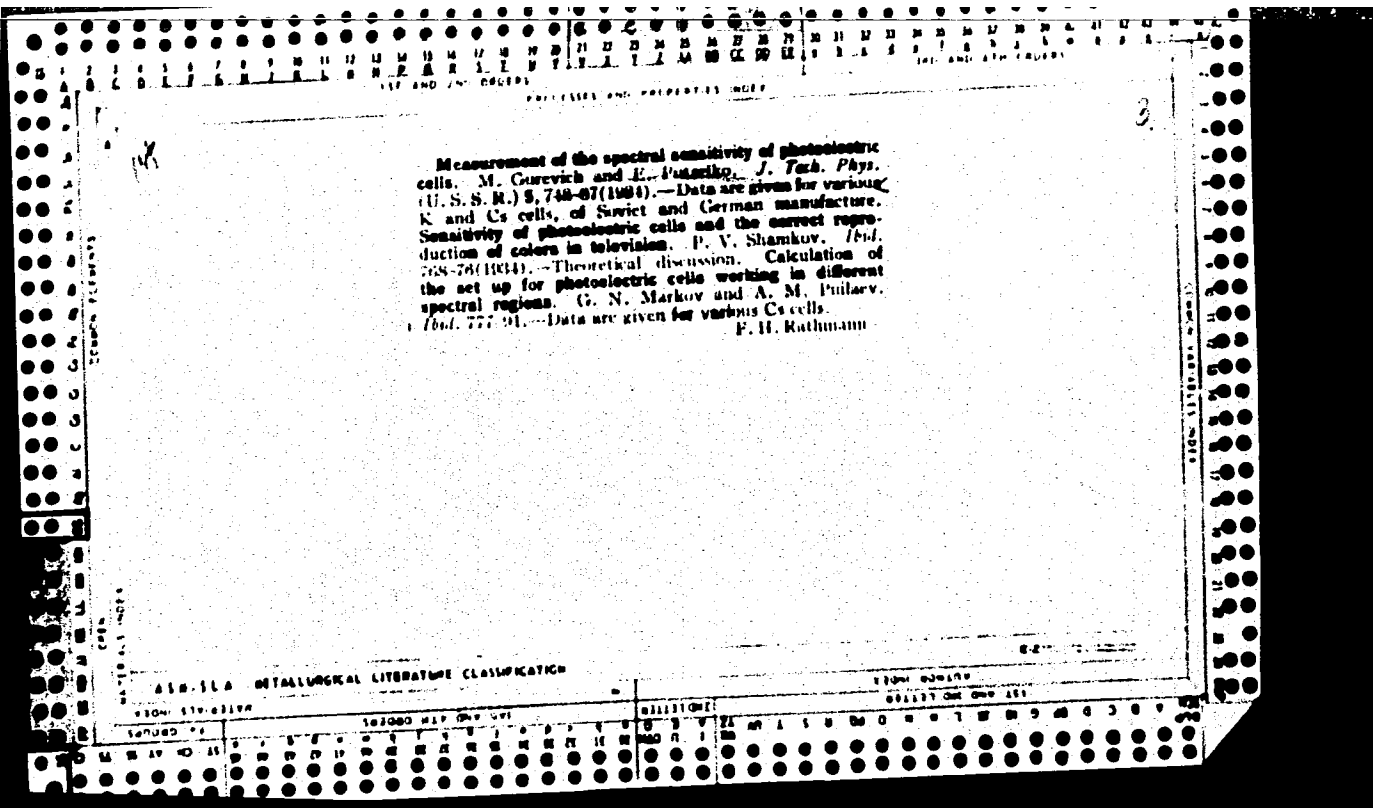
The Photoelectric Sensitivity of Chlorophyll and Its Analogues in Various States

pigment to the zinc oxide. The results obtained by the present paper are a further argument in favor of the mechanism of sensitization by the transfer of energy. The author thanks Academician A. N. Terenin for his advice and for his useful discussions of the present paper. There are 4 figures and 14 references, 10 of which are Soviet.

PRESENTED: October 13, 1958, by A. N. Terenin, Academician

SUBMITTED: July 1, 1958

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1st AND 2nd COLUMNS 3rd AND 4TH COLUMNS

PROCESSES AND PROPERTIES INDEX

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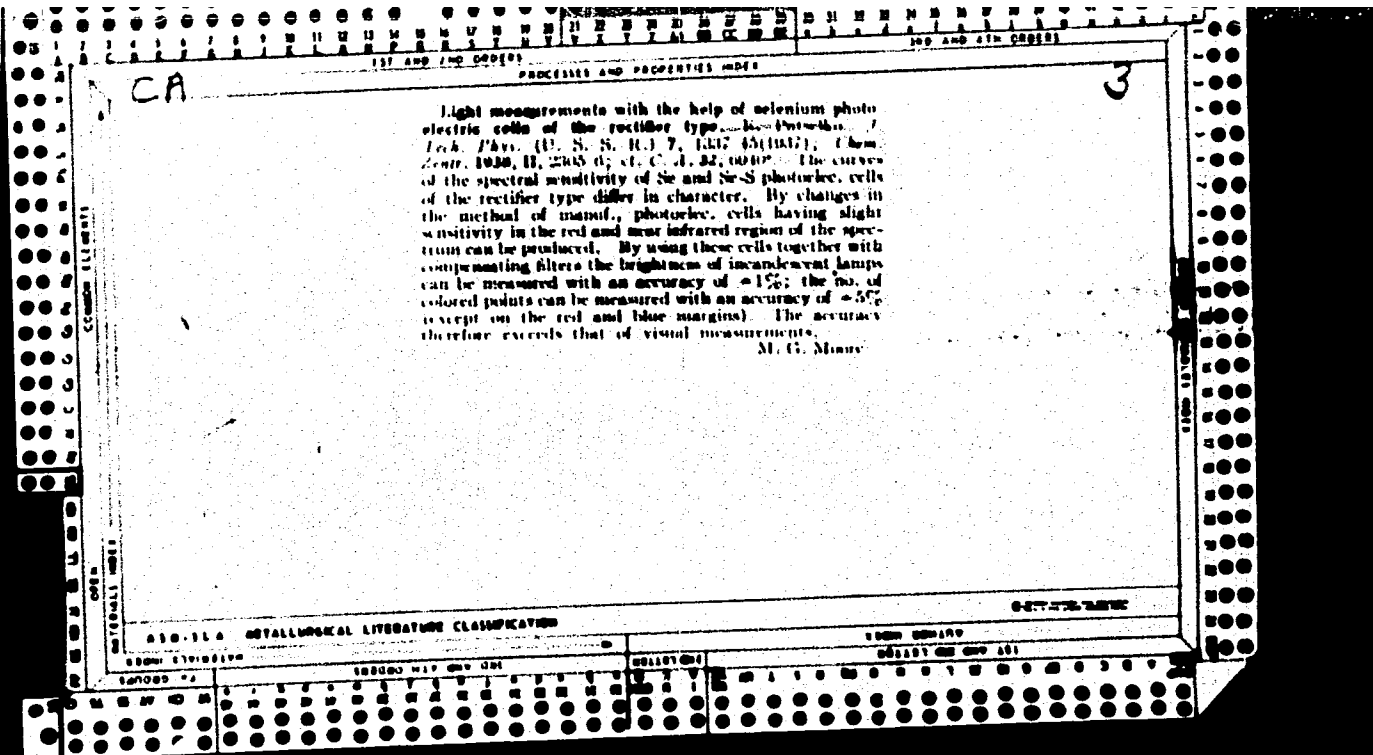
Abstract: The effect of the addition of optimum concentrations of phosphorus to... A. A. BOURNAN and C. A. JONES. *Phys. Chem.*, 1962, 66, 252. The process of crystallization of deformed metals is discussed by three-dimensional diagrams (crystal size vs deformation temp.). R. T.

