YUGOSLAVIA/Farm Animals - Honeybee Q

Abs Jour : Ref Zhur - Biol., No 15, 1958, 69435

Author : Vitman, P.
Inst :
Title : Dzierzonian Theory and Practice

Orig Pub : Pcelarstvo, 1957, 12, No 2, 54-56

Abstract : No abstract.

Card 1/1

VITMAN, P.

AID P - 2300

Subject : USSR/Aeronautics

Card 1/1 Pub. 58 - 5/24

Authors : Tarasov, P., Vitman, P. and Karpinskiy, V.

Title : Landing training on the Yak-18. Experiences of a flying instructor in the Aeroclub of Vladimir

Periodical: Kryl. rod., 6, 9-10, Je 1955

Abstract : The authors describe the landing of an aircraft and then analyze the landing procedure on the Yak-18. Some numerical data are given.

Submitted : No date

S/048/60/024/007/032/032/XX
B104/B201

AUTHORS: Vitman, V. D., Dzhelepov, B. S., Pavlov, A. A., Semenov, S. V., and Shestopalova, S. A.

TITLE: Determination of the ratio of the number of quanta of K- and L emission of some neutron-deficient isotopes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 24, no. 7, 1960, 934-938

TEXT: The present paper has been read at the 10th All-Union Conference on Nuclear Spectroscopy, Moscow, January 19-27, 1960. A proportional counter served to measure the relative intensities of the K- and L emissions of Ho^{160}, Dy^{159}, Nd^{140} + Pr^{140}, and Sm^{145}. These isotopes were obtained by the chromatographic separation of rare earths, the latter being chemically separated from a tantalum target irradiated with 660-Mev protons on the synchrocyclotron of the OIYaI. The experimental system was calibrated on Zn^{65}, Se^{75}, In^{114}, Cs^{137}, and Sm^{145}, the relative half-widths of the lines being 15-12%. The ratio of the numbers of L- and K emission quanta is put

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S/048/60/024/007/032/032/XX
B104/B201

Determination of the ratio of ...

proportional to the ratio of the area of the lines measured: $N_L/N_K = kS_L/S_K$ (N_L and N_K are the numbers of quanta, S_L and S_K the areas bounded by the line contours). The S_K and S_l were found from the lines determined experimentally after deduction of the background. The latter was determined by means of a filter made of 0.8 mm cadmium, 0.5 mm copper, and 0.5 mm aluminum. Quanta up to 60 kev were completely absorbed by this filter; quanta with more than 200 kev were allowed to pass. Results are collected in Table 1. With the aid of these values, the ratios λ_L/λ_K between the capture probabilities of the electrons from L- and K shells were calculated. These values are given in Table 2. It is noted, however, that they exhibit a considerable error. There are 1 figure, 2 tables, and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva(All-Union Scientific Research Institute of Metrology imeni D I. Mendeleyev)

Card 2/7

S/048/60/024/007/032/038/XX
B104/B201

Determination of the ratio of ...

Legend to Table 1: Determination of the ratio of N_L/N_K. 1, isotope; 2, efficiency of counter in %; 3, contribution of radiation incident upon the counter.

1) Изотоп	s_L/s_K	2) Эффективность счетчика, %	
		ε_L	ε_K
$Nd^{140}+Pr^{140}$	2,20±0,12	90,75±0,03	2,18±0,08
Sm^{145}	3,8±0,3	99,17±0,11	1,78±0,07
Dy^{159}	8,7±0,5	95,7±0,3	1,25±0,07
Ho^{160}	7,6±1,1	95,1±0,3	1,21±0,08

Card 3/7

Determination of the ratio of ...

S/048/63/027/007/034/032/XX
B104/B201

Доли излучения, попавшего в счетчик, %			
Π_K	Π_L	$K = \frac{\Pi_K \varepsilon_K}{\Pi_L \varepsilon_L}$	N_L / N_K
98,7±0,1	25,1±1,6	0,086±0,09	0,19±0,03
98,9±0,1	37,7±2,0	0,047±0,005	0,18±0,04
99,0±0,1	55,8±2,0	0,246±0,022	0,21±0,04
92,6±0,2	16,1±0,7	0,073±0,008	0,56±0,15

Card 4/7

Determination of the ratio of ...

Legend to Table 2: Determination of the ratio λ_L/λ_K. 1, isotope; 2, number of vacancies forming in the L-shell if one of the vacancies in the K-shell is occupied; 3, and 4, fluorescence yields; 5, and 6, number of conversion electrons hitting the counter per decay; 7, note: (a) no intensive gamma transitions, (b) W_K and W_L, data calculated according to Brosi et al. (Phys. Rev., 113, 239 (1959)), (c) W_K and W_L calculated according to data by Brosi et al. (Phys. Rev. 116, 98 (1959)), (d) W_K and W_L calculated according to data by Grigor'yev et al. (Izv. AN SSSR. Ser fiz., 23, 868 (1959)), (e) the following values were used in the calculation of λ_L/λ_K for Nd^{140}: β^+ = 53%, K = 41%, and L = 6%.

Card 5/7

VITMAN, V.D.; VOINOVA, N.A.; DZHELEPOV, B.S.; KARAN, A.A.

Relative intensities of some γ-lines in the spectrum of Ta^{182}.
Izv. AN SSSR. Ser. fiz. 25 no.2:199-200 F '61. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D.I. Mendeleyeva i Fiziko-tekhnicheskiy institut AN SSSR.
(Tantalum--Spectra)

VITMAN, V.D.; DZHELEPOV, B.S.; KARAN, A.A.

Relative intensities of γ-rays from RaC in the 1300-2520 Kev energy range. Izv. A.N. SSSR. Ser. fiz. 25 no.2:201-206 F '61. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva.

(Bismuch---Isotopes)
(Gamma rays)

S/056/61/040/002/015/047
B102/B202

AUTHORS: Vitman, V. D., Voinova, N. A., Dzhelepov, B. S., Karan, A. A.

TITLE: 892.4-kev gamma transition in the W^{182} nucleus

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 479-482

TEXT: The authors present measurement results of the intensity of 892.4-kev gamma transition from the 1221.8-kev level to a level of the fundamental rotational band in W^{182}. The experimental results obtained for the $Ta^{182} \rightarrow W^{182}$ decay are illustrated in the decay scheme. The transitions B and C are well known. The present paper gives details concerning transition A. The 892-kev line has been known since 1950; its relative intensity (intens-

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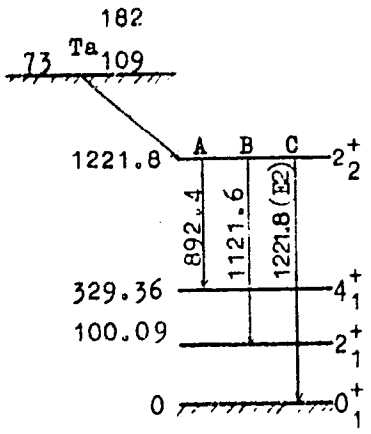
892.4-kev gamma ...



ity of the 892.4-kev gamma radiation referred to that of the 1221.8-kev gamma radiation) was found to be 0.017 or less. The following value was obtained by V. S. Gvozdev, L. I. Rusinov, and Yu. L. Khazov from the conversion electron spectrum: $K_{892.4}/K_{1221.8} \leq 0.02$; C. J. Gallagher et al. (Phys. Rev. 113, 1298, 1959) found a line with 894.7±0.8 kev ($T_{1/2}$ = 13 hr) of considerably higher intensity: $K_{894.7}/K_{1221.8} = 2:3$ in $Re^{182} \rightarrow W^{182}$ decay. According to the authors, this line is too intense to be related to the 1221.8-kev level of W^{182}. To explain this problem, the ranges 850-910 and 1100-1250 kev of the gamma spectrum were studied by means a new magnetic spectrometer (Elotron) which had been built of the VNIIMa; this spectrometer is characterized by high sensitivity (1.2% in the

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range of 1 Mev) and low background. The recoil-electron spectrum is shown in Fig. 2. The results were entered without consideration of the background (which was constantly about 0.04 pulses per minute). $I(\gamma_{892.4})/I(\gamma_{1221.8}) \leq 0.006$ was obtained for the intensity ratio. On the basis of the theory of non-axial nuclei of A. S. Davydov et al., the authors then calculated the relative intensities of the 1221.8 and 1121.6 kev transitions. Using a formula by Davydov with $E(2_1^+) = 100.092$ kev and $E(2_2^+) = 1221.8$ kev, γ was found to be 11.40°. The following results were obtained:

892.4-kev gamma...

Intensity ratios for the transitions A, B, C from the 1221.8-kev level

Transition energy, kev	Experimental intensity ratio	Theoretical intensity ratios					
		acc. to Davydov		acc. to Alaga			
		$\gamma=11.40^0$	$\gamma'=11.20^0$	K=0	K=1	K=2	
						without correction	with correction
892.4	≤ 0.6	3.8	3.7	53.6	23.8	1.46	3.2
1121.6	122	131	130	93.2	23.5	93.2	122
1221.8	100	100	100	100	100	100	100

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892.4-kev gamma...

According to the theory of axial nuclei by G. Alaga et al (Kong. Dan. Vid. Selsk.Mat.-fys.Medd. 29, 9, 1955), the intensity ratio of the transitions depends on the quantum number K of the 1221.8-kev level. The transition intensity ratios following from this theory are also shown in the table. The values for K=2 are in fairly good agreement with the measured values; those obtained for the 892.4-kev transition, however deviate largely. N. N. Zhukovskiy is mentioned. There are 2 figures, 1 table, and 17 references: 7 Soviet-bloc and 10 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy institut metrologii (All-Union Institute of Metrology)

SUBMITTED: September 24, 1960

Card 5/6

VITMAN, V. D.; VOINOVA, N. A.; DZHELEPOV, B. S.

"Gamma Radiation from As^{76}."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

VNIIM (All-Union Sci Res Inst Metrology im D. I. Mendeleyev)

VITMAN, V. D.; VOINOVA, N. A.; DZHELEPOV, B. S.

