Kinetics of ...

conditions as in Ref. 3 a value of $\sim 10^{-12}$ sec was obtained for the time in which a photoelectron passes the region of space charge. In the following, the authors demonstrate that the relaxation time of a photocell τ_j depends on the charging resistance in the following way: with $R_H \gg R_{BH}$ (R_H = charging resistance, R_{BH} = external differential resistance of a photocell) τ_j is independent of R_H and equal to $R_{BH}C$ (C = capacitance between the layer of space charge and support); with small R_H and if $R_T \ll R_{BH}$ (R_T = resistance of the semiconductor) τ_j depends linearly on R_H. Photocells Cu - CdS with a resistivity CdS being $\approx$1 ohm.cm were measured. The Cu-layer was electrolytically applied from a Cu_2SO_4 solution by N. F. Prikot, student of the LGU (Leningrad State University). τ_j was measured by the method of phase compensation of light which was sinusoidally modulated by a frequency of 1 Mc. 240 and 260 were obtained for the capacitance of the space charge. The capacitance of the support was 60 pf. 1 kohm and 440

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ohms were obtained for for R_{BH}. Photocells of this type can be used as photosensitive receivers with low inertia for the red and infrared range of the spectrum; also the range of sensitivity can be varied according to the metal and the semiconductor employed. The authors thank F. M. Berkovskiy for measuring the time constants. There are 2 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut imeni A. F. Ioffe AN SSSR Leningrad (Institute of Physics and Technology imeni A. F. Ioffe AS USSR Leningrad)

SUBMITTED: November 26, 1960

L 12822-63 EWT(l)/EWP(q)/EWT(m)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3
JD/IJP(C)
ACCESSION NR: AT3003018 S/2927/62/000/000/0271/0275 65 62

AUTHOR: Rogachev, A. A.

TITLE: Investigating the effect of current density in a p-n junction on the concentration of injected carriers [Report at the All-Union Conference on Semiconductor Devices, Tashkent, 2-7 October, 1961]

SOURCE: Elektronno-dy*rochny*ye perekhody* v poluprovodnikakh. Tashkent, Izd-vo AN UzSSR, 1962, 271-275

TOPIC TAGS: diode junction, germanium diode

ABSTRACT: The effect of current density in a p-n junction on the concentration of injected carriers, in a heavy current range, was considered theoretically by Jonsher (J. Electron. and Control 5, 1, 1959 and 5, 266, 1958) and by V. I. Stafeyev (FTT, v. 3, 185, 1961). Their conclusions are widely different. The article describes some experiments conducted to verify the above theories. Germanium diodes obtained by alloying In into n-Ge with a resistivity of 40 ohm.cm were used in experiments. The recombination radiation vs. current density curve shows that, with small currents, the radiation increases with I^2, while with heavier currents, the relation becomes linear; that means that the carrier concentration is propor-

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L 12822-63
ACCESSION NR: AT3003018

3

tional to $\sqrt{V}$. Current-voltage characteristics, beginning from 10^3 amp/cm^2, are linear. Theoretical conclusions of both authors are criticized. "The author is thankful to S. M. Ry*vkin, V. I. Stafeyev, and A. A. Grinberg for discussing the results of his work." Orig. art. has: 6 figures and 4 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 15May63 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 006

Card 2/2

36893
S/181/62/004/004/038/042
B102/B104

24.6111
27.7000

AUTHORS: Nasledov, D. N., Rogachev, A. A., Ryvkin, S. M., and Tsarenkov, B. V.