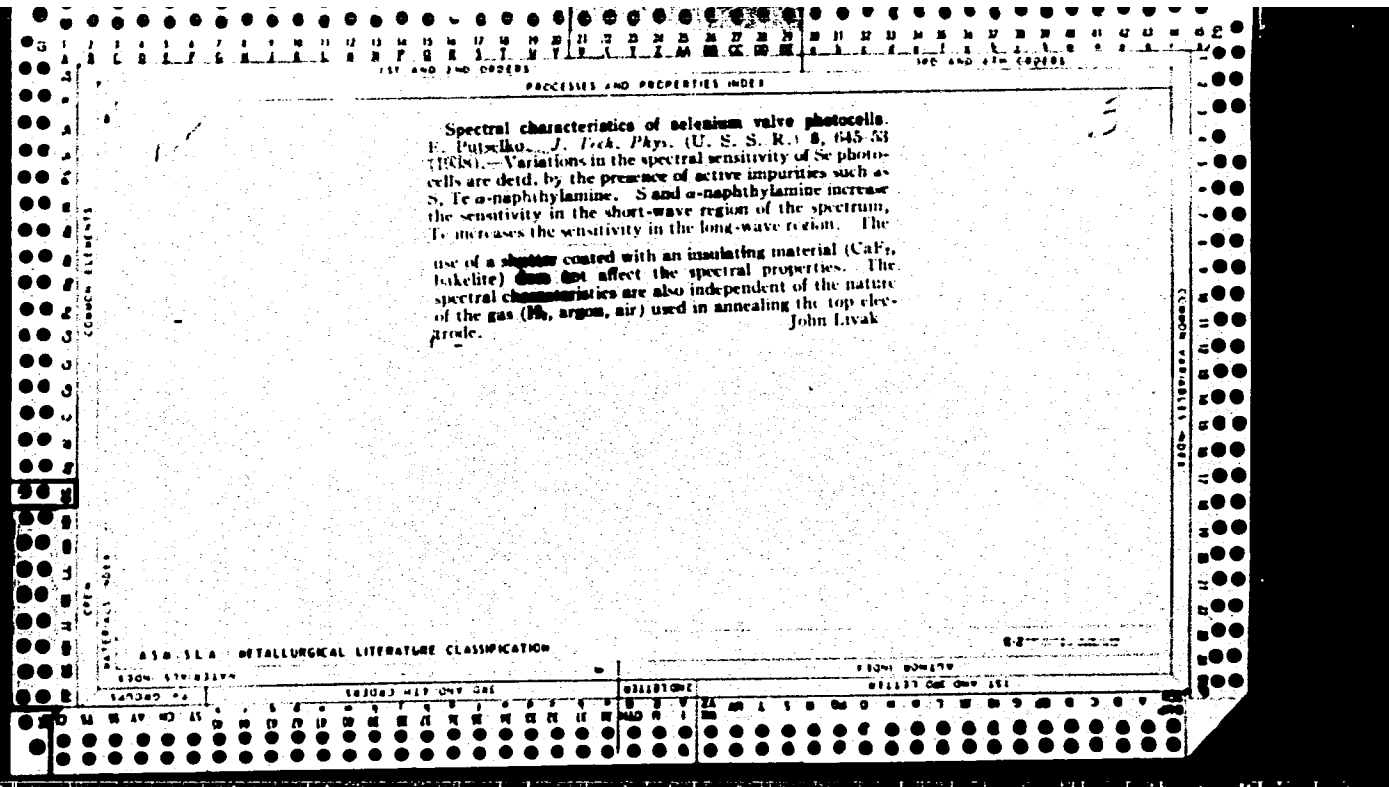
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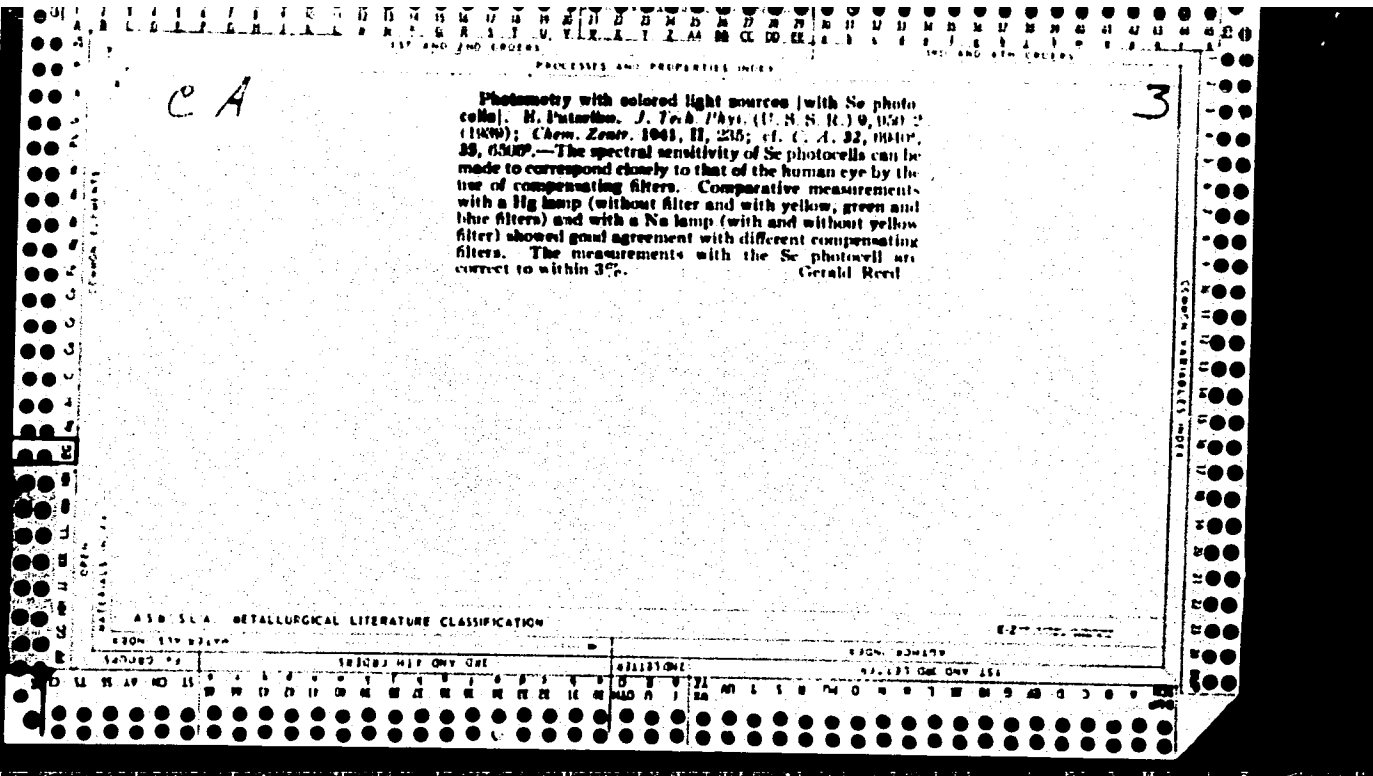


1ST AND 2ND CROSS
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PROCESSES AND PROPERTIES INDEX

POTSEYKO, K. K.
A-1

Spectral characteristics of calcium photoelements. E. K. Potsevko (Dokl. Acad. Sci. U.S.S.R., 1958, No. Phys., 718-720).—Addition of traces of S and Te cause displacements of the spectral sensitivity curve of Ca towards short and long λ , respectively. L. J. J.