Relative intensities of the Ir^{194} γ-line in the 860-2130 Kev. energy range. Izv. AN SSSR. Ser. fiz. 16 no.12:1475-1479 D '62. (MIRA 16:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut meteorologii im. D. I. Mendeleyeva i Fiziko-tekhnicheskiy institut AN SSSR im. A. F. Ioffe.

(Iridium—Spectra)

S/048/62/026/012/004/016
B117/B186

AUTHORS: Vitman, V. D., Voinova, N. A., and Dzhelepov, B. S.

TITLE: Relative intensities of Ir^{194} γ-lines in the 860 - 2130 kev energy range

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 12, 1962, 1475-1479

TEXT: The γ-spectrum of Ir^{194} was investigated using the Elotron. This instrument has practically no background and its spectral sensitivity is well known, viz. with 4% accuracy in the 1150 - 2150 kev range. 4 radioactive sources, each of 20 - 30 curies, were provided by spectroscopically pure iridium powder, activated by a neutron flux of $5 \cdot 10^{13} - 10^{14}$ $cm^{-2} sec^{-1}$ in the FTI reactor and mixed with graphite. 23 γ-lines were found in the range investigated, the 1569 kev line being observed for the first time. A decrease in its intensity with a half-life of 18 ± 4 hr confirmed it as an Ir^{194} line. The peak observed near 1800 kev was interpreted as the sum of two γ-lines, hν = 1786 and 1808 kev.

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Relative intensities of Ir^{194} γ-lines ...

Energies and the relative intensities determined were compared with the results of H. Johns and S. Nablo (Phys. Rev. 96, 1599, (1954)), and with those of I. Kern and G. Bäckström (Nucl. Phys., 19, 461 (1960)). The agreement is closer in the first case than in the second. The 70% divergence of the comparative values for the energy range above 1200 kev could be regarded as the result of a systematic error in the experiments carried out by Kern and Bäckström. Since apparently some of the values for the relative intensity given by these workers were incorrect, the multipole orders of the transitions they had determined were also checked and some of them recalculated. This paper was presented at the 12th Annual Conference on Nuclear Spectroscopy held in Leningrad from January 26 to February 2, 1962. There are 5 figures and 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev); Fiziko-tekhnicheskiy institut Akademii nauk SSSR im. A. F. Ioffe (Physicotechnical Institute of the Academy of Sciences USSR imeni A. F. Ioffe)

VITMAN, V.D.; VOINOVA, N.A.; DZHELEPOV, B.S.

Relative intensities of γ-lines in Ga^{72}. Izv.AN SSSR.Ser. fiz. 27 no.2:249-257 F '63. (MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D.I.Mendeleyeva i Fiziko-tekhnicheskiy institut AN SSSR im. A.F.Ioffe.
(Gamma-ray spectrometer) (Gallium isotopes)

ACCESSION NR: AP4031177 S/0056/64/046/004/1479/1480

AUTHOR: Vitman, V. D.; Dzhelepov, B. S.; Podkopayev, Yu. N.

TITLE: High energy gamma transitions in Ga-72 decay

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1479-1480

TOPIC TAGS: gallium, gamma line, gamma ray spectrum, gamma ray intensity, line spectrum, decay scheme, half life

ABSTRACT: The Ga^{72} γ spectrum was investigated in the energy range above 2000 keV using the γ hodoscope of NIFI LGU. Two Ga^{72} specimens were used, with activity ~ 3 and 5 Curie. In addition to the previously known lines, γ rays with energy 3,680 ± 40 keV, were with a half life (13 ± 3 hours) that indicates that they belong to the Ga^{72} γ spectrum, were observed for the first time in the Ga^{72} decay. The investigations show that in Ga^{72} decay there are no transitions with higher energies, whose intensity would exceed 2×10^{-7} photons per disintegration. The γ ray spectrum of Ga^{72} was also investigated in the 3000 — 4000 keV range with a scintillation γ spectrometer, and the existence of low-intensity 3700 keV γ rays was confirmed. Orig. art. has: 1 figure and 1 table.

Card 1/4

ACCESSION NR: AP4031177

ASSOCIATION: Leningradskiy gosudarstvenny*y universitet (Leningrad State University)

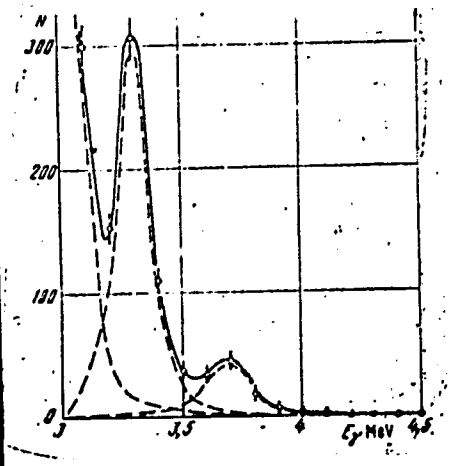
SUBMITTED: 27Jul63 DATE ACQ: 07May64 ENCL: 02

SUB CODE: NP NR REF SOV: 001 OTHER: 003

Card 2/4

ACCESSION NR: AP4031177

ENCLOSURE: 01



Experimental spectrum of γ rays of Ga^{72}

Experimental spectrum of γ rays of Ga^{72} in the 3000-4000 keV range.

N - number of frames
solid curve - sum of spectral component
o - experimental points of histogram

Card 3/4

ACCESSION NR: AP 4031177

ENCLOSURE: 02

E, keV	Интенсивности γ-переходов, 10^{-4} квантов/распад 1			
	[*]	[*]	[*]	Наши данные 2
2076	—	—	7±2	9,8±2,0
3050	13	—	~2	0,7
3100	—	4	<1	
3340	3	2	—	0,75±0,22
3680	—	—	—	0,05±0,02

1 - intensity of γ transitions, 10^{-4} quanta per decay

2 - our data

Card 4/4

L 23729-66 EWT(m) DIAAP JD/JG

ACC NR: AP6014811 SOURCE CODE: UR/0367/65/001/002/0191/0197

AUTHOR: Vitman, V. D.; Voinova, N. A.--Voynova, N. A.; Dzhelepov, B. S.

ORG: All-Union Institute of Metrology im. D. I. Mendeleyev (Vsesoyuznyy institut metrologii); Physicotechnical Institute im. A. F. Ioffe AN SSSR (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: New data on the decay scheme of Re^{188}

SOURCE: Yadernaya fizika, v. 1, no. 2, 1965, 191-197

TOPIC TAGS: rhenium, spectrometer, thermal neutron, osmium, radioactive decay

ABSTRACT: The energies and relative intensities of γ-lines in Re^{188} were determined using an Elotron magnetic γ-spectrometer. Metallic rhenium activized by thermal neutrons was used as a source. In all, 23 γ-lines were observed in the spectrum; of these the lines with energies of 717, 1019, 1175, 1193, 1322, 1460, 1656, 1675, 1852, 1869, and 2026 KEV were found for the first time. The decay scheme of the Re^{188} was considered in comparison with the previously suggested schemes, and three new levels with energies of 2026, 1828, and 1809 KEV were introduced. The values of the quantum characteristics of these levels were discussed. The intensities of β-transitions to Os^{188} levels were determined from the balance of γ-transition intensities. Orig. art. has: 4 figures and 1 table. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20 / SUBM DATE: 05Aug 64 / ORIG REF: 001 / OTH REF: 007

Card 1/1

L 13174-66 EWT(m) DIAAP

ACC NR: AP6001142 SOURCE CODE: UR/0367/65/002/003/0393/0401

AUTHOR: Vitman, V. D.; Voinova, N. A.; Dzhelepov, B. S.

ORG: Physics-Technical Institute im. A. F. Ioffe, Academy of Sciences, SSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR); Institute of Metrology im. D. I. Mendeleyev (Institut metrologii)

TITLE: Determination of the intensity and multipolarity of high-energy gamma-transitions accompanying Ta^{182}-decay

SOURCE: Yadernaya fizika, v. 2, no. 3, 1965, 393-401

TOPIC TAGS: tantalum, radioactive decay, radioactive decay scheme, gamma transition, multipole order

ABSTRACT: The authors present data and discuss precise measurements of the intensities of gamma-transitions of Ta^{182} with energies above 900 kev performed at an installation of VNIIM. The source used was tantalum activated with neutrons at the FTI reactor (source activity amounted to about 12 curie). A total of 20 transitions were observed. Determinations were made of multipolarities, and in some cases of a mixture of different polarities. Multipolarities of transitions with the energy of 1342; 1372; 1386; 1410; (1435); and 1453 kev were determined for the first time. The W^{182} level scheme is discussed. The following quantum characteristics were ascribed to excited levels of W^{182}: K, I^{π}: 0.2^+ (1222); 0.2^+ (1258); 2.2^- (1289); 2.3^+ (1331); (1), 0^+ (1410), and $I^{\pi}=2^-$ (1435). These characteristics were

Card 1/2

L 13174-66

ACC NR: AP6001142

ascribed on the basis of analyses of the work performed. It is noted that the data obtained do not contradict the values of $I^{\pi} = 4^{-}$ for the levels 1488 and 1554 kev, and $I^{\pi} = 4^{+}$ for the 1443 kev level. Authors use this opportunity to express their sincere gratitude to A. L. Medvedev of VNIIM for his help in the measurements, and to V. M. Mikhaylov of LGU for valuable advice and discussion of the results. Orig. art. has: 2 figures and 3 tables.

SUB CODE: 20, 18/ SUBM DATE: 28Dec64/ ORIG REF: 010/ OTH REF: 006

Card 2/2

VITMAN, V.D.; VOINOVA, N.A.; DZHELEPOV, B.S.

Determining the intensities and multipolarity of high-energy gamma-transitions accompanying Te^{132} decay. IAN. Ser. fiz. no.3:393-401 S '65. (MIRA 18:9)

1. Fiziko-tekhnicheskiy institut im. A.F. Ioffe AN SSSR i Institut metrologii im. D.I. Mendeleyeva.

TOPIC TAGS:

ABSTRACT:

Card 1/2

L 60962-65

ACCESSION NR: AP[illegible]

Card 2/2

L 65203-65 EWT(m)/EWP(t)/EWP(b) DIAAP/IJP(c) JD/JG

ACCESSION NR: AP5000386/65/002/002/0097/0099

AUTHOR: [illegible]

TITLE: Energies and relative intensities of 2201, 2490 and 2508 kev γ-lines in the Ga^{71} spectrum

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. [illegible], [illegible]

Card 1/4

L 6520?-65
ACCESSION NR: AP[illegible]

[illegible] May is important of the [illegible] figure,

1 table.