TITLE: Recombination radiation of gallium arsenide

PERIODICAL: Fizika tverdogo tela, v. 4, no. 4, 1962, 1062-1065

TEXT: Monocrystalline n-type InAs plates with an electron concentration of $\leq 10^{17}$ cm^{-3} were used to study the intrinsic recombination radiation. A p-n junction of ≈ 0.1 cm^2 was produced by diffusion of Zn or Cd into the InAs plate. The nonequilibrium carriers were excited by pulsed injection through the junction. The radiation was observed in parallel to the p-n junction plane. At 77°K the emission spectrum has a narrow peak at 1.47 ev (optical self-absorption edge) and two maxima at lower energies which are in connection with recombination via impurity levels. One of these levels is 0.2 ev distant from the middle of the forbidden band, the other 0.25 ev from a band edge. The relative height of all maxima depends on the current density through the p-n junction. At less

than 1 a/cm^2 only impurity radiation is observed, then intrinsic radiation arises and increases rapidly, and between 10 and 100 a/cm^2 the relative height of the maxima remains constant. The results can be explained by assuming volume-charge recombination at weak currents and injection at high currents. At above 10 a/cm^2 the emission intensity increases linearly with the current density through the p-n junction and decreases only above $\sim 10^3$ a/cm^2. The forbidden band width is temperature-dependent according to the law $(1.51-5.6\cdot10^{-4}T)$ ev. The intrinsic emission line narrowing observed at high current densities can be explained by inverse band filling (production of states with "negative temperature") or by assuming that the injected carriers cause degenerate filling of one band only. The latter possibility is more probable. There are 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

SUBMITTED: January 11, 1962

37925

S/181/62/004/005/016/055
B125/B104

AUTHORS: Rogachev, A. A., and Chechurin, S. N.

TITLE: Field effect and photoconductivity in lead-sulfide layers

PERIODICAL: Fizika tverdogo tela, v. 4, no. 5, 1962, 1174 - 1179

TEXT: The field effect of light-sensitive PbS layers condensed on glass and mica in vacuo is studied. An a-c method was used to measure the dependence of conductivity on the field strength under quasi-equilibrium conditions at room temperature. It is assumed that the conductivity of the layer is mainly due to its particles contacting the backing. In the range of 16 - 100 cycles, the oscillograms were independent of the frequency of the modulating field. Illumination of the layer increases the number of surface holes, shortens the relaxation time $\tau_{f.e.}$ of the field effect, and slightly increases the h-f value μ_{hf} of the effective mobility. If, in the absence of a field, the surface conductivity is of the p-type, illumination shifts the curve of the field effect slightly to the left, whereas a considerable shift occurs with n-type conductivity.

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Field effect and photoconductivity...

The real part Re $\mu_{eff} = \mu'_{eff}$ of effective mobility changes signs in some specimens, but is always positive at high frequencies. The reduced conductivity remained constant for several days when d-c voltages of up to 1500 v were applied. Photoelectrons are trapped in the surface layer of the photoresistors investigated. When an inversion layer appears on the surface, the minimum of the curve representing the field effect is shifted much more. The frequency dependence of the field effect is given by

$$\mu'_{эфф.} = \mu_p - \frac{(\mu_p + \mu_n) C_n + \mu_p C_t}{C_n + C_p + C_t} \frac{1}{1 + \omega^2 \tau^2_{э. п.}} \approx \mu'_{eff} \quad (3)$$

where μ_n is the electron mobility, and μ_p is the hole mobility; dQ_c, dQ_v, and dQ_t denote the variation in charge in the conduction band, valence band, and surface states, respectively, and ψ is the surface potential. The photoconductivity of the vacuum-condensed PbS layers is mainly due to the change in concentration of the majority carriers (holes) in the intermediate layers on illumination. Experiments on the frequency dependence of the field effect permit a quantitative evaluation of the effect of barriers on the photoconductivity of the layer in any concrete case. There are

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Field effect and photoconductivity...

S/181/62/004/005/016/055
B125/B104

6 figures. The most important English-language reference is: J. N. Zemel a. J. Varela. Phys. a. Chem. of Solids, 14, 142, 1960.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: December 23, 1961

Card 3/3

14.7700

28925
S/181/62/004/006/049/051
B108/B138

AUTHORS: Rogachev, A. A., and Ryvkin, S. M.