COMMON ELEMENTS
ORIGINAL SOURCE
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<p>Selenium photocell for light measurements. E. Putniko. <i>J. Tech. Phys. (U. S. S. R.)</i> 11, 485-8(1941); <i>ibid.</i> C. A. 34, 8347. — With Se contg. 0.2 to 0.3% S, tempered at 190-195° for 1.5-4 hrs., distribution of spectral sensitivity was not reproducible; there was still a displacement about 8 mμ wide between the extreme curves of 21 cells built with Se contg. 0.16% S, all tempered at 190 ~ 21° 2 hrs. (max. 620 mμ). Constancy and sharp coincidence of sensitivity curves for 44 cells, between 400 and 700 mμ, were obtained with purified S-free Se. Max. was at 560 mμ. Deviations of 10-20% were found only in the region 700-780 mμ, attributed to traces of Te. N. T.</p>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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PROCESSES AND PROPERTIES INDEX

CA 3

Temperature coefficient of selenium-cadmium photo-cells with blocking layers. E. Putzko. *J. Tech. Phys.* (U. S. S. R.) 11, 777-82 (1941).--Intensity of short-circuiting current of Se-Cd cells increases with temp. in the range -130° to +100°, the temp. coeff. α varying for different samples from +0.06% to +0.5% per 1°. It is found that for each sample the thermal variation of the current intensity corresponds numerically to the variation of the integral photosensitivity in an equal temp. interval; example, ratio of photosensitivities at -127, +25 and +100°, 1:1.06:1.15; ratio of current intensities at -102, +20 and +94°, 1:1.08:1.13. For Se-Cd cells, α diminishes from red to blue. With ordinary Se cells, the parasite resistance r' is comparable with the resistance r of the blocking layer; the intensity of the short-circuiting current $i = Ir/(r+r')$, where I = photocurrent, decreases with the temp., the effect of the temp. coeff. of r' ($\alpha = -0.5\%$ per 1°) outweighing that of the temp. coeff. of the photosensitivity ($\alpha = +0.1$ to +0.05%).
N. Thon

ASTM-56A METALLURGICAL LITERATURE CLASSIFICATION

PUTSEYKO, Ye.K.

Kinetics of the photoconductivity of phthalocyanines. Dokl.
AN SSSR 132 no.6:1299-1302 Je '60. (MIRA 13:6)
(Phthalocyanine) (Semiconductors)

PUTS'KO, T. K. ; SHRYVON, M. M.

Principles of military optical shading or dishading .

An article found in "Optics for Military Use", part 4, published by the USSR Academy of Science, Moscow, 1945.

PUTSEYKO, Ye. K.

"Photoelectric Method of the Determination of the Diffuse Reflection
with Infrared Rays," Zhur. Tekh. Fiz. 15, No. 12, 1945.

State Optical Inst., Photometrical Lab.

FUTSEYKO, E. K.

PA 26T80

USSR/Physics
Selenium
Photoelectric Effect

Sep 1947

"The Valvular Photoeffect in Selenium with Cadmium Admixture, " B. T. Kolomiyets,
E. K. Futseyko, 6 pp

"Zhur Eksper i Teoret Riz" Vol. XVII, No 9

The article discusses experiments which resulted in the data contained in it. The most important discovery was the fact that the introduction of a cadmium admixture into selenium by means of simultaneous vaporization of selenium and cadmium in a vacuum results, not only in a change of the spectral disposition of the sensitivity of the photoelements, but also in the formation of a new type of photoelement. Submitted at the State Optical Institute, and the Physico-Technical Institute of the Academy of Sciences of the USSR.

PA 26T80

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DD DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LL LM LN LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH MI MJ MK ML MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB NC ND NE NF NG NH NI NJ NK NL NO NP NQ NR NS NT NU NV NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OO OP OQ OR OS OT OU OV OW OX OY OZ PA PB PC PD PE PF PG PH PI PJ PK PL PM PN PO PP PQ PR PS PT PU PV PW PX PY PZ QA QB QC QD QE QF QG QH QI QJ QK QL QM QN QO QP QQ QR QS QT QU QV QW QX QY QZ RA RB RC RD RE RF RG RH RI RJ RK RL RM RN RO RP RQ RR RS RT RU RV RW RX RY RZ SA SB SC SD SE SF SG SH SI SJ SK SL SM SN SO SP SQ SR SS ST SU SV SW SX SY SZ TA TB TC TD TE TF TG TH TI TJ TK TL TM TN TO TP TQ TR TS TT TU TV TW TX TY TZ UA UB UC UD UE UF UG UH UI UJ UK UL UM UN UO UP UQ UR US UT UU UV UW UX UY UZ VA VB VC VD VE VF VG VH VI VJ VK VL VM VN VO VP VQ VR VS VT VU VW VX VY VZ WA WB WC WD WE WF WG WH WI WJ WK WL WM WN WO WP WQ WR WS WT WU WV WW WX WY WZ XA XB XC XD XE XF XG XH XI XJ XK XL XM XN XO XP XQ XR XS XT XU XV XW XX XY XZ YA YB YC YD YE YF YG YH YI YJ YK YL YM YN YO YP YQ YR YS YT YU YV YW YX YY YZ ZA ZB ZC ZD ZE ZF ZG ZH ZI ZJ ZK ZL ZM ZN ZO ZP ZQ ZR ZS ZT ZU ZV ZW ZX ZY ZZ

1ST AND 2ND CODES

3RD AND 4TH CODES

PROCESSED AND PROPERTIES INDEX

1

Differential spectral photoelements. M. T. Kolomiets and E. K. Puzirko (Phys.-Tech. Inst. and State Optical Inst., Leningrad, Russia). *Compt. rend. acad. sci. U.R.S.S. 50, 267-8(1947)*; (*Chem. Zvest. 1947, 1, 173-4*); cf. C.A. 41, 7263i.—Photoelements prepd. by the penetration of Cd into Se by simultaneous vaporization showed photo-currents the direction of which was dependent on the wave length of the incident light. E.g., excitation by light of the green or blue region of the spectrum produced a photo-current in one direction, while excitation with red light produced a current opposite in direction. It is assumed that during the vaporization and the subsequent process of crystn. of the Se, the metallic Cd is converted into CdSe and forms a mosaic of Se and CdSe crystals on the Au film so that the "perforation" cond. of the Se is responsible for the neg. photoeffect and the electron cond. for the pos. effect.