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

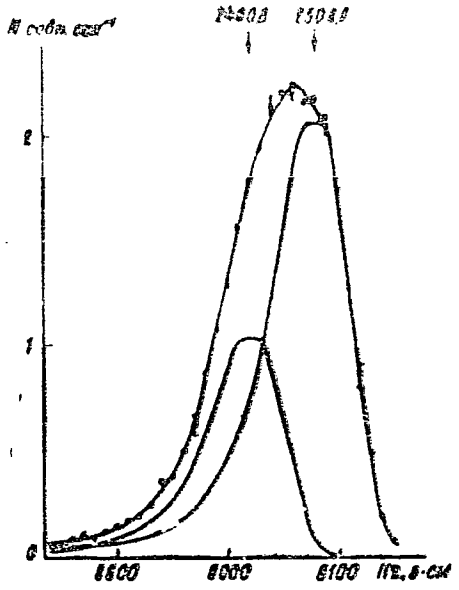
[illegible]

[illegible]

Card 2/4

L 65203-65
ACCESSION NR: AP5021737

ENCLOSURE: 01



Card 3/4

L 65203-65
ACCESSION NR: AP5021737

ENCLOSURE: 02

Table 1

Energy and relative intensities of [illegible] and 2508 kev γ-lines in Ga^{72}

[illegible]

E_γ, kev	I_{rel}	E_γ, kev	E_γ, kev	I_{rel}	E_γ, kev	I_{rel}
2201.3±0.6	100		[illegible]	100	2205±4	100
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]

[illegible] Hedgran, D. Lind, Arkiv Fiz. [illegible]
[illegible]
[illegible]

Card 4/4

BOKHOVKIN, I.M.; VITMAN, Ye.O.

Physicochemical study of the systems of acetamide with benzoic and phthalic acids. Zhur. ob. khim. 35 no.8:1319-1322 Ag '65. (MIRA 18:8)

1. Arkhangel'skiy lesotekhnicheskiy institut.

BOKHOVKIN, I.M.; VITMAN, Ye.O.

Physicochemical study of the reaction of acetamide with alkali metal nitrates. Zhur. ob. khim. 35 no.6:949-953 Je '65.
(MIRA 18:6)

1. Arkhangel'skiy lesotekhnicheskiy institut.

BOKHOVKIN, I.M.; BOKHOVKINA, Yu.I.; VITMAN, Yo.O.

Physicochemical investigation of the ternary system carbamide - acetamide - acid. Zhur. ob. khim. 34 no. 5: 1363-1365 My '64.

Physicochemical investigation of the ternary system phenol-monochloroacetic acid - trichloroacetic acid. Ibid.:1369-1371

Physicochemical investigation of the ternary system phenol-acetic acid - monochloroacetic acid. Ibid.:1372-1375
(MIRA 17:7)

1. Arkhangel'skiy lesotekhnicheskiy institut.

BOKHOVKINA, Yu.I.; BOKHOVKIN, I.M.; VITMAN, Ye.O.

Physicochemical study of the ternary system carbamide - monochloroacetic acid - trichloroacetic acid. Zhur. ob. khim. 34 no. 3:723-727 Mr '64.

Physicochemical analysis of the ternary system phenol - acetamide - trichloroacetic acid. Ibid.:727-731 (MIRA 17:6)

1. Arkhangel'skiy lesotekhnicheskiy institut.

BOKHOVKIN, I.M.; BOKHOVKINA, Yu.I.; VITMAN, Ye.O.

Physicochemical analysis of the ternary system phenol - acetamide - monochloroacetic acid. Zhur.ob.khim. 33 no.7:2087-2090 Jl '63. (MIRA 16:8)

1. Arkhangel'skiy lesotekhnicheskiy institut.
(Phenols) (Acetamide) (Acetic acid)

BOKHOVKIN, I.M.; VITMAN, Ye.O.

Physicochemical study of binary systems formed by furfurole with cresols. Zhur.ob.khim. 33 no.7:2083-2087 Jl '63. (MIRA 16:8)

1. Arkhangel'skiy lesotekhnicheskiy institut.
(Furaldehyde) (Cresol)

BOKHOVKIN, I.M.; VITMAN, Ye.O.; YERMOLINA, N.N.; CHESNOKOV, V.F.

Physicochemical analysis of the ternary system carbamide-phenol - acetic acid. Zhur.ob.khim. 32 no.9:2755-2759 S '62.
(MIRA 15:9)

1. Arkhangel'skiy lesotekhnicheskiy institut imeni V.V. Kuybysheva.
(Urea) (Phenols) (Acetic acid)

BOKHOVKIN, I.M.; BOKHOVKINA, Yu.I.; VITMAN, Ye.O.

Thermal analysis of the ternary system carbamide - acetic acid - trichloroacetic acid. Zhur.ob.khim. 32 no.8:2415-2418 Ag '62. (MIRA 15:9)

1. Arkhangel'skiy lesotekhnicheskiy institut.
(Urea) (Acetic acid) (Thermal analysis)

SURNAME, Given Names: WITNER, Ivor

Country: Czechoslovakia

Academic Degrees: [not given]

Affiliation: Department of Mathematics (Katedra matematiky), Structural Faculty of Czech Institute of Technology (Stavebni fakulty Ceskeho vysokeho uceni technickeho), Prague

Source: Bratislava, Matematicko-Fizikalny Casopis, Vol 11, No 3, 1961, pp 161-172

Data: "Osculating Quadrics of Curves in an Equicentroaffine Space"

GPO 981643

PROCESSES AND PROPERTIES INDEX

The phosphorus content of blood. AL. IONESCO-MATIU AND MLLE. M. VITNER. *Ann. sci. univ. Jassy* 16, 383-8(1931).—Detns. of blood P by Borderano's modification of the colorimetric method of Bell and Doisy (cf. *Ann. sci. univ. Jassy* 14, 353 (1926)) showed normal limits lie between 3.6 and 5.5 mg. per 100 cc. of inorg. P and 25 and 45 mg. per 100 cc. of total P. T. H. RIDER

11 f

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

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The phosphorus content of blood. Al. Ionescu Matiu and Mile M. Vitner. *Bul. soc. chim. România* 11, 103-8(1930). The colorimetric method of Bell and Doisy which is used with the modification of Bordeianu (cf. *Ann. sci. univ. Jassy* 14, 351(1930)) which calls for the use of *glycine* instead of *hydroquinone* as the reducing phenolic compd. In normal blood inorg. P varies from 0.035 to 0.055 g./l. and total P from 0.25 to 0.45 g./l. Values given for tuberculous and diabetic patients fall within these limits.

T. H. Rider

METALLURGICAL LITERATURE CLASSIFICATION

VITNER, Cestmir

Geometric interpretation of the curvature of curves in E_n.
Cas pro pest mat 88 no.4:433-437 '63.

1. Ceske vysoke uceni technicke, Praha 2, Trojanova 13.

VITNER, Cestmir

Orthogonalization process in pseudoeuclidean spaces. Cas pro pest mat 89 no.1:31-35 F '64.

1. Czech Higher School of Technology, Prague 2, Trojanova 13. Submitted June 29, 1962.

VITNER Chestmir [Vitner, Cestmir]

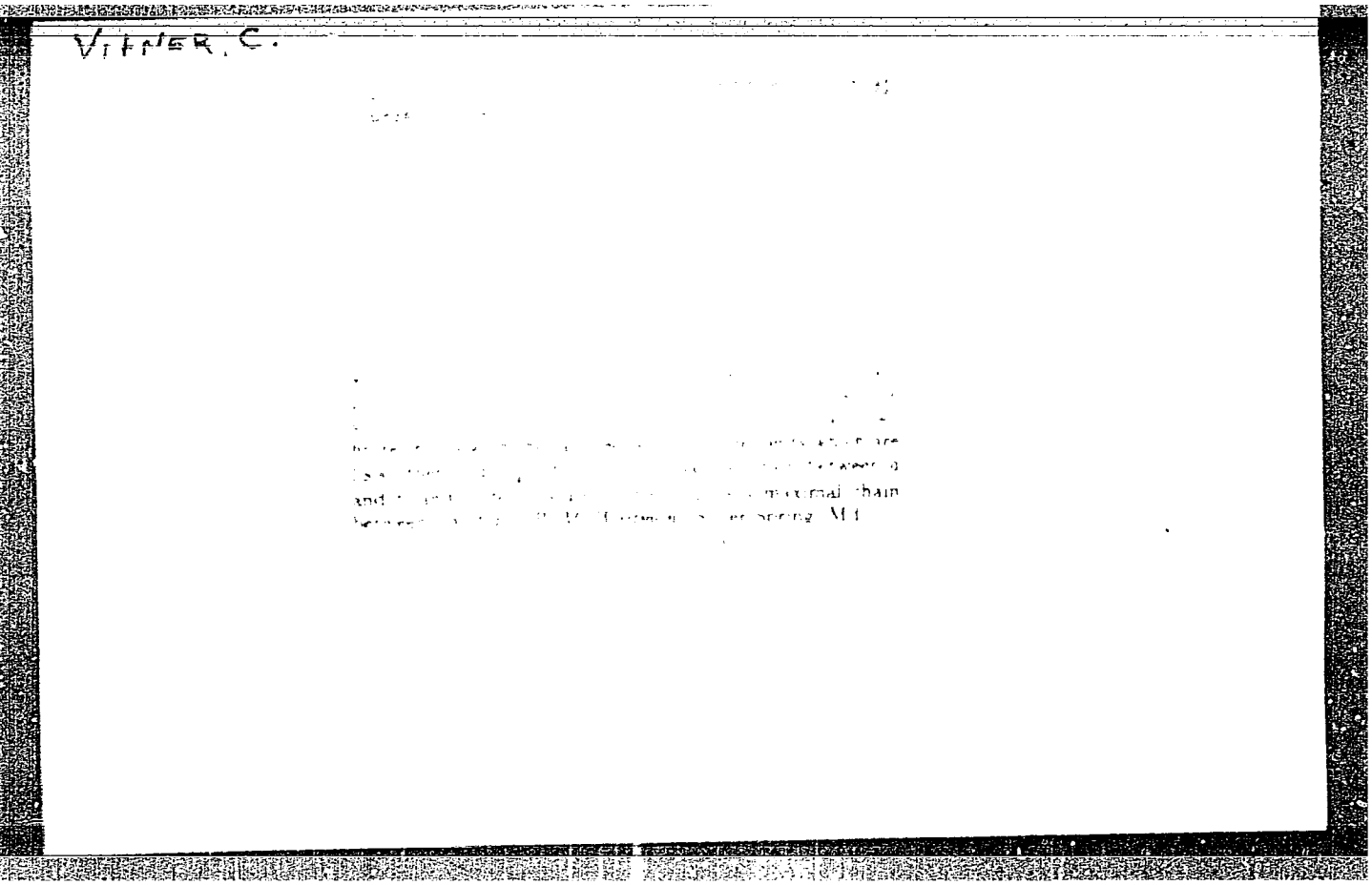
Curves in spaces with a nonsingular pseudoeuclidean criterion of an arbitrary index. Chekhosl mat zhurnal 14 no. 2:243-253 '64.