TITLE: Temperature dependence of the radiative recombination cross section in germanium

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1676 - 1678

TEXT: The authors' preliminary experiments have shown that at 77°K and with a high injection level ($\Delta p \approx 10^{16}$ cm^{-3}) the time constants of photoconduction in germanium are greater than was concluded by van Roosbrock and W. Shockley (Phys. Rev., 94, 1558, 1954). They also measured the temperature dependence of the radiative recombination cross section in n-type Ge diodes. Only a slight increase in intensity of the recombination radiation was observed as the n-p junction was cooled from room temperature to liquid nitrogen temperature: $\sigma_R \sim 1/T$. It is stated that the rapid decrease in σ_R with rising temperature, as established by van Roosbrock and Shockley, is probably due to an error in calculation. It is demonstrated

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Temperature dependence ...

that even under ideal conditions τ_R cannot decrease more rapidly than in proportion to $T^{-5/2}$. There is 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

SUBMITTED: February 26, 1962

Card 2/2

NASLEDOV, D.N.; ROGACHEV, A.A.; RYVKIN, S.M.; KHARTSIYEV, V.Ye.; TSARENKOV, B.V.

Structure of direct recombination spectra of gallium arsenide. Fiz. tver. tela 4 no.11:3346-3348 N '62. (MIRA 15:12)

1. Fiziko-tekhnicheskiy institut imeni A.F. Ioffe AN SSSR, Leningrad.

(Gallium arsenide--Spectra)

L 14978-63 EWA(l)/EWG(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/SSD
Px-4/Pz-4 AT/JD/WG/IJP(C)
ACCESSION NR: AP3004916 S/0120/63/000/004/0187/0188

AUTHOR: Gutkin, A. A.; Rogachev, A. A.; Sedov, V. Ye.; Tsarenkov, B. V.

TITLE: Low-inertia gallium arsenide light-generating diode

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1963, 187-188

TOPIC TAGS: gallium arsenide light generator, light-generating diode, gallium arsenide diode, carrier injection luminescence, injection luminescence, gallium arsenide laser, laser, carrier, luminescence, injection

ABSTRACT: A light-generating diode made of single crystal n-type gallium arsenide diffused with p-type zinc has been constructed and tested. Light emission was produced at room temperature by applying a pulsed current with pulse duration of 1—10 μsec across the p-n junction. The obtained light spectrum showed two maxima centered at 0.95 and 1.3 μ. The time constant was less than 5×10^{-8} sec. At a maximum injection current of 20 amp the efficiency of the generator was about 0.1%. The authors hope to increase the photon flux several times by constructional refinements and the use of higher quality material. The author acknowledges that while the present article was being prepared for printing, the journal

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L 14978-63
ACCESSION NR: AP3004916

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Electronics (July 1962, 13, 7; 1962, 27, 24) disclosed the construction (in the U. S.) of a gallium arsenide light-generating diode with a power of 3 w operated at liquid-nitrogen temperatures. "The authors thank D. N. Nasledov and S. M. Ry*vkin for their interest in the work." Orig. art. has: 4 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physicotechnical Institute, AN SSSR)

SUBMITTED: 14Sep62 DATE ACQ: 28Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 001

Card 2/2

ROGACHEV, [illegible]; RYVKIN, [illegible]

Tunnel type radiative recombination in semiconductors. Fiz. tver. tela 6 no.10:3188-3190 O '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut im. A.F. Ioffe AN SSSR, Leningrad.

L 18009-63 EWT(1)/EWG(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3 Pe-4
AT/JD S/0181/63/005/006/1730/1732
ACCESSION NR: AP3001299

AUTHORS: Asnin, V. M.; Rogachev, A. A.

TITLE: Dependence on the width of the forbidden band in germanium on the concentration of current carriers

SOURCE: Fizika tverdogo tela, v. 5, no. 6, 1963, 1730-1732

TOPIC TAGS: forbidden band, current carrier, emission spectrum, Ge, semiconductor, diffusion coefficient, current density, recombination, carrier concentration

ABSTRACT: Results are given of experimental study on the spectrum of recombination emission in Ge at a high injection level. Nonequilibrium carriers were produced by application of current pulses in a forward direction toward the Ge diode. The recombination emission was plotted against current density, and it was found that increase in current density shifted the long-wave edge of emission toward lower energy. To prove that this shift was not due to heating of the sample during passage of current, spectra were observed for different frequencies and durations of current pulses, and it was established that the shape of the spectrum did not change for pulse durations ranging from 5 to 10 microseconds or for frequencies ranging from 0.5 to 4 kilocycles. Because of a decline in