M. G. Moore

MATERIALS INDEX

AS 5-51 A METALLURGICAL LITERATURE CLASSIFICATION

52000 521000000

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ANDRONNIKOV, K.S.; BALAKOV, V.V.; BUZHINSKIY, A.N.; BURAGO, A.N.; VENTMAN, L.A.; VISHNEVSKIY, A.A.; VOLOSOV, D.S.; GASSOVSKIY, L.N., professor; GERSHUN, A.A., professor; YEL'YASHEVICH, M.A.; YEVSTROP'YEV, K.S.; GUREVICH, M.M., professor; KOLIADIN, A.I.; KORYAKIN, B.M.; KURITSKIY, A.L.; PAPIYANTS, K.A.; PROKOP'YEV, V.K., professor; PUTSEYKO, Ye.K.; REZUNOV, M.A.; RITYN', N.E.; SAVOST'YANOVA, M.V., professor; SEVCHENKO, A.N.; SENNOV, N.I.; STOZHAROV, A.I.; FAYERMAN, G.P., professor; PROFILOV, P.P.; TSAREVSKIY, Ye.N., professor; CHEKHMATAYEV, D.P.; YUDIN, Ye.F.; KAVRAYSKIY, V.V., professor; VAVILOV, S.I., akademik, redaktor

[Optics in military science] Optika v voennom dele; sbornik statei. Pod red. S.I.Vavilova i M.V.Savost'ianovoi. Izd. 3-e, sanovo perer. i dop. Moskva. Vol.2. 1948. 387 p. (MLRA 9:9)

1. Akademiya nauk SSSR. 2. Sostaviteli - sotrudniki Gosudarstvennogo Opticheskogo instituta (for all except Vavilov and Kavrayskiy)
3. Voenno-morskaya akademiya (for Kavrayskiy)
(Optics)

Pa. 21/4979

USSR/Chemistry - Photography, Sensitizers Oct 48
Chemistry - Photography, Sensitivity

"Photoelectric Sensitivity of Photographic
Sensitizers," E. Pitseyko, State Opt Inst,
Leningrad, 8¹/₂ pp

"Zhur Fiz Khimii" No 10

Treats subject under following: (1) method,
(2) apparatus, (3) comparison of methods,
(4) results of measurements, and (5) conclusions.
Submitted 24 Feb 48.

LC

21/4979

Photoelectric sensitivity of photographic sensitizers
 E. Putzko. *Zhur. Fiz. Khim.* (J. Phys. Chem.) **22**,
 1772-84 (1948).—The method of Bergmann and Hander
 (C. I. 20, 3115) was improved. A condenser was made
 up of (a) translucent metal layer, (b) glass plate, (c) thin
 (0.02 cm.) photosensitive layer, (d) glass plate, and (e)
 metal plate; (c) was illuminated with intermittent mono-
 chromatic light (λ 400-1100 m μ) through (a) and (b),
 and the oscillations of the potential drop V induced be-
 tween (a) and (e) were amplified. The resistance of the
 condenser was 10^9 ohm and light frequency 150 sec.⁻¹.
 The sensitivity spectrum of V for H₂S, Ag₂S, and Se was
 almost identical with the dependence of photocurrent K
 and the $e/m \cdot E$ of the photocell on λ , except that K was
 more light-sensitive than V and E between 500 and 800 m μ
 for the sulfides and had an addit. max. of sensitivity at 7.50
 m μ for Se. V is due to the primary internal photoeffect.
 The curves of V vs. λ are given for pentaerythritol, thiatri-
 carbocyanine, tricarbocyanine, and several sensitizers
 identified only by nos. and letters. For 2 sensitizers the
 approx. agreement between the V - λ curve and the ab-
 sorption spectrum is shown. J. J. Bikerman

BUYSYKO, Ye. K.

SA

337.312.5:771.534.17.2

3229. Use of the capacitor method in studying the internal photo-effect of sensitizers. Purtsko, E.
 Dokl. Akad. Nauk, SSSR, 99 (No. 3) 471-4 (1948)
 In Russian.—The internal photo-effect of semi-conductors is usually studied by observing changes in conductivity due to the liberation of residual electrons by irradiation (photo-conductivity) with an external electric field applied. The latter, however, introduces secondary effects on the electrodes, viz. their polarization, owing to which the current gradually decreases. Intermittent irradiation goes far in obviating these undesirable effects. The capacitor method, introduced by Bergmann, consists in including a fine layer of the pulverized substance between insulating slides of a transparent material (e.g. glass) and placing these between the plates of a special capacitor, one plate of which is semi-transparent. The intensity of the light entering the powder layer decreases according to an exponential law, as does the concentration of the liberated electrons across the layer. Owing to this concentration gradient the electron cloud is displaced along the path of the light and charges the condenser plates.

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The alternating p.d. on the plates (due to the intermittent irradiation) is then amplified and accurately depicts the internal photo-effect of the semi-conductor. The authors investigated, apart from typical semi-conductors like Se or thallium sulfide, organic dye sensitizers in intermittent monochromatic light (frequency of alternation 150-500 c/s). Curves of photoelectric sensitivity and absorption are given and the results discussed.

B. F. K.

PUTSEYKO, YE. K.

PA 42/49T84

Physic/Physicist
Photoelectricity
Photoconductivity

Mar/Apr 49

"Using the Condenser Method to Measure the Photoelectric Sensitivity of Powdery Solids," Ye. K. Putseyko, State Opt Inst, 6 pp

"Is Ak Nauk SSSR, Ser Fiz" Vol XIII, No 2

Applies condenser method developed by L. Bergmann and J. Bausler to give more accurate results in measuring photoconductivity, photosensitivity, and photoeffect. Condenser method eliminates secondary processes which occur when metal electrodes are used (polarisation)

42/49T84

USIA/Physic (Contd)

Mar/Apr 49

of electrodes, secondary emission). Obtains curves of the spectral distribution of photoemission, photoconductivity, and photoeffect for powdery thallium sulfide and powdery selenium.

42/49T84

PROCESSES AND PROPERTIES INDEX

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1ST AND 2ND COPIES

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Photoconduction of the internal photocurrent in zinc oxide and other semiconductors by adsorbed dyes. E. A. Putulko and A. N. Terenin. *Zhar. Fiz. Khim.* 43, 670-89 (1949); cf. *C.A.* 43, 1273d.—When a dye having an absorption max. at λ_0 μm is adsorbed on semiconductor, the latter shows photoelec. effect on irradiation with λ_0 , although the noncontaminated semiconductor is sensitive only to wave lengths near λ_0 , λ_0 being always $< \lambda_0$. If the photosensitivity s , i.e., the ratio of voltage produced by light to light intensity, is set equal to 100 for ZnS at its λ_0 , it is 10-20 for TiCl ($\lambda_0 = 350 \text{ m}\mu$), 80 for TlBr (410 $\text{m}\mu$), 30 for TlI (440 $\text{m}\mu$), 50, 10, and 1-3 for CuI, AgCl, and CdO, resp., 0.5-1 for ZnO (370 $\text{m}\mu$), 0.5-1 for pinacyanol, and 3-5 for carbocyanine dyes. Eosin (I) and erythrosin (II) alone show no photoelec. effect but make ZnO, CdO, and PbO sensitive at their λ_0 ; s increases with the concn. of dye soln. from which adsorption took place (the adsorbed amt. was not detd.). Rhodamine B (III) photoconduces TiCl and ZnO; the s of these systems is 5-10 times that of III powder, and powders of ZnS, TiO₂, BaSO₄, etc., all dyed with III, show no effect at λ_0 ; hence the sensitivity of the ZnO-III and TiCl-III systems is not due to that of III crystals. The s of ZnO-pinacyanol and ZnO-carbocyanines at λ_0 is less than s of pure dyes at λ_0 . The dependence of s on λ is complicated by the absorption of violet and ultraviolet rays, which cause photoelec. effect in pure semiconductors, by the adsorbed dye. The elec. cond. s of ZnO, also in the presence of I, II, or III, is due to electrons. The s of III, of TiCl, of TiCl + III, and of ZnO-carbocyanines has mixed character (electrons and "holes"). Anthracene, Ph₂NH, and glycine cannot be made photosensitive by adsorption of dyes.