1. Czech Higher School of Technology, Prague 2, Trojanova 13.

VITNER, Cestmir

On angles of linear subspaces in E_n. Cas pro pes mat 87 no.4:415-423 0 '62.

1. Ceske vysoke uceni technicke, Praha 2, Trojanova 13.



VITNER, Cestmir (Praha)

Exceptional points on curves in Riemann spaces. Cas pro pest mat 84 no.4:433-453 '59 (RZMat 9:3)
(Spaces, Generalized) (Curves)

VITNER, Cestmir

Osculating curve quadrics in a equicentroaffine space. Mat fyz cas SAV 11 no.3:161-172 '61.

1. Katedra matematiky, Stavebni fakulta, Ceske vysoke uceni technicke, Praha 2, Na bojisti 3.

VITNER, Cestmir

Vilhelm, Václav, and Vitner, Čestmir. Continuity in metric spaces. Časopis Pěst. Mat. 77, 147–173 (1952). (Czech)

This is a partly expository article. A novelty is the introduction of Cauchy continuity: a mapping f of a metric space X with metric ρ onto a metric space Y with metric σ is said to be Cauchy continuous if $\{f(x_n)\}_{n=1}^{\infty}$ is a Cauchy sequence in Y whenever $\{x_n\}_{n=1}^{\infty}$ is a Cauchy sequence in X. It is noted that uniform continuity implies Cauchy continuity which implies continuity. A large number of theorems are proved, of which the following may be taken as typical. The mapping f is uniformly continuous if and only if the conditions $A, B \subset X$ and $\rho(A, B) = 0$ imply $\sigma[f(A), f(B)] = 0$. Elegant proofs are given, for metric spaces, of Urysohn's lemma and Urysohn's extension theorem. It is shown that Cauchy continuity and uniform continuity can be preserved in applying Urysohn's extension theorem. *E. Hewitt.*

3 0 0 0

10-28-54 LL

VITNER, Cestmír (Praga)

Semimodular conditions in the lattices [with summary in English].
Chekh.mat.zhur. 3 no.3:265-282 S '53. (MLRA 7:5)
(Lattice theory)

VITNEROVA, D.

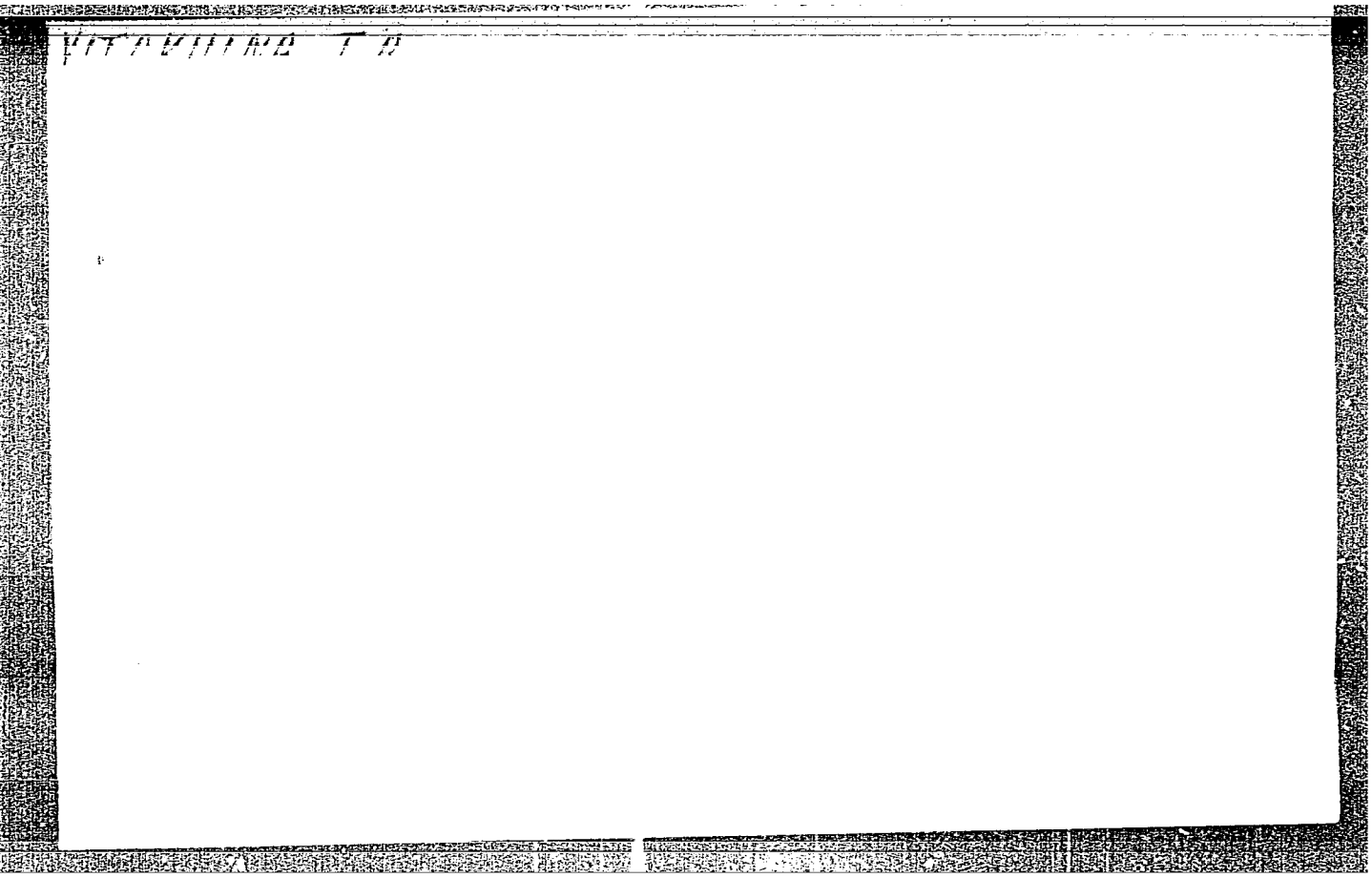
Following the example of Soviet women.

P. 390, (Svet Motoru) Vol. 11 , no. 12, June 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

BERDYANSKIY, M.G.; CHUS, V.G.; BRODSKIY, I.I.; VEYEVNIK, V.F.; VITNOV, L.I.; GRINVAL'D, V.A.; TOLDAYEV, A.S.

Automatic machine for screwing unions. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 17 no.12:27-29 D '64. (MIRA 18:3)



BEYLINSON, A.V.; ORLOVA, N.N.; SHAKHANINA, K.L.; VITOKHINA, T.A.; CHISTOSERDOVA, G.V.; L'VOVA, A.I.

Purification and concentration of polyvalent sera against influenza by fractional salting out. Vop. virus. 5 no. 2:140-145 My-S '60.

1. Institut epidemiologii i mikrobiologii imeni N.F. Gamalei AMN SSSR i Institut virusologii imeni D.I. Ivanovskogo AMN SSSR, Moskva.

(SERUM) (INFLUENZA)

BEYLINSON, A.V.; TROITSKIY, V.L.; VITOKHINA, T.A.; KAULEN, D.R.; SHUFER, R.L.; ZAGREBEL'NAYA, T.M.

Gamma-irradiation as a sterilization factor in the process of preparing purified sera. Zhur.mikrobiol., epid. i immun. 32 no.11:6-12 N '61. (MIRA 14:11)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.
(SERUM) (RADIATION STERILIZATION)

NOSOVA, Z.A., kand.tekhn.nauk; VITOKHINA, V.M., inzh.

Zirconium pigments for glazes. Stek.i ker. 19 no.12:18-22 D '62.
(MIRA 16:1)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut stroitel'noy keramiki.

(Zirconium) (Glazes)

5(3) SOV/80-32-3-35/43

AUTHORS: Dokunikhin, N.S., Kravchenko, E.M., Matskevich, I.M., Blinov, V.A., Vibkhina, L.Ya.

TITLE: Linear Dis-Azo Dyes Which are Derivatives of Oxadiazol and Thiodiazol (Lineynyye disazokrasiteli - proizvodnyye oksadiazola i tiodiazola)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 3, pp 664-667 (USSR)

ABSTRACT: Linear azo dyes containing heterocyclic nuclei connected with the chain by conjugated double bonds are investigated here. The auxochromes are also connected by conjugated double bonds to the chain. An oxadiazol and thiodiazol ring is introduced to the same chain. The dyes prepared are: 2,5-bis-(4-nitrophenyl)-1,3,4-oxadiazol, 2,5-bis-(4-aminophenyl)-1,3,4-oxadiazol, 2,5-bis-(4-nitrophenyl)-1,3,4-thiodiazol, and 2,5-bis-(4-aminophenyl) -1,3,4-thiodiazol. The dyes are resistant to water, soap solution and sweat.