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L 18009-63

ACCESSION NR: AP3001299

4

diffusion coefficient the rate of increase in current-carrier concentration during increase in current density may prove to be less than expected. It is noted that if the condition $\frac{e}{4\pi\sigma} \ll \frac{\hbar}{E_g}$ (where σ is conductivity and E_g is width of the forbidden band in the semiconductor) is not fulfilled, the forbidden band determined by electrostatic interaction of carriers will manifest constriction only during emission, not during absorption. This condition in Ge is met if the electron concentration exceeds 3×10^{18} per cm^3. "The authors express thanks to S. M. Ry*vkin for valuable counsel during the performance of their work and to V. L. Bonch-Bruyevich and L. V. Keldy*sh for useful discussions." Orig. art. has: 2 figures and 1 formula.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physical and Technical Institute, Academy of Sciences, SSSR)

SUBMITTED: 28Jan63 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 004

Card 2/2

L 6411-66 EWT(l)/EWT(m)/T/EWP(t)/EWP(b)/EWA(h) IJP(c) JD/AT
ACC NR: AP5027413 SOURCE CODE: UR/0181/65/007/011/3339/3343

AUTHOR: Rogachev, A. A.; Ryvkin, S. M.

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

TITLE: Long-wave recombination radiation in germanium due to the interaction of current carriers

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3339-3343

TOPIC TAGS: germanium semiconductor, recombination radiation, semiconductor carrier, optic transition

ABSTRACT: Experiments are conducted in an attempt to observe recombination radiation in germanium associated with optical transitions during the interaction of current carriers. Since the intensity of these radiative transitions increases sharply with carrier concentration (approximately as $n^2p + p^2n$), a high injection level must be used for such observations as well as a fairly pure semiconductor to avoid transitions with the participation of impurities. These requirements are best met by

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L 6414-66

ACC NR: AP5027413

germanium. Injection in a *p-i-n* diode was used for producing a high concentration of non-equilibrium carriers. The method used in preparation of the specimens is described. Square pulses with a duration of 2 μsec and a prf of 500 cps were used for producing a high injection level. The shape of the emission spectra remains the same within a prf range of 200-300 cps. This indicates that the injection current does not heat the specimens to any great degree. The entire spectrum is shifted toward the low-energy side when the current density is increased. The magnitude of this shift depends on the effective reduction in the width of the forbidden band due to Coulomb interaction. An increase in the current density in the long-wave region of the emission spectrum generates a new long-wave radiation in addition to shifting the spectrum toward the low-energy side. The relative magnitude of this emission increases with current. The authors thank A.A. Grinberg and O.V. Konstantinov for useful consultation, and N.I. Sablina for assistance in conducting the experiment. Orig. art. has: 3 figures, 3 formulas.

SUB CODE: SS/ SUBM DATE: 07Jun65/ ORIG REF: 008/ OTH REF: 001

Card 2/2

L 21157-66 EWT(m)/EWP(t) IJP(c) JD
ACC NR: AP6003785 SOURCE CODE: UR/0181/66/008/001/0187/0191

70
69
B

AUTHORS: Rogachev, A. A.; Sablina, N. I.

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

TITLE: Vanishing of impurity levels in germanium at high injection levels

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 187-191

TOPIC TAGS: germanium, impurity level, radiative recombination, semiconductor carrier, pn junction, phonon, conduction band, ionization, forbidden band, carrier density

ABSTRACT: The authors investigated the radiative recombination of germanium containing 10^{17} cm^{-3} of arsenic at different injection levels up 10^{18} cm^{-3}. The injection of the nonequilibrium carriers was effected by passing short current pulses through the pn junction in the forward directions. The junctions were prepared by fusing an