I. I. Bikerman

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PUTSEYKO, Ye. K

PA 1/50T84

USSR/Physics - Photoelectricity Aug 49
Semiconductors

"Applying the Condenser Method to the Determination of the Sign of the Photocurrent Carriers,"
Ye. K. Putseyko, State Opt Inst, 4 pp

"Dokl Ak Nauk SSSR" Vol LXVIII, No 6

Compiled table giving the sign of the current carrier for 30 semiconductors. Pressed semiconductors, in powder form, between thin transparent insulating linings and placed in a condenser. When a constant electric field is applied to the plates, many semiconductors

1/50T84

USSR/Physics - Photoelectricity (Contd) Aug 49

exhibit a characteristic change of photoelectric sensitivity in dependence upon its voltage. When the current transfer is due to a shift of negative charges (electron semiconductors), an increase in photoelectric sensitivity is observed when a negative voltage is applied to the semitransparent condenser plate. Changing the sign of the applied field causes the effect to subside rapidly. The opposite picture is observed for semiconductors with "hole" conductivity. Submitted by Acad A. N. Terenin 13 Jun 49.

1/50T84

Accumulation of electrons of a semiconductor in organic dyes adsorbed thereon. E. K. Putseiko and A. N. Terenin. *Doklady Akad. Nauk S.S.S.R.* 70, 401-4 (1970); cf. *C.A.* 43, 7340d. (1) Adsorption of methylene blue on TII gives rise, in addn. to the proper photocond. (I) of TII (max. in the 4000-A. region), to a sensitized photocond. (II) in the range of absorption of the dye (around 6500 A.). From -40 to +70°, II increases by a factor of 10, whereas in the same temp. interval I changes only very slightly. On heating to 70°, II attained almost 50% of I. This difference of the temp. coeffs. parallels the temp. dependence of the photolysis of AgBr without sensitization and sensitized by org. dyes. (2) If, in addn. to intermittent illumination with light absorbed by the adsorbed methylene blue, TII is simultaneously exposed to const. illumination with wave lengths (4358 and 4047 A.) within the range of I, and photocond. is measured by the condenser method, without application of an elec. field, the spectral curve of II is unchanged, but the magnitude of II is substantially increased, and, at the same time, that of I markedly decreased. With increasing intensity of illumination with ~4000 A., or on application of an elec. field to the condenser, the increase of II reaches satn. This increase of II through simultaneous application of a const. short-wave illumination has permitted detection of II also in HgI₂, where it is weak as compared with I, and in TlBr, where it is not detectable under ordinary conditions. On the other hand, the const. illumination is without effect on TII powder dyed with erythrosin or eosin, and on ZnO dyed with methylene blue or other dyes, although in the latter case there is a pronounced II effect. The enhancing effect of const. illumination changes little with the temp. between -40 and +70°, and evacuation of the air makes no difference. (3) The enhancement of II at the expense of I shows that electrons freed in the semiconductor can accumulate on intermediate levels from which

they are released through quanta absorbed by the adsorbed dye. These levels can be due to perturbations of the surface of the semiconductor itself, or else be produced through the adsorption of the dye. The effect is pronounced only with cationic dyes, and is absent with anionic dyes. Whereas in TII and TlCl, which show II strongly, simultaneous const. short-wave illumination in the absence of an adsorbed dye has no effect on the spectral curve of I, an addnl. max. of the photocond. (measured in intermittent light) does appear under the same conditions (i.e. without adsorbed dye) on simultaneous const. illumination with 4358 and 4047 A. of TlBr and HgI₂, which show only an insignificant or no II effect; at the same time, the main max. of photocond. is lowered. Similar observations were made with phosphors ZnS:CuS(Cu), with crystals of CdS, PbO, TlBr + TII, etc. Evidently, in TlBr and HgI₂ the trapping levels preexist in the semiconductor, independently of adsorption. By the position of the addnl. maxima, these levels, in TlBr and in HgI₂, lie 0.2 and 0.4 e.v., resp., above the filled zone. The const. short-wave illumination evidently results in an impoverishment in electrons of the levels responsible for I. The absence of a II effect in TlBr and HgI₂ may either indicate that the trapping levels are not surface levels, or else that they lie too far below the conduction zone for the dye-absorbed quantum to be sufficient for lifting into that zone. In TlCl and TII, these levels appear to be localized at the surface, and to lie less deeply below the conduction zone; the very deep levels, analogous to those of TlBr, evidently lie very close to the ground zone, and are filled. (4) Application of a const. external elec. field (100 v./cm.) gives rise, in TlBr and HgI₂, to effects analogous to those of a superposed const. short-wave illumination. In dyed TII and TlCl, an external elec. field also gives rise to an increase of II and simultaneous decrease of I. The elec. field evidently favors formation of trapping levels.

N. Thon

1957

PULSEIKO E. K.

APPROVED FOR RELEASE: 06/15/2000
 8622. Photoelectric sensitivity of alkali halide crystals. P. V. MELIKYAR and E. K. PUTSEIKO. *Dokl. Akad. Nauk, SSSR*, 73 (No. 1) 63-5 (1950) in Russian.

Measurements of the spectral distribution of photoelectric sensitivity in crystals of AgCl and AgBr were made by two methods: (a) a condenser method without an electric field [Abstr. 3229, 7015 (1950)]; (b) determination of the photoconductivity. The sign of the charge carriers was determined by using the condenser method with the superposition of a const. electric field [Abstr. 8748 (1950)]. Subsidiary levels in the halides were detected by using a method described previously [Abstr. 4970 (1950)]. Detection and measurement of subsidiary absorption bands (before and after illumination) were made by a differential method on a photoelectric spectrophotometer. It was shown that for non-irradiated

AgCl and AgBr there is only one natural band of photoelectric sensitivity with max. of 366 mμ for irradiation by light of 366 mμ for AgBr and AgCl. Irradiation by light of 366 mμ gave two subsidiary photoelectric sensitivity bands with max. at 450-460 mμ and 540-600 mμ. For irradiated AgBr and AgCl in the region of natural sensitivity the conductivity had a "hole" character, while in the region of the subsidiary max. sensitivity the conductivity had an electronic character. By measuring the absorption of irradiated samples in relation to that of non-irradiated samples, subsidiary absorption bands were found with max. at 430-440 mμ for AgBr and 370-380 mμ for AgCl. Simultaneously with these absorption bands, longer wavelength bands were detected belonging to colloidal Ag with max. at 600-700 mμ for AgBr and 560-620 mμ for AgCl. New short wavelength absorption bands were observed by heating non-irradiated crystals, e.g. by heating AgBr from 20° to 200°c at 460-470 mμ, the absorption increased about 10 times, the max. being displaced towards the long wavelength side; on cooling the absorption retained its normal value. On the basis of the results obtained, the formation in irradiated crystals of centres analogous to F-centres in alkali halides is discussed.