Card 1/2

SOV/10-32-5-35/43

Linear Dis-Azo Dyes Which are Derivatives of Oxadiazol and Thiodiazol

There are 17 references, 8 of which are Soviet, 6 German, 2 French and 1 Italian.

SUBMITTED: July 26, 1957

Card 2/2

LAYZAN, V. [Laizans, V.]; VITOL, A. [Vitols, A.]

Characteristics of the electronic paramagnetic resonance spectra of Mn^{2+} in crystals of NaCl with Ca^{2+} and Cd^{2+} impurities. Izv.AN Latv.SSR no.12:57-60 '63. (MIRA 17:3)

1. Institut fiziki AN Latviyskoy SSR.

ACCESSION NR: AP4013750 S/0197/63/000/012/0057/0060

AUTHORS: Layzan, F; Vitol, A.

TITLE: Characteristics of EPR spectra of Mn^{2+} in NaCl crystals with Ca^{2+} and Cd^{2+} admixture

SOURCE: AN LatSSR. Izv., no. 12, 1963, 57-60

TOPIC TAGS: crystal, pulverized crystal, single crystal spectra, spectral intensity

ABSTRACT: Several NaCl-Mn crystals containing Ca and Cd mixtures, prepared by the Kiropoulos technique, have been investigated. The Mn^{2+} spectra are found to depend on the method of thermal treatment used, with the two admixtures simplifying considerably the otherwise complicated Mn^{2+} spectra. Furthermore, the spectra of pulverized NaCl-Mn crystals are examined and found to differ only slightly from the single crystal spectra. In proportion to pulverization, the spectral intensity diminishes and the Mn^{2+} centers disintegrate. "The authors express their gratitude to K. K. Shvarts and Yu. K. Krumin' for their assistance." Orig. art. has: 2 figures.

Card 1/2

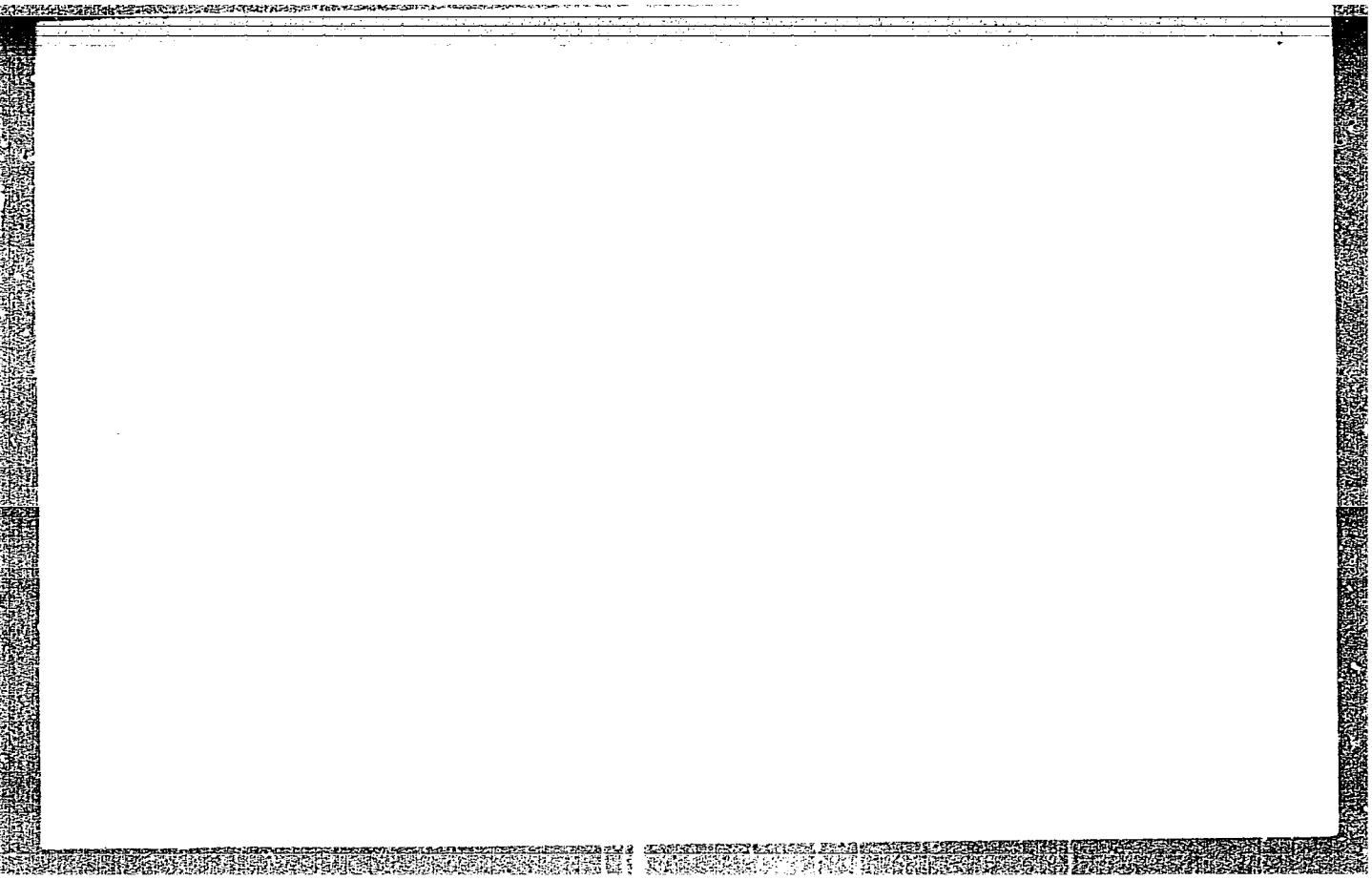
ACCESSION NR: AP4013750

ASSOCIATION: Institut fiziki AN Latv. SSR (Institute of Physics AN Latv. SSR)

SUBMITTED: 01Mar63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: PH REF SOV: 000 OTHER: 007

Card 2/2



APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001860120015-7"

ACC NR: AT7001781 SOURCE CODE: UR/3119/66/000/004/0031/0038

AUTHOR: Shvarts, K. K.; Layzan, B. B.; Vitol, A. Ya.

ORG: Institute of Physics, AN LatSSR (Institut fiziki AN LatSSR)

TITLE: Macrostructure of Mn^{++} in NaCl crystals and their change under the influence of irradiation

SOURCE: AN LatSSR. Institut fiziki. Radiatsionnaya fizika, no. 4, 1966. Ionnyye kristally (Ionic crystals), 31-38

TOPIC TAGS: sodium chloride, electron paramagnetic resonance, paramagnetic ion, manganese, irradiation effect, luminescence center

ABSTRACT: The authors summarize the results of their earlier investigations of electron paramagnetic resonance and luminescence of Mn^{++} in NaCl crystals (Izv. AN SSSR ser. fiz. v. 29, 404, 1965 and preceding papers). While the authors' results concerning the microstructure of the Mn^{++} centers in NaCl crystals containing impurities agreed in the main with those of others, they did observe a strong influence of certain cation impurities on the arrangement of the Mn^{++} ions in the lattice. The presence of Cd^{++} and Ca^{++} as impurities violates the principle of local compensation of the charge in such crystals, but the presence of Pb^{++} does not. The strongest effect on the microstructure of the Mn^{++} centers is exerted by anion impurities, especially F^-. The nature of the manganese luminescence centers in NaCl was investigated by means of optical and EPR methods and it is concluded that in view of the observed

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ACC NR: AT7001781

differences between the spectral parameters of the luminescence centers in regular lattice points and those in clusters, that the results favor the model of the luminescence center proposed by F. Seitz (Trans. Faraday Soc. v. 35, 74, 1939). The net result of the research is that in quenched NaCl-Mn crystals the luminescence centers are Mn^{++} ions which replace cations of the main substance in regular lattice points. Admixtures of Cd^{++} and Ca^{++} ions exert a stronger influence on the distribution of the cation vacancies and increase the number of Mn^{++} ions in a cubic environment. In crystals NaCl-MnF, the Mn^{++} ions are predominatly localized near the F^- ions. In NaCl-MnCd crystals, the kinetics of the decay of the paramagnetic centers changes strongly under γ irradiation, owing to the effective capture of carriers by the Mn centers. Orig. art. has: 3 figures and 4 formulas.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 015/ OTH REF: 012

Card 2/2

ACC NR: AP7001980 SOURCE CODE: GE/0030/66/018/002/0897/0909

AUTHOR: Shvarts, K. K.; Vitol, A. Ya.; Podin, A. V.; Kalnin, D. O.; Ekmanis, Yu. A.

ORG: Institute of Physics, Academy of Sciences of the Latvian SSR, Riga

TITLE: Radiation effects in pile-irradiated LiF crystals

SOURCE: Physica status solidi, v. 18, no. 2, 1966, 897-909

TOPIC TAGS: inorganic crystal, lithium fluoride, irradiation, neutron irradiation, electron paramagnetic resonance, ~~optical~~ light absorption, electron density, radiation effect, irradiated crystal

ABSTRACT: A study was made of electron paramagnetic resonance, optical absorption (in the 2—6 ev range), and density variation in lithium fluoride crystals irradiated in a reactor in amounts up to 10^{19} neutrons/cm^2. The principal paramagnetic defects in the irradiated crystals were found to be F-centers. Conclusions are drawn on the process of radiational expansion in crystals and the formation of color centers. Some aspects of F-center aggregation in the thermal annealing of irradiated crystals are clarified. [Authors' abstract] [DW]-[SP] [W095]

Card 1/1 SUB CODE: 20/SUBM DATE: 20Aug66/ORIG REF: 013/OTH REF: 022/

L 31129-66 EPF(n)-2/EWT(m)/EWP(t) DIAAP/IJP(c) JD/JG

ACC NR: AT6010460 SOURCE CODE: UR/3119/65/000/003/0103/0110

AUTHOR: Layzan, V. B.; Shvarts, K. K.; Vitol, A. Ya.