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L 21157-66

ACC NR: AP6003785 O

alloy of indium with gallium into n-type germanium. The injection current ranged from 0.1 to 200 a. The pulse duration was from 2 to 10 μsec. The spectral instrument was a mirror monochromator with LiF prism, and the radiation detector was a cooled lead-sulfide photoresistance. The separation of the phonon radiation from the impurity radiation was by comparison with the spectra of pure germanium obtained at the same temperatures. The concentration of the injected carriers was estimated from the shift of the edge of the phonon-radiation spectrum towards lower energies, for which an empirical relation valid for the range of concentrations from 10^{17} to 5×10^{18} cm^{-3} (at 77K) was obtained. The results indicate that when the injection level is increased the difference between the impurity band and the conduction band decreases, whereas the distance between the valence band and the impurity band remains practically constant. By checking the temperature dependence of the impurity radiation, it is established that the ionization energy ranges between 0.005 and 0.008 ev, and that the decrease in the width of the forbidden band is proportional to the ionization energy. As applied to arsenic and germanium, this means that the levels of the arsenic should vanish at

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L 21157-66
ACC NR: AP6003785

an injected-carrier density of ~ 1 x 10^{18} cm^{-3}. This means that the structure of the spectra of radiative recombination ceases to be sensitive to the presence of impurity levels when the injected-carrier concentration approaches this value. The authors thank S. M. Ryvkin for a discussion of the results. Orig. art. has: 3 figures and 4 formulas.

SUB CODE: 20/ SUBM DATE: 12Jul65/ ORIG REF: 002/ OTH REF: 008

Card 3/3 BK

L 25476-66 EWT(1)/EWT(m)/EWP(t) IJP(c) JD

ACC NR: AP6009676 SOURCE CODE: UR/0181/66/008/003/0866/0871

AUTHOR: Rogachev, A. A.; Sablina, N. I.

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

TITLE: Recombination radiation of strongly doped germanium

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 866-871

TOPIC TAGS: recombination radiation, germanium, semiconductor impurity, pn junction, semiconductor carrier, optic transition, Coulomb collision

ABSTRACT: The authors investigate the recombination radiation of germanium alloyed with arsenic at concentrations 10^{17}--4 x 10^{19} cm^{-3}. The recombination radiation was excited by injection in a p-n junction. The experimental setup used to plot the emission spectra was described in an earlier paper (FTT v. 7, 3339, 1965). The ratio of the densities in the n- and p-regions of the diodes was such that the injection at liquid-nitrogen temperature was possible in all cases only from the p region to the n region, so that only the recombination radiation occurring in the n region of the diodes was investigated in fact. A long-wave radiation, whose intensity decreased rapidly with decreasing energy, was observed. Extrapolation of the long-wave section of the spectrum to zero energy yielded the value of the energy gap, the narrowing of which was determined from the shift of the long-wave edge of the main recombination radiation resulting from the doping. Arguments are advanced in favor of the hypo-

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L 25476-66

ACC NR: AP6009676

5

thesis that the recombination radiation is due to indirect optical transitions occurring as a result of carrier interaction. The influence of the Coulomb collision of the impurities on the energy spectrum of strongly doped semiconductors is discussed. The authors thank L. V. Keldysh and S. M. Ryvkin for useful discussions and advice, V. L. Bonch-Bruyevich and V. Ye. Khartsiyev for interest in the work, and N. A. Belova for supplying the samples. Orig. art. has: 4 figures and 5 formulas.

SUB CODE: 20/ SUBM DATE: 05Aug65/ ORIG REF: 007/ OTH REF: 007

Card 2/2 CC

L 63511-65 EWA(k)/FBD/EWG(r)/EWT(l)/EEC(k)-2/T/EEC(b)-2/EWP(k)/EWA(h)/
EWA(m)-2 Pm-4/Pn-4/Po-4/Pf-4/Pi-4/Pl-4/Peb SCTB/IJP(c) WG
ACCESSION NR: AP5017320 UR/0181/65/007/007/2206/2208

AUTHOR: Grinberg, A. A.; Rogachev, A. A.; Ryvkin, S. M.