W. HUGHES

102

3

Photoelectric sensitivity and optimum absorption of cadmium sulfide. B. K. Putsulu, *Izv. Akad. Nauk S.S.S.R., Ser. Fiz.* 13, 707-711(1951).—By using the condenser method (cf. C.A. 43, 6074c), P. found 2 max. of spectral sensitivity at 470-480 m μ and 520-530 m μ . Since the inertia of the long-wave max. exceeded the time const. of the condenser (10^{-9} sec.), static cond. measurements had to be made which showed a large long-wave max. with applied voltage at approx. 10 v. Crystals of CdS when kept in the dark were not sensitive to the max. λ but became sensitive after irradiation with blue light. The short-wave max. is ascribed to the absorption of the lattice, whereas the nature of the long-wave band is undetd. The λ and μ is electronic in the short-wave max. and a mixt. in the long-wave max. Condenser measurements with addnl. const. illumination show the presence of traps. Absorption measurements showed a band of increased absorption 30 \AA . wide at 515-525 m μ at the absorption edge indicating an impurity level 0.25-0.3 e.v. away from the photoelec. level. S. Paksver

4839 AEC-tr-2155
PHOTOELECTRIC AND OPTICAL PROPERTIES OF SILVER
HALIDE CRYSTALS. E. K. Putzelko and P. V. Mel'dyar.
Translated from Zhur. Ekspit. i Teoret. Fiz. 21, 541-
9(1951). Sp. Available from Associated Technical Services
(Trans. No. 64G5R), East Orange, N. J.
The spectral distribution of photoelectric sensitivity and
light absorption has been studied in both irradiated and
unirradiated crystals of AgBr and AgCl. The change in ab-
sorption by the crystals as a result of increased tempera-

Photoelectric sensitivity and optical absorption of thin film halogen, E. K. Patil, *Ph.D. Thesis, Dudley Reid, Naval S.S.R. 79-438-0(1981)*, of G. J. 43, 7246; 48, 5018. In illumination with unpolarized light and simultaneous continuous illumination with light of a wave length corresponding to the proper inner photoelectric sensitivity (~200 mμ) of the crystal, TlBr and Tl showed addit. narrow max. of sensitivity close to the long-wave edge of the proper sensitivity. In TlBr, the addit. max. was observed in the powder; in Tl, it was observed after evapn. of the powder in vacuo. In absorption, addit. bands, coinciding with the addit. max. of the photoelectric sensitivity, were found in thin layers of TlBr and Tl, particularly distinctly on heating to 100° for Tl and to 200° for TlBr. On evaporation to 10⁻⁴ mm. (abs.), the photoelectric sensitivity of Tl increased in the addit. max., and decreased in the max. of proper sensitivity. The reverse effect, namely a sharp fall of the sensitivity in the addit. max. and a rise of the proper sensitivity, was found when the previously evacuated Tl was treated with 1 vapor under 0.1-1.0 mm. Pressure of recovered the original proper sensitivity (at ~450 mμ). The quenching of the inner photoelectric effect in the addit. max. by 1 vapor was observed not only in vacuo but also in air, but the original sensitivity was recovered after long evacuation. Similar phenomena were found in TlBr. The centers responsible for the addit. max. of photoelectron. and absorption are evidently halide defect pairs deficient in halogen ions. Absorption in the region of proper sensitivity from an electron of the halide ion, and the free neutral halogen atom, no more bound to the lattice, diffuses into the lattice. Evacuation withdraws these free neutral atoms. Points previously occupied by halide ions are now occupied only by electrons, and give rise to a new system of local levels, analogous to the levels of F-centers in alkali or Ag halides. Formation of these new centers alters the nature of the crystal. Thus, TlBr illuminated only by modulated light of ~410 mμ shows a mixed-type conduction whereas under continuous illumination the elec. cond. is of the p-type. N. Thon

W

CA
Putsyko, Ye.K.

PUTSEYKO, Ye. K.

USSR/Physics - Semiconductors

Jan/Feb 52

"Application of Condenser Method to Investigation of Spectral Distribution of Photoelectric Sensitivity in Semiconductors," Ye. K. Putseyko

"Iz Ak Nauk SSSR, Ser Fiz" Vol XVI, No 1, pp 34-45

Applies condenser method suggested by A. N. Terenin to study of photoelec sensitivity of semiconducting powders and finds selective bands in TlBr, TlI, AgBr, AgCl, PbO, CdS, HgI₂ and ZnS.CdS-Cu. In AgBr AgCl and TlI the appearance of these selective bands was followed by new absorption bands nearly

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USSR/Physics - Semiconductors (Contd) Jan/Feb 52

in the same sectors. It was shown that the nature of these light-sensitive centers is similar to F-centers of alkali-halide crystals.

218785

PUTSEYKO, Ye.K.

3

USSR

537.312.5 : 537.311.33

4545. Sensitization of the internal photoeffect of
semiconductors by chlorophyll and allied pigments.
Ye. K. PUTSEYKO AND A. N. TERESIN. Dokl. Akad.
Nauk SSSR, 90, No. 6, 1005-8 (1953) In Russian.
English translation, U.S. National Sci. Found.
NSF-1147.

The sensitivity of the sensitizing agents employed
was found to be zero. Chlorophyll absorption on
ZnO in powder form took place in air from diluted
solutions in ethyl alcohol. The degree of pigmen-
tation was small. Additional photoelectric bands
appeared at 0.43 and 0.65 μ as well as the usual
peak at 0.37 μ . Other materials such as magnesium
phthalocyanin, iron porphyrin complex and haematin
were studied as sensitizing agents.

C. A. HOGARTH

PUTSEYKO, Ye. K.

Influence of the adsorption of gases and vapors on the characteristic photoelectric effect of zinc oxide and on the photoelectric effect of zinc oxide sensitized by chlorophyll and similar pigments. Ye. K. Putseiko. *Doklady Akad. Nauk S.S.S.R.* 91, 1071-1(1953)(Engl. translation issued as *U.S. Atomic Energy Comm. NSF-tr-149*, 4 pp.(1953)); cf. *C.A.* 48, 7420e.—The characteristic photo-e.m.f. of powd. ZnO was lowered to 2-10% of its value in air at room temp. by evacuation of the ambient atm. to 10^{-4} mm. Hg. Layers of PbO, Tl halides, and other semiconductors did not display such a decrease with evacuation. Introduction of air within 20-40 min. restored the initial photo-e.m.f. of ZnO; however, if held *in vacuo* for 3-5 days, ZnO was changed irreversibly so that the photo-e.m.f. was only partially restored on introduction of air. O at 0.05-300 mm. produced only 20-30% restoration of the photo-e.m.f., while the maintenance of ZnO in O for several days resulted in a reversible suppression of the photo-e.m.f. Heating of ZnO layers at 200-300° in O caused irreversible lowering of the photo-e.m.f. Adsorption of H₂, carbonic acid, and water vapor did not affect the vacuum lowering of the photo-e.m.f. Quinone vapor at room temp. and a partial pressure of about 0.02 mm. reversibly increased the atm. pressure photo-e.m.f. of ZnO, regardless of previous vacuum treatment without changing the spectral curve of the characteristic photosensitivity of ZnO. Quinone also reduces

the inertia of the photoelec. effect. Investigation of the kinetics of photocond. in air by the Tolstol-Pechlov method (C.A. 45, 10060k) has shown 2 characteristic lifetimes of photoelectrons, 6 microsec. and 5 millisecc. ZnO sensitized by chlorophyll and phthalocyanin of Mg presented a reversible decrease in photoelec. sensitivity in both the sensitized and the nonsensitized regions of the spectrum when the air was pumped out. The photo-e.m.f. was decreased to 10-20% of the initial sensitivity at 10^{-4} mm. Introduction of O at 0.05-300 mm. after evacuation at 20°C. restored the sensitized photo-e.m.f. in the red max. to 20-30% of its initial value. H₂, water vapor, or NH₃ did not restore the sensitivity. The effect of O and H on photoelec. sensitivity of ZnO colored by phthalocyanin of Mg was shown. Elec. discharge through dry O at partial pressures of 0.02-30 mm. caused not only full restoration but also an increase in the initial photo-e.m.f. in sensitized samples. This effect was reversible and did not affect the positions of the spectral max.; however, no changes were observed in water vapor, NH₃, H₂, and CO₂ atm. Quinone vapor rapidly restored the photoelec. sensitivity of pigmented ZnO. It was concluded that O, Os, and quinone act as electron traps by prolonging the life of the photoelectrons in the conduction band to about 5 millisecc. Harry Letaw, Jr.