ORG: none

TITLE: Effect of gamma radiation on decay of paramagnetic manganese centers in NaCl

SOURCE: AN LatSSR. Institut fiziki. Radiatsionnaya fizika, no. 3, 1965. Ionyye kristally (Ionic crystals), 103-110

TOPIC TAGS: electron paramagnetic resonance, manganese, sodium chloride, impurity center, gamma irradiation

ABSTRACT: Electron paramagnetic resonance is used for studying the effect of gamma radiation on paramagnetic manganese centers in $NaCl-MnCl_2-CdCl_2$ crystals. The work was done to determine the qualitative changes in the local structure of impurity centers during gamma radiation and to develop methods for using electron paramagnetic resonance in studying radiation effects. A spectrometer with rf modulation in the 9Gc range was used for measuring the electron paramagnetic resonance spectra. The specimens were irradiated at room temperature. Curves are given for the kinetics of decay under ordinary conditions and under the effect of gamma radiation. It was found that the intensity of central lines is reduced more sharply by radiation than is the intensity of edge lines corresponding to $Mn^{++}v'_+$ centers. The ratio of the number of

Card 1/2

centers in the cubic surrounding N_k to the centers with an associated vancy N_v is approximately equal to:

$$\frac{N_k}{N_v} = \frac{1}{21}\left(\frac{I_c}{I_v} - \frac{27}{5}\right).$$

where I_c is the intensity of the central lines and I_v is the intensity of the edge lines. Some of the characteristics in the decay of paramagnetic manganese centers in NaCl crystals and the effect of irradiation on this decay process are discussed. Orig. art. has: 6 figures, 3 formulas. [14]

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 007/ OTH REF: 008
ATD PRESS: 4241

SHVARTS, K.K. [Svarcs, K.]; VITOL, A.Ya. [Vitols, A.]; KRUMIN', Yu.K. [Krumins, J.]; LAYZAN, V.B. [Laizans, V.]; LYUSHINA, A.F.

Microstructure of manganese centers in sodium chloride crystals. Izv. AN SSSR. Ser.fiz. 29 no.3:404-405 Mr '65. (MIRA 18:4)

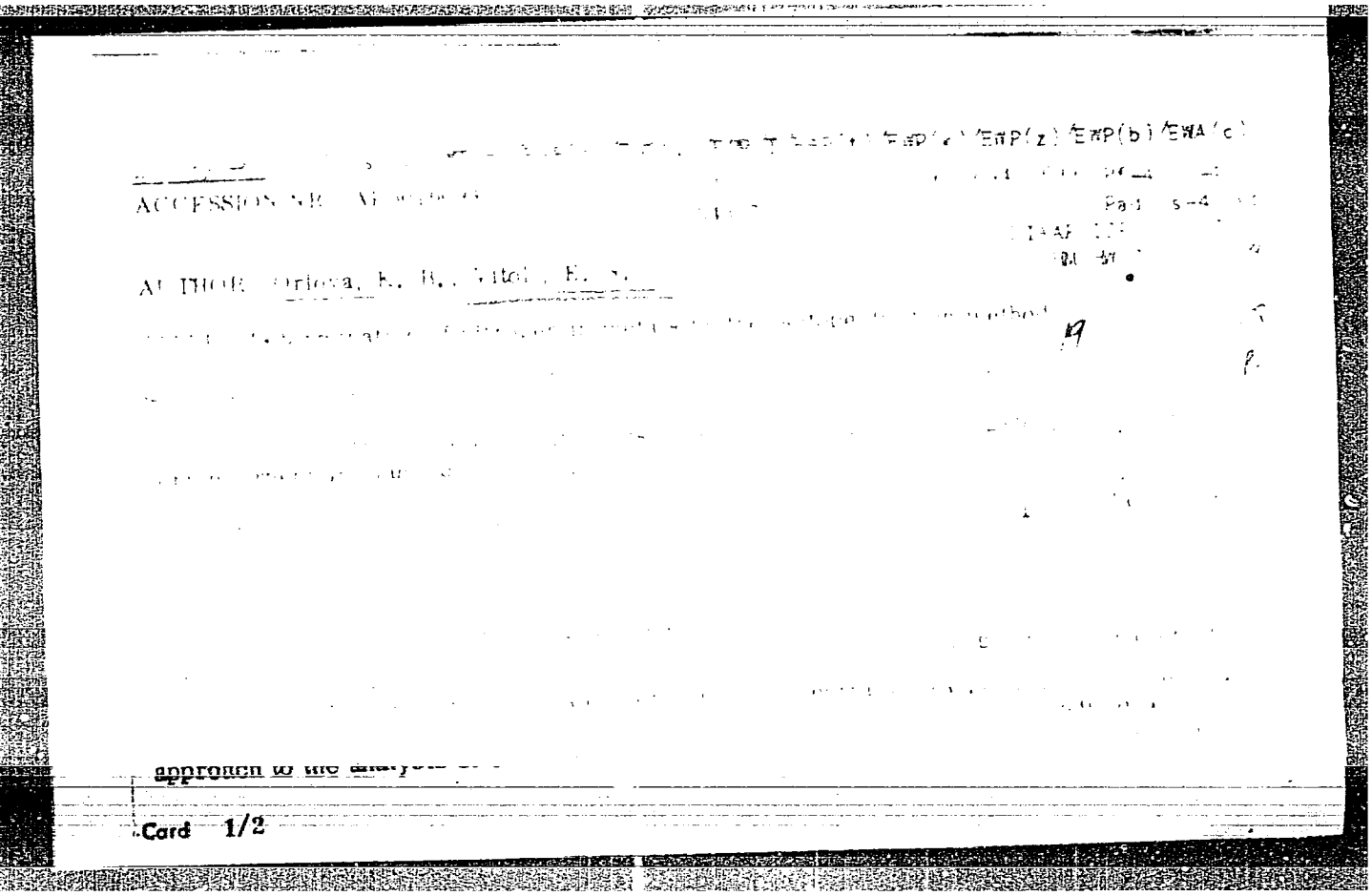
ORLOVA, K.B.; VITOL', E.N.

Determination of nitrogen in metals by the isotope dilution method. Zhur. anal. khim. 20 no.6:694-699 '65.
(MIRA 18:7)

VITOL', E.N.

Isotopic method of determination of oxygen in metals. Zav. lab. 29 no.6:649-652 '63. (MIRA 16:6)

(Metals—Oxygen content)
(Oxygen isotopes)



ACCESSION NR:

AUTHOR:

approach to the analysis

Card 1/2

L 58898-65

ACCESSION NR: AP5016094

fusion methods. The relative sensitivity of the method is 1×10^{-4}%. "In conclusion, we [illegible] chemical determination of nitrogen [illegible] and formulas.

ASSOCIATION: None

SUBMITTED: 19Apr64 ENCL: 00 SUB CODE:IC

NO REF SOV: 005 OTHER: 002

2/2

83367
S/051/60/009/003/003/011
E201/E691

24,3500

AUTHORS: Vitol, I.K. and Plyavin', I.K.

TITLE: Kinetics of Short-Lived Photoluminescence of Some Activated Alkali-Halide Crystals

PERIODICAL: Optika i spektroskopiya, 1960, Vol. 9, No. 3, pp. 365-368

TEXT: The paper was presented at the Conference on Physics of Alkali-Halide Crystals held in July, 1959, in Tartu. It deals with the effect of two lower excited levels of Ga^+, In^+, Tl^+ activator ions on the kinetics of short-lived photoluminescence of KI-Ga, KI-In and KI-Tl crystals. The temperature dependences of the decay time constants are given in Figs. 1-3. The results obtained agreed well with theoretical calculations confirming the correctness of the latter and permitting determination of some luminescence-centre parameters. There are 3 figures and 10 references: 8 Soviet, 1 English and 1 translation into Russian.

SUBMITTED: December 28, 1959

Card 1/1

S/051/60/009/004/027/034
E201/E191

AUTHOR: Vitol, I.K.

TITLE: Non-isothermal Relaxation of Luminescence Spectra of X-ray Irradiated KCl Crystals Activated with Tl^+, In^+, Ag^+ and Cu^+ Ions

PERIODICAL: Optika i spektroskopiya, 1960, Vol 9, No 4, pp 535-538

TEXT: The author investigated thermoluminescence spectra of KCl crystals containing Tl^+, In^+, Cu^+, Ag^+, Pb^{++} and Sn^{++} ions. For this purpose an apparatus known as a "relaxation combine" was used; with this apparatus one could record automatically absorption, luminescence, excitation and optical-flash stimulation spectra. The optical part of the "combine" was based on a monochromator СФ-4 (SF-4). The electronic part included a synchronous detector for measurement of weak light fluxes and a circuit for measuring absorption of light between 240 and 1100 mμ. To obtain absorption spectra a modulated (at 70 c/s) light beam was passed alternately through a sample and a standard (air); the transmitted beam was measured with photomultipliers ФЭУ-18 (FEU-18) and ФЭУ-22 (FEU-22). Simultaneously with absorption spectra, one could record continuously total thermoluminescence

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S/051/60/009/004/027/034
E201/E191

Non-isothermal Relaxation of Luminescence Spectra of X-ray Irradiated KCl Crystals Activated with Tl^+, In^+, Ag^+ and Cu^+ Ions

using the same photomultipliers. The rate of heating during thermoluminescence experiments was 0.1-0.3 °C/sec. The spectra were photographed on an oscillograph screen with a cine camera "Kiyev" 16C-2 (16S-2) or with automatic recorders PSRI-01 (PSRI-01) or N-375 (N-375). Fig 1 shows the thermoluminescence spectra of X-ray irradiated KCl containing 0.03 mol.% Tl. Curve a represents a spectrum obtained with an automatic recorder, while curves б and в represent photographs of the oscillograph screen. Thermoluminescence of KCl-Tl consisted of two bands; their intensity ratio was strongly affected by rise of temperature. The band at 300 mμ represented electronic-vibrational transitions in Tl^+ ions situated at lattice sites, while the band at 470 mμ represented the same transitions in Tl^+ ions situated near lattice defects. The changes in the band intensities on increase of temperature were partly due to temperature quenching. KCl crystals activated with In^+, Cu^+ and Ag^+, also had thermoluminescence bands due to electronic

Card 2/3

S/051/60/009/004/027/034
E201/E191

Non-isothermal Relaxation of Luminescence Spectra of X-ray Irradiated KCl Crystals Activated with Tl^+, In^+, Ag^+ and Cu^+ Ions

transitions in the activator ions (Fig 2). Thermoluminescence of KCl-Pb and KCl-Sn was at least 1000 times weaker than thermoluminescence of KCl-Tl; such weak emission lay below the sensitivity threshold of the apparatus. A non-activator band at 440 mμ was observed in all phosphors.