TITLE: Possibility of negative absorption at free-carrier-assisted indirect transitions

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2206-2208

TOPIC TAGS: laser, semiconductor laser, indirect transition, indirect transition laser, stimulated emission, negative absorption

ABSTRACT: An analysis is conducted of criteria required to attain negative absorption due to indirect transitions involving transfer of energy and momentum between electrons (holes) and free carriers. Such a mechanism, first discussed by S. M. Ryvkin in FTT, v. 7, no. 4, 1965, p. 1278, and later analyzed by Ryvkin et al. in FTT, v. 7, no. 7, 1965, p. 2195, requires the presence of an applied electric field to generate hot carriers. Since the main advantage of any indirect transition laser is that only a small concentration of charge carriers is required, the authors consider only the nondegenerate case (absence of carrier degeneracy). It is shown that the criteria for attaining negative absorption by means of indirect free-carrier-assisted transitions is identical to those for phonon-assisted transitions, derived by N. G. Basov et al. in 1960. It is shown that amplification can be achieved at a

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ACCESSION NR: AP5017320

moderate concentration of excess carriers in semiconductors with the valence and the conduction band minima not displaced relative to one another in the energy momentum epace and for photons with energies several hundreds of ev smaller than the width of the forbidden gap. In the calculations the free carrier absorption, believed to be mainly responsible for failure to achieve laser action by means of indirect phonon assisted transitions (W. Dumke, Physical Review, v. 127, 1962, p. 1559), was taken into account. Orig. art. has: 4 formulas and 1 figure. [CS]

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

SUBMITTED: 23Feb65 ENCL: 00 SUB CODE: SS, EC

NO REF SOV: 003 OTHER: 002 ATD PRESS: 4049

Card 2/2

ROGACHEV, A.A.; RYVKIN, S.M.

Effect of shielding on recombination cross sections in the presence of a Coulomb barrier. Fiz. tver. tela 6 no.12:3742-3745 D '64 (MIRA 18:2)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR, Leningrad.

L 12007-65 EWT(1)/EWG(k)/T Pz-6 AFWL/RAEM(a)/AS(mp)-2/AEDC(a)/ASD(a)-5/
ESD(gs)/ESD(t)/IJP(c) AT
ACCESSION NR: AP4046653 S/0181/64/006/010/3188/3190

AUTHOR: Rogachev, A. A.; Ry*vkin, S. M.

TITLE: Tunnel-type radiative recombination in semiconductors

SOURCE: Fizika tverdogo tela, v. 6, no. 10, 1964, 3188-3190

TOPIC TAGS: tunnel effect, radiative recombination, Raman spectrum, semiconductor diode

ABSTRACT: The experiments were conducted with n-p junctions made of a material with a high impurity density in order to be able to display tunnel-type radiative recombination more clearly. The diodes were made by fusing tin with p-type material with a zinc concentration on the order of 2×10^9 cm^{-3}. The n-p junction was approximately 1×10^{-3} cm^2 in area. The tests have shown that with increasing current the Raman spectrum shifts towards higher energies but, unlike the situation in earlier investigations, an increase in

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L 12007-65
ACCESSION NR: AP4046653

2

the current results in a strong shift in the spectrum (by 0.4 ev) and the intensity of the long-wave components does not saturate with increasing current, but passes through a maximum. It is shown briefly that the experimental results can be reconciled with the model proposed by J. I. Pankove (Phys. Rev. Letters, v. 9, 283, 1962), wherein the observed radiation is connected with tunnel-type radiative recombination of electrons from the n-region with holes from the p-region of the n-p junction. "The authors thank M. Ye. Rusanova for help with the experiment." Orig. art. has: 2 figures.

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

SUBMITTED: 01Jun64 ATD PRESS: 3120 ENCL: 00

SUB CODE: SS NO REF SOV: 005 OTHER: 002

Card 2/2

L 15287-65 EWG(j)/EWT(m) Pb-4 SSD/AFWL/AMD
ACCESSION NR: AR4045857 S/0299/64/000/014/M021/M021

SOURCE: Ref. zh. Biologiya. Svodny*y tom, Abs. 14M139

AUTHOR: Chertkov, I. L.; Sukyasyan, G. V.; Novikova, M. N.; Rogacheva, L. S.; Shepshelevich, L. L.; Maksimenko, A. S.; Raushenbakh, M. O.