62

PUTSEYKO, Ye. K.

4

Sensitization by dyes of internal photoeffect in semi-
 conductors. A. N. Terepin and E. K. Putseiko. *Uspekhi*
Nauk. Fiz. Akad. Nauk S.S.S.R., Ucheb. Khim. Nauk 3,
 101-9(1955); cf. Bergmann and Häsler, *C.A.* 30, 5116.
 Photoelec. sensitivity was studied on powd. ZnO, ZnS,
 PbO, TiCl₃, TiBr₃, and TiI₃, on which org. dyes were ad-
 sorbed. Bergmann's app. and method were used. The
 spectral curve of light dispersion by the colored powder was
 detd. The absorption spectra of the same dye, pptd. from
 the same soln. on a quartz leaf, was detd. Increase of
 photoelec. sensitivity was obtained with eosin, erythrosine,
 and Rhodamine B on ZnO, erythrosine on PbO, methylene
 blue, Rhodamine B, and malachite green on TiCl₃, and
 methylene blue on TiI₃. Sensitivity of TiBr₃ without TiCl₃
 or TiI₃ was not affected. With 1 exception sensitivity went
 through a max. as dye concn. increased, but for Rhodamine
 B on TiCl₃ a min. occurred instead. The effect of light on
 TiBr₃ and on TiCl₃ was studied. Eurilla Mayerle

Putseyko, Ye. K.

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TREASURE ISLAND BOOK REVIEW

AID 797 - S

PUTSEYKO, YE. K and A. N. TEREININ

VLIYANIYE GAZOV I PAROV NA FOTOLEKTRICHESKIYE PROTSESSY V OKISI TSINKA I V DRUGIKH POLUPROVODNIKAKH (Effect of gases and vapors on photoelectric processes occurring in zinc oxide and in other semiconductors). In Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis), vol. 8. Izdatel'stvo Akademii Nauk SSSR, 1955. Section I: Effect of illumination on the adsorbability of solids. p. 53-60.

The effect of gases-- oxygen, hydrogen, carbon dioxide-- and of vapors of water, ethyl alcohol, acetone, acetic acid, benzaldehyde, quinone, ammonia, and methyldiphenylamine has been investigated. Some of the molecules are electron donors or electron acceptors. The voltage of freshly prepared pulverulent zinc oxide is markedly decreased by evacuation of air even at room temperature; however, the voltage is restored rather rapidly when air is let in. Oxygen (dry) intake restores the voltage only to 5-20% of its initial value. 5 references, 3 Russian (1936-53). 6 diagrams.

1/1

PUTSEYKO, YE. K.

USSR/ Physics - Photo-effect

Card 1/1 Pub. 22 - 16/52

Authors : Putseyko, Ye. K. and Terenin, A. N., Academician

Title : Effect of oxygen, water vapor and organic compounds on the photo-electronic processes in zinc oxide

Periodical : Dok. AN SSSR 101/4, 645-648, Apr 1, 1955

Abstract : The results of experiments conducted to determine the effect of oxygen, water vapor and organic compounds on the photo-electric processes in zinc oxide are described. Six references: 3 USSR, 2 USA and 1 Swiss (1927-1953). Graphs.

Institution :

Submitted : January 15, 1955

PUTSEYKO, YE. K.

USSR/ Physics - Photo-effect

Card 1/1 Pub. 22 - 16/62

Authors : Akimov, A. N., and Putseyko, Ye. K.

Title : Effect of the adsorption of iodine vapor on its own and the sensitized (by pigments) photo-effect of iodine salts of silver and thallium

Periodical : Dok. AN SSSR 102/3, 481 - 484, May 21, 1955

Abstract : A study of the basic factors increasing the sensitization of the inner photo-effect of silver and thallium halides with pigments is presented. Experiments with silver and thallium halides, conducted in a vacuum under temperatures from $+50^{\circ}$ down to -80° C, are described. The method of photo-conductivity was used in conducting the experiments. Eighteen references: 11 USSR, 3 French, 2 Germ., 1 Brit. and 1 USA (1910-1953). Graphs.

Institution :

Presented by: Academician A. N. Terenin, February 10, 1955

PUTSEYKO, E., AKOMOV, I., and TIRENIN, A.

"Optical Sensitization of the Halides of Silver, Thallium, and Other Semi-Conductore by Dyestuffs," paper given at the International Conference on Scientific Photography, Cologne, 24-27 Sep 1956

E-3,068,138

sensitivity of the photo-c.m.f. of PbO to
long-wave light. The sensitization of ZnO
and HgO by chlorophyll and its analogues
is discussed.

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APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343710011-0"

PUPSBYKO, Ye.K.; TERKININ, A.N.

Effect of vapors and gases on the internal photoeffect of phthalocyanines containing different metals [with English summary in insert]. Zhur.fiz. khim.30 no.5:1019-1027 My '56. (MIRA 9:9)
(Photoelectricity) (Phthalocyanine)

Putseyko, E. K.

AUTHOR: Putseyko, E. K.

51-6-22/25

TITLE: On the Problem of Measurement of High Optical Densities.
(K voprosu ob izmerenii bol'shikh opticheskikh plotnostey.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol. III, Nr. 6,
pp. 668-671. (USSR)

ABSTRACT: A large number of recent papers (Refs.1-6) dealt with errors in measurement of absorption using photoelectric spectrophotometers. The effect of scattered light in a Beckmann spectrophotometer when high optical densities are measured was emphasized. Grenishin and Solodovnikov in the preceding paper (pp.665-668) deal with fictitious maxima produced by scattered light in measurement of absorption at the edge of visible spectrum (410-500 m μ) by a differential method. The latter authors measured optical densities with values 5-9 which are far outside the permissible ranges of application of Beckmann and C Φ -4 spectrophotometers. Absorption can be measured using these spectrophotometers only if the

Card 1/4

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On the Problem of Measurement of High Optical Densities.

optical density of the medium does not exceed 2. It is possible to extend this upper limit of density to 3 by increase of the sensitivity of the recording potentiometer. This extension is, however, accompanied by a poorer reproducibility and accuracy of the results. The optical densities from 2 to 3 may be extended by the use of intermediate optical standards with known coefficient of transmission. The present author summarizes some of his results on determination of optical densities above 3. (1) In 1949 the author measured spectral absorption of "neutral" platinum attenuators with optical densities of 3-4. He found that even in measurements on neutral attenuators the maximum optical density measurable with the Beckmann spectrophotometer does not exceed 4. (2) When optically dense filters were used, the uniformity of the objects studied was of great importance. To study small defects and to control the position of a sample in a Beckmann spectrophotometer the author constructed a special holder which made it possible to

Card 2/4

On the Problem of Measurement of High Optical Densities.

51-6-22/25

check, using a microscope, the uniformity of the sample, and to determine absorption in samples of small dimensions. (3) Experiments showed that for yellow samples whose long-wavelength absorption edge is sufficiently steep, the Beckmann spectrophotometer can be used to determine optical densities not higher than 3 with an accuracy of + 5%. By way of example, Fig.1 shows values of optical densities for three yellow filters of optical glass H/C -16 . Fig.2 shows the absorption spectra of a colour filter 3C -3 by itself and in conjunction with H/C -16 . (4) Differences in the absorption spectra measured by the differential method are found in samples of the same thickness when the amount of light scattered by defects in them is different. Films of pure silver bromide and thallium bromide 0.01-0.04 mm thick were prepared and then treated thermally at various temperatures. Fig.3 shows absorption spectra for TlBr and Fig.4 - for AgBr . The differences between the absorption spectra of similar samples of one substance were found to be due to differences in local lattice defects produced by different heat

Card 3/4

On the Problem of Measurement of High Optical Densities. 51-6-22/25

treatments. There are 4 figures and 10 references,
of which 4 are Russian, 4 English, 1 German and 1
French.

SUBMITTED: April 9, 1957.

AVAILABLE: Library of Congress.

Card 4/4

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41075

S/058/62/000/008/086/134
A062/A101

AUTHORS: Akimov, I. A., Putseyko, Ye. K.

TITLE: Sign of photocurrent carriers and photoconductivity relaxation in thallium and silver iodides, sensitized by organic dyes

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 30 - 31, abstract 8E224
(In collection: "Fotoelektr. i optich. yavleniya v poluprovodnikakh", Kiyev, AN USSR, 1959, 301 - 313)

TEXT: In order to define precisely the mechanism of photoeffect sensitization, the relaxation times and the photocurrent carrier signs were determined in non-dyed and dyed layers of TlI and AgI for different regions of the spectrum. The sign of the carriers was determined by the capacitor method. The photocurrent relaxation times were measured by the method of N. A. Tolstoy and P. P. Feofilov ("Uspekhi fiz. nauk", 1960, 41, 44) on a taumeter with an exponential sweep. It was found that the sign of the sensitized photocurrent carriers does not depend on the sign of the photocurrent carriers in the dyes, but it is determined by the photoelectric properties of the semiconductor. The role of the dye consists only

Card 1/2 *SEE S/058/62/000/008/086/134*

Sign of photocurrent carriers and...

S/058/62/000/008/086/134
A062/A101

in light absorption and transmission of the absorbed energy to the semiconductor. The role of a sensitizer can also be carried out by iodine molecules (RZhFiz, 1956, no. 2, 4259, and I. A. Akimov, Ye. K. Putseyko, Dokl. AN SSSR, 1955, 102, 481; I. A. Akimov, EKFKh, 1956, 30, 1007; ZhNIPFIK, 1956, 1, 254), their absorption determines the photoelectric sensitivity in the long wavelength region of the undyed layers of TlI, AgI. The article proposes a scheme of the mechanism of the proper and sensitized photoeffect which is confirmed by the relaxation measurements of the TlI photoconductivity.

O. Shustova

[Abstracter's note: Complete translation]

Card 2/2

5,4500

41076

S/058/62/000/008/087/134
AC62/A101

AUTHOR: Putseyko, Ye. K.

TITLE: Sensitization of the photoeffect of inorganic semiconductors by organic dyes. (Theses)!

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 31, abstract 8E225
(In collection: "Fotoelektr. i optich. yavleniya v poluprovodnikakh", Kiyev, AN USSR, 1959, 314 - 315)

TEXT: An investigation was made of the main photoelectric parameters of dye-sensitizers which are in adsorbed condition on inorganic semi-conductors, and also in the form of aggregated layers (microcrystals and solid layers). It has been shown that the sensitization effect is mainly due to the dye molecules. By means of the capacitor method it was found that in an electronic semiconductor all the sensitizers, whatever the type of their own photoconductivity, produce a sensitized photoeffect also of the electronic type. It is supposed that the sensitization mechanism consists in energy transmission from the excited sensitizer to the electrons localized on the surface levels of the semiconductor.

[Abstracter's note: Complete translation]

O. Shustova

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TITLE: Optical Sensitization of the Photoelectric Effect at the Contact Between a Semiconductor and an Organic Dye

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 2, pp 303-306 (USSR)

ABSTRACT: Ye. K. Putseyko and A. N. Terenin (Ref 1) showed that in aggregated form a dye sensitizes the photoeffect in ZnO and other semiconductors, although less effectively than in its molecular dispersed form. The present paper shows the following: A similar effect of the optical sensitization may be obtained not only by the adsorption of dyes from organic solvents but also by pressing a solid dye layer to a layer of zinc oxide or to a layer of another semiconductor. Pulverulent layers of zinc oxide (with a surface of 2 cm²) pressed under a pressure of 5 atmospheres and solid layers of dyes which were pressed to thin mica bases served as experimental objects. These samples were illuminated with monochromatic interrupted light with a frequency of 150 cycles through the transparent coating of the condenser and through the dye layer pressed to zinc oxide. These experiments proved the following:

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Under optimum conditions the sensitized photoelectromotive force attains some millivolt per milliwatt at the maximum of sensitivity on the contact between the dye and zinc oxide. If the same layers of dyes are in contact with the insulators MgO, BaSO₄ etc they do not cause any sensitization. The authors observed a contact sensitization on ZnO in layers of dyes with different mechanisms of conductivity: tripaflavine, erythrosine, magnesium-phthalocyanine (hole-type), pinacyanol, crystal violet (electron type). The phenomenon could be observed in air as well as in vacuum in the temperature interval of from + 100 to - 40°. The first diagram shows the spectra of the sensitized photoelectromotive force with the maxima at 460 and 550 mμ which occur in pressing solid layers of tripaflavine and erythrosine and of zinc oxide in contact with magnesium phthalocyanine. The same diagram shows the spectra of sensitization in the ordinary coloring of zinc oxide with the same dyes from dilute alcohol solutions. The photoelectromotive force in the maximum of sensitivity at the contact point between dye and semiconductor is by one or several orders of magnitude smaller than in the coloring. The efficiency of sensitization attains its

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maximum in the thinnest layer of the dye. In denser layers the photoelectromotive force strongly decreases. Sensitization takes place due to the molecules of the dye which are in direct contact with zinc oxide. The occurrence of the photoelectromotive force at the contact between dye and inorganic semiconductor in the case of interrupted illumination is not in relation with the formation of a blocking layer. The author thanks Academician A. N. Terenin for his advice and for a useful discussion. There are 4 figures and 6 references, 5 of which are Soviet.

PRESENTED: July 9, 1959, by A. N. Terenin, Academician

SUBMITTED: July 1, 1959

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PUTSEYKO, Y. K., and TERENCEV, A. N. (USSR)

"The Internal Photoelectric Effect in Aggregated Chlorophyll, Methylchlorophyllide and Chloroplast Pigments."

Report presented at the 5th International Biochemistry Congress,
Moscow, 10-16 Aug 1961

PUTSEYKO, Ye.K.; TERENIN, A.N., akad.

Photoelectric sensitivity of crystalline chlorophyll and pigments of green leaves. Dokl.AN SSSR 136 no.5:1223-1226 F '61.

(MIRA 14:5)

(Chlorophyll) (Photoelectricity)