Acknowledgements are made to Ch.B. Lushchik who directed this work and suggested the subject.

There are 2 figures and 7 references: 4 Soviet, 1 English and 2 mixed (Soviet, English and German).

SUBMITTED: October 31, 1959

Card 3/3

S/048/61/025/003/022/047
B104/B214

5.4160 (3201, 2804 only)
24.3500 (1137, 1138, 1395)

AUTHORS: Vitol, I. K. and Tale, I. A.

TITLE: Investigation of the photoelectric polarization of the crystal phosphors on the basis of ZnS

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 3, 1961, 368-369

TEXT: This paper was read at the Ninth Conference on Luminescence (Crystal Phosphors) held in Kiyev from June 20 to June 25, 1960. For the study of the mechanism of recombination processes in crystal phosphors it is expedient to apply, in addition to optical methods of investigation, also electrical methods which permit an immediate determination of the sign of the excited carriers. On certain assumptions, a study of the photoelectric polarization can furnish not only the sign of the carriers but can also give the ratio of the electron and hole components in mixed conductivity. The surface condition strongly affects the crystal photo-effect in semiconductors. The existence of surface levels affects also the amount and sign of the experimentally measured photoelectric polarization

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of the crystal phosphors. However, a number of experimental facts show that on account of the specific properties of crystal phosphors and under certain conditions (excited conductivity much larger than equilibrium conductivity) the surface levels have no effect on the sign and amount of photoelectric polarization. In the region of fundamental absorption of ZnS phosphors activated by Cu, Ag, and Mn, light excites an n-type conductivity. The p-type conductivity at room temperature lies within the limits of the experimental error, that is, within less than 5% of the total conductivity. If a ZnS-Cu crystal is exposed to light of wavelength 312 mμ, the photoelectric polarization reaches a constant value of the potential difference. On exposure to light in the range of wavelengths 350 - 1150 mμ, there occurs, along with the extinction of luminescence, a decrease of the photoelectric polarization to φ_n. The dependence of φ_n and φ_{nu} on the wavelength of the light is shown graphically in Fig. 1. This figure also gives the intensity of luminescence $\Delta I/I$ and the additional absorption $\Delta D/D$ according to data of V. V. Antonov-Romanovskiy (Ref. 7: Antonov-Romanovskiy V. V., Shchukin I. P., Dokl. AN SSSR, 71, 2 (1950)) as functions of the wavelength. The decrease of the photoelectric polarization in the range of 500-800 mμ can be explained as due

to the following two causes: 1) The infrared light sets the holes free, which combine with the localized electrons, and so the electron concentration in the conduction band is decreased. 2) The infrared light sets the holes free, and the photoelectric polarization decreases on account of the diffusion of the holes to the unexposed surface of the specimen. The absence of decrease of the photoelectric polarization above 1,150 mμ shows that the extinction of luminescence in this range differs from that in the range 500-800 mμ. Ch. B. Lushchik is thanked for interest and discussions. There are 1 figure and 7 Soviet-bloc references.

Legend to Fig. 1:
Dependence of the photoelectric polarization of the low-inertia component φ_n and the inertia component φ_{nu}, and of the relative decrease $\Delta I/I$ of luminescence on the wavelength of irradiation for a ZnS-Cu phosphor under constant excitation with light of wavelength 312 mμ.

Investigation of the photoelectric...

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B104/B214

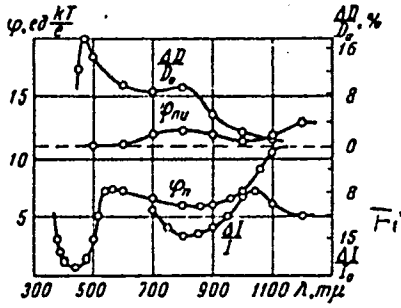

Fig. 1

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20837

S/048/61/025/003/026/047
B104/B214

24.3500 (1138, 1153, 1395)

AUTHORS: Valbis, Ya. A., Vitol, I. K., and Zirap, V. E.

TITLE: Excitation and de-excitation mechanisms of the recombination luminescence of alkali halide crystal phosphors

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 3, 1961, 377-379

TEXT: This paper was read at the Ninth Conference on Luminescence (Crystal Phosphors) held in Kiyev from June 20 to June 25, 1960. The thermostimulated current, the thermoluminescence, and the spectrum of thermoluminescence were investigated by comprehensive experiments, and it was attempted to clarify some problems of the complicated relaxation processes in excited alkali halide crystals. The thermostimulated currents and thermoluminescence excited by X-rays in KCl and KBr crystals were investigated. The crystals were either unactivated or activated with thallium. In the temperature range 110-340°K, all peaks of one effect corresponded to those of the other. This fact is seen as a proof of the recombination nature of the afterglow in the crystal phosphors investigated.

Card 1/ 4

Excitation and de-excitation ...

If this is correct one has : $I/\sigma = \eta\beta p/eu$ (1). Here, p is the hole concentration in the recombination centers, β the probability of recombination of a free electron with a localized hole, η the yield of luminescence produced by recombination, e and u the charge and mobility of an electron, I the intensity of luminescence, and σ the electrical conductivity. An experimental determination of the relation (1) can give information on a multi-stage relaxation mechanism. Fig. 1a shows graphically the dependence of the intensity of luminescence on temperature; the temperature dependence of the thermostimulated current and that of the quantity I/j are graphically shown in Fig. 1b and Fig. 1c, respectively. A step-like decrease of this ratio is seen in the temperature ranges 110-190°K and 270-330°K. It is surmised - and the surmise is supported by data already known - that electron recombination takes place in the first range, and hole recombination in the second. Fig. 2 shows the temperature dependence of the intensities of different luminescence bands (whose maxima lie at 2.6 ev, 3.0 ev, and 3.4 ev) of a KBr-Tl crystal (0.5 mole%). The curves (a) show the X-ray luminescence (measured by cooling the crystal) and the curves (b) the thermoluminescence (heating rate: 0.2 deg/sec). This diagram illustrates the effect of change of the

recombination mechanism on the luminescence spectrum. The nature of the luminescence centers is not known and would require new experiments for its clarification. Ch. B. Lushchik is thanked for a discussion, and I. I. Liyelpeter for help in the work. There are 2 figures and 16 references: 12 Soviet-bloc and 4 non-Soviet-bloc.

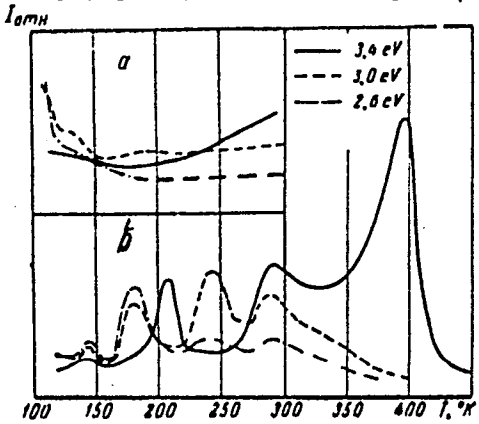

Fig. 2

Excitation and de-excitation...

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B104/B214

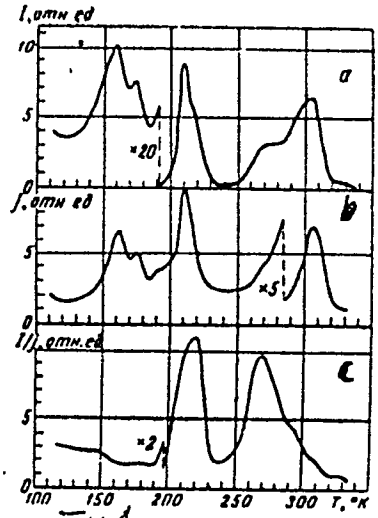

Fig. 1

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ACCESSION NR: AP4025004 S/0070/64/009/002/0308/0310

AUTHORS: Beyzitor, L. K.; Vitol, I. K.

TITLE: Growing thin monocrystalline layers of semiconductors on a nonmonocrystalline base

SOURCE: Kristallografiya, v. 9, no. 2, 1964, 308-310

TOPIC TAGS: semiconductor, semiconductor crystal, crystal growth, monocrystal semiconductor layer, germanium base, tantalum base, glass base, quartz base, steel base, vacuum precipitation, Pierce electron gun, electron gun, crystallization angle effect

ABSTRACT: Very little information exists concerning the process of growing monocrystalline layers on polycrystalline or amorphous bases. It is known, however, that such processes are affected by two mutually opposite factors: the orienting tendency of a growing crystal and the disorienting influence of the base. The experiments described here were performed in order to study the possibility of decreasing the disorienting effect of the base by choosing proper thermal conditions. These experiments involved the vacuum precipitation of thin Ge layers

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on tungsten, glass, quartz, tantalum and steel bases. The necessary temperature gradient was established with the J. R. Pierce linear electron gun generating an electron beam 1 mm wide. Data obtained showed that tungsten is the most suitable material for a base-plate because its affinity for Ge is weak and its thermal expansion coefficient is close to that of Ge. Maximum layer thickness (5 mm) was obtained when the base was heated on the underside. With the electron beam directed toward the growing layer, the maximum crystal height was only 0.3 mm. The success of the underside heating is attributed to the fact that under this condition the crystallization angle is positive and its value is at a maximum. "The authors express their appreciation to N. N. Sheftal' for the discussion of the results obtained, and to A. I. Vovsi and V. Ya. Krumin' for their help in the experimental part of this work." Orig. art. has: 2 figures.