TITLE: New data on the morphological basis of secondary sickness with bone marrow transplantation in irradiated dogs

CITED SOURCE: Sb. 3 Vses. konferentsiya po peresadke tkaney i organov, 1963. Yerevan, 1963, 243-244

TOPIC TAGS: secondary sickness, bone marrow, transplantation, dog, irradiation, irradiation lethal dose, radiation sickness

TRANSLATION: The experiment was staged on 23 dogs irradiated with a lethal dose (1,000 r). Bone marrow was introduced intravenously in a dose of $5 \times 5 \times 10^9 - 15 \cdot 10^9$ nuclear cells. Donor erythrocytes were determined by differential agglutination using dogs A- as donors and dogs A+ as recipients. Leukocytes were determined by sex

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L 15287-65
ACCESSION NR: AR4045857

chromation (donors - females, recipients - males). To determine the activity of immunologically competent cells, the donors were immunized with a pure Vi-antigen of typhoid bacilli and the Vi-antibodies were determined in the recipients. A myelogram investigation showed that aplasia and hypoplasia appear in 2 to 3 days, and hemopoiesis is partially restored in 4 to 5 days. Young myeloid cells appear in the recipient's blood and in 5 to 7 days donor erythrocytes (2 to 3.5%) also appear. From the seventh day hyperbasophilic cells are found which the authors regard as transitional forms from hemocytoblasts to lymphocytes. Later on hemopoiesis stopped, but the number of lymphocytes increased sharply reaching 60 to 80% of the total number of leukocytes by the 8th to 9th day. Opening of the bone marrow disclosed reticular hyperplasia typical for radiation sickness. The time required for transformation of blood formation was determined by antigen differences between donor and recipient. The conclusion is drawn that secondary sickness is caused by the transformation of basic blood-forming cells into immunologically competent ones.

SUB CODE: LS ENCL: 00

Card 2/2

GUTKIN, A.A.; ROGACHEV, A.A.; SEDOV, V.Ye.; TSARENKOV, B.V.

Low-inertia light source from gallium arsenide. Prib. i tekh. eksp. 8 no.4:187-188 Jl-Ag '63. (MIRA 16:12)

1. Fiziko-tekhnicheskiy institut AN SSSR.

ASNIN, V.M.; ROGACHEV, A.A.

Dependence of the width of the forbidden zone in germanium on the current carrier concentration. Fiz. tver. tela 5 no.6:1730-1732 Je '63. (MIRA 16:7)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR, Leningrad.

MOGACHEV, A. N.

"Paleoliticheskiye zhilishcha i poseleniya v Vostochnoy Yevrope."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

ROGACHEV, A. V.

5417. Kratkoye rukovodstvo po vchebnoy gidrometricheskoy praktike. Dlya studentov gidrotekhn. spetsial'nosti. Sost. A. V. Rogachev. Kuybyshev, 1954. 82 s. 14 sm. (M-vo vyssh. obrazovaniya SSSR. Kuybyshevskiy gidrotekhn. in-t im. A. I. Mikoyana). 500 ekz. B. ts.— (54-57956) 551.48.018 (076.5)

SO: Knizhnaya Letopis', Vol. 1, 1955

ROGACHEV, A. V., Candidate Tech Sci (diss) -- "Investigation of the river runoff within the northern Transvolga region". Moscow, 1959. 20 pp (Min Agric USSR, Moscow Inst of Water Economy Engineers im V. R. Vil'yams), 150 copies (KL, No 22, 1959, 116)

3 (7)

AUTHOR: Rogachev, A. V. SOV/50-59-9-7/16

TITLE: On the Problem of Mapping a River Discharge

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 9, pp 32 - 36 (USSR)

ABSTRACT: One of the principal methods of determining some hydrological calculation parameters required for projecting hydraulic structures is the mapping method which has been in wide use after the publication of the map for the discharge standard by D. I. Kocherin (Ref 3). To determine the discharge standard of rivers which are not yet investigated, the map by B. D. Zaykov (Ref 1) is used at present. The outstanding shortcomings in the available maps of the isolines of the discharge standard are pointed out here. According to investigations by the author, the error in the discharge standard in the map of Zaykov in the basin of the Bol'shoy Irgiz amounts to ±82%, and under consideration of the usual errors in a map to 102%. These shortcomings can be eliminated by drawing the regional maps according to hydrological regions or subregions. This permits the map scale to be enlarged 3-4 fold, the gradients to be reduced by at least one-half, the center of gravity of the drainage areas to be determined more accurately, the

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largest possible number of hydrometrical stations to be used, the local characteristics of the drainage areas to be considered, and the map accuracy to be increased. This is illustrated here by the example of the map of isolines for the mean annual discharge over several years in the North Zavolzh'ye. Next, the map of the mean annual turbidity is investigated, and the preference of regional maps of this kind is shown by the example of North Zavolzh'ye. Among the available maps of this kind, D. L. Sokolovskiy and V. G. Andreyanov recommend the map by G. I. Shamov (Ref 5). It is shown that on this map the error attains 1400% in some cases. The important shortcomings of a small-scale map for the mean annual turbidity can be greatly eliminated by drawing the regional maps on a large scale of relatively small hydrological regions and subregions. The author developed such a map for North Zavolzh'ye on a scale of 1 : 1,500,000. A comparison of this map with that by Shamov clearly shows the advantage of the former. In conclusion it is said that it is inconvenient to draw small-scale maps. It is pointed out that not every parameter of the river discharge can be represented in the form of corresponding isolines on a

geographic map. It is wrong to plot the minimum discharge, the variation parameters of the annual discharge and of the maximum discharge, the distribution of the discharge in the course of a year, if these parameters also depend on the very complicated, not yet investigated hydrogeological conditions, the magnitude of the drainage area, etc. There are 2 figures and 5 Soviet references.

ROGACHEV, B.; SEDEL'NIKOV, E.; TEMES, A.

Transistorized microvoltmeter. Radio no.6:20-22 Je '60.
(MIRA 13:7)

(Voltmeter)

R6625

S/107/60/000/006/005/006/XX
E192/E282

9,6000 (1099, 1159, 1160)

AUTHORS: Rogachev, B., Sedel'nikov, E., and Temes, A.

TITLE: Microvoltmeter Based on Transistors

PERIODICAL: Radio, No. 6, 1960, pp. 20-22

TEXT: The instrument described is designed primarily for the prospecting for various useful minerals. The instrument covers a frequency range extending from 100 - 3,000 c/s. It is provided with a number of filters which can easily be changed. At the minimum frequency of 412 c/s the filter has a bandwidth of 40 c/s and the slope of the filter characteristic is 60db per octave. The instrument has four measuring ranges: 30,100,300,1000 and 3000 microvolts. The sensitivity of the first scale is 0.3 microvolts. The supply voltage for the instrument is 22.5V and the current taken by it is 7mA. The instrument operates at temperatures between -15 and +45°C. It is provided with a calibrator which operates at 3V. The weight of the instrument with its supply batteries is 3.0kg. A detailed circuit diagram of the instrument with a filter for the frequency of 412 c/s is shown in Fig. 2. A ferrite core antenna together with the condenser C_1 (see Fig. 2)

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E192/E282

Microvoltmeter Based on Transistors

forms the input circuit of the instrument. The signal from the circuit is applied to the input of the amplifier which is based on 5 germanium transistors which are connected as grounded emitter amplifying stages. The gain of the amplifier is stabilized by means of the resistances R_1, R_{13}, R_{16}, R_{22} and R_{25}, and also by the self-bias on the bases of the transistors. The first stage of the amplifier is provided with a temperature-sensitive resistor R_4 which acts as a compensating element. This stage is supplied with a voltage of 3V in order to reduce its noise. The signal from the output of the first amplifying stage is applied to a voltage divider which changes the sensitivity of the instrument. The third stage of the amplifier contains a resonant filter consisting of the transformer L_2 and the condenser C_8. The output of the amplifier is followed by a bridge rectifier based on semiconductor diodes. The μA-meter connected into the diagonal of the bridge is calibrated in microvolts corresponding to the voltage at