ASSOCIATION: Latviyskiy gosudarstvenny*y universitet im. P. Stuchki (Latvian State University)

SUBMITTED: 27May63 DATE ACQ: 16Apr64 ENCL: 00

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L 26499-66 EWT(1) IJP(c)

ACC NR: AP6013053 SOURCE CODE: UR/0048/66/030/004/0564/0569

AUTHOR: Vitol, I. K.

ORG: None

TITLE: Modern views regarding the mechanism of recombination luminescence in alkali halide phosphors /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 564-569

TOPIC TAGS: recombination luminescence, alkali halide, crystal phosphor

ABSTRACT: The paper is based on a longer review presented at the Fourteenth Conference on Luminescence. The author discusses modifications that have been made with regard to the common concepts concerning the mechanism of recombination luminescence of alkali halide phosphors in the light of a series of recently published (within the past 5 years) papers and the data obtained in the author's laboratory (at the Latvian State University in Riga). Note is made of the methodological difficulties encountered in investigating recombination luminescence and the need for comprehensive studies and cross-checking of the inferences drawn on the basis of different experiments: EPR, optical excitation in the excited state, electron emission, the Parfianovich effect, glow curves, etc. Hole processes are discussed and general data all pointing to the "hole

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nature" of recombination luminescence in KBr at 185° C are tabulated. These data indicate that in KBr at 185° C the hole recombination process involves the following stages: delocalization (release) of V_k centers, interaction of the V_k centers with F centers, appearance of an exciton-like state at or near a vacant site, and emission of a 2.4-2.6 eV photon. Another aspect discussed is the influence of hole processes on electron recombination luminescence. Here mainly V_k and "ionized" centers are involved. Finally, consideration is given to the possible role of mobile defects in recombination luminescence. Such mobile defects are termed "defections" and are tentatively identified as V_k centers that acquire mobility in alkali halide phosphors above a certain temperature. Other types of V centers, as well as F and H centers, are considered briefly, together with their probable temperatures of decomposition and manifestation. In conclusion, I express my gratitude to Ch.B.Lushchik for discussion of the questions touched on in the review and critical remarks. I am also very grateful to my coworkers Ya.R.Bogan, Ya.A.Valbis, V.E.Zirap, Yu.Ya.Kuz'min, A.A.Portnov, Z.A.Rachko and others for help in obtaining and evaluating the experimental results cited in the paper. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 022/ OTH REF: 023

ACC NR: AP7004965 SOURCE CODE: UR/0048/66/030/009/1439/1440

AUTHOR: Bogan, Ya.R.; Vitol, I.K.

ORG: none

TITLE: On the possibility of utilizing the Hall effect for studying nonequilibrium processes in crystal phosphors /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 9, 1966, 1439-1440

TOPIC TAGS: Hall effect, hole conduction, hole mobility, electron conduction, electron mobility, luminescent crystal, zinc sulfide

ABSTRACT: The authors discuss the Hall effect in the simultaneous presence of n-type and p-type conduction. Curves are presented showing the ratio j_H/c of the Hall current to the conductivity as a function of the ratio n/p of the electron to the hole concentration for different values of the ratio μ_n/μ_p of the electron to the hole mobility. From Hall effect and conductivity measurements under different excitation conditions one can draw conclusions with the aid of these curves concerning the presence of carriers of both signs and concerning their concentrations and mobilities. Apparatus described elsewhere by one of the authors (Ya.R.Bogan, Izv. AN SSSR, Ser. fiz.,29, 480 (1965)) was employed to measure the Hall effect and conductivity in a ZnS crystal phosphor. The phosphor was excited with ultraviolet radiation at room temperature,

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was heated to 50° C, was cooled again to room temperature, and was heated again at the constant rate of 0.1 degree/sec to 220° C. The thermostimulated Hall current and the thermostimulated conductivity were measured during the second heating. From the results it is concluded that carriers of both signs are present and that the ratio n/p varies with temperature. To draw more detailed conclusions from the data it would be necessary to know the ionic conductivity and the temperature dependences of the mobilities. The authors thank A.A.Veyspal and I.K.Penezis for assistance with the work. Orig. art. has: 2 formulas and 2 figures.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 002 OTH REF: 001

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ACC NR: AP7004966 SOURCE CODE: UR/0048/66/030/009/1441/1442

AUTHOR: Bogan, Ya.R.; Vitol,I.K.; Portnov,A.A.

ORG: none

TITLE: Use of the luminescent probe technique for investigating hole processes in crystal phosphors /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR, Izvestiya. Seriya fizicheskaya, v. 30, no. 9, 1966, 1441-1442

TOPIC TAGS: luminescence, electron hole, exciton, F band, luminescence center, luminescent crystal, potassium bromide, thallium

ABSTRACT: The authors propose a technique, which they call "luminescent probing", for investigating hole (and other) processes in crystal phosphors whose electrical conductivities are too low to permit application of the more usual techniques involving conductivity, the Hall effect, photopolarization, etc. To employ this technique one induces in the specimen luminescence centers that radiate on interaction with only one type of mobile defect (e.g., only with holes, electrons, excitons, or the like) and investigates the luminescence and absorption in different bands. F centers radiate in the α band on interaction with V_k centers and are thus suitable centers for use in connection with luminescent probe investigations. This was confirmed by measurements of the temperature dependences of the α luminescence, the Tl

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luminescence, and the F absorption of a KBr:Tl crystal phosphor. Strong α luminescence, weak Tl luminescence, and a rapidly decreasing F absorption was observed in the temperature range from 165 to 180 K in which the V_k centers decay. The advantage of the luminescent probe technique is its simplicity. It is not yet known whether suitable centers can be found for study of electron and exciton processes, and the use of F centers as luminescent probes is limited by our lack of knowledge of the conditions under which α luminescence can appear as a result of exciton reactions and resonance transfer of energy. Orig. art. has: 1 figure.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 010 OTH REF: 004

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ACC NR: AP7005004 SOURCE CODE: UR/0048/66/030/009/1560/1562

AUTHOR: Talo,I.A.; Bogan,Ya.R.; Bomika,V.A.; Vitol, I.K.

ORG: none

TITLE: Concerning the mechanism of recombination processes in zinc sulfide /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.30, no.9, 1966, 1560-1562

TOPIC TAGS: photoconductivity, zinc sulfide, irradiation, hole conduction, electron conduction

ABSTRACT: The authors have investigated the infrared-stimulated photoconductivity in different ZnS crystals, determining the sign of the carriers by means of Hall effect and photoelectric polarization measurements. The investigated specimens fell into two main groups: high-resistivity crystals, and low-resistivity ZnS crystals containing an excess of Zn, whose high equilibrium conductivity was due to the presence of a high concentration of lattice microdefects. None of the specimens exhibited thermal hysteresis of the electric conductivity, and their luminescence yields were very low. After excitation in the fundamental absorption band, photoconductivity could be stimulated in specimens of both types by irradiation in any of four bands peaking at 0.95, 1.6, 2.0, and 2.8 eV. In the low-resistivity specimens the photo-

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current was carried by electrons regardless of the wavelength of the stimulating photons; in the high-resistivity specimens the photocurrents stimulated in the 0.95 and 2.8 eV band were carried by electrons, and those stimulated in the 1.6 and 2.0 eV bands were carried by holes. Moreover, de-excitation of the high resistivity crystal: in the 0.95 eV band reduced the photosensitivity in the 1.6 and 2.0 eV bands, de-excitation in the 1.6 or 2.0 eV bands reduced the photosensitivity in the 0.95 eV band, irradiation in the 2.8 eV band restored the photosensitivity in the other three bands Cooling from room temperature to liquid nitrogen temperature destroyed the photosensitivity of the 1.6 and 2.0 eV bands; the photosensitivity could be restored only by further excitation in the fundamental absorption band. It is concluded that the 1.6 and 2.0 eV bands are not simple; stimulation in these bands excites trapping centers of several different kinds, of which some have excited states in the forbidden gap. Sensitivity in the 2.8 eV band appeared in specimens that exhibited a green luminescence; the authors accordingly associate this band with an activator. The photoconductivity stimulated in the 2.8 eV band at room temperature had both electron and hole components; the holes were not revealed by the Hall effect measurements because of their low mobility. Orig. art. has: 2 figures.

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

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L 28338-66 EWT(1) IJP(c)

ACC NR: AP6013078 SOURCE CODE: UR/0048/66/030/004/0675/0678

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48
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AUTHOR: Zirap, V. E.; Vitol, I. K.

ORG: none

TITLE: Correlation between the optic and electric characteristics of crystal phosphors /Report, Fourteenth Conference on Luminescence held in Riga 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 675-678

TOPIC TAGS: crystal phosphor, electric conductivity, potassium bromide, optic property, electric property

ABSTRACT: There have been relatively few theoretical and experimental studies of the relation between the optic (luminescence and absorption) and the electric (conductivity) properties of crystal phosphors. The present work was devoted to an extensive and comprehensive study of the characteristicts of KBr (high purity), KBr:Ga, KBr:In and KBr:Tl (activator concentration 10^{-2} to 10^{-4} mole percent), and KBr:NaBr and KBr:KI (impurity ion concentration about 10^{-1} mole percent). There were obtained the temperatures of the glow curve peaks, the conductivity peaks and the bleaching peaks, and the corresponding characteristics under photostimulation. The resultant experimental data are presented in a large table together with some comparative

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results of other investigators. The results are largely consistent with the mechanism of electron-hole recombination as hypothesized and developed in the work of V.V. Antonov-Romanovskiy, Ch.B.Lushchik and his group, M.L.Kats, I.A.Parfianovich and his associates, and other Soviet and foreign luminescence physicists (numerous references are cited). The tabulated data are discussed from the standpoint of correlation between the optic and electric properties: in some cases the correlation is obvious and strong; in other cases it appears to be weak or absent. The authors are sincerely grateful to Ch.B.Lushchik and Ya.A.Valbis for discussions of some of the questions mentioned in the paper. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 031/ OTH REF: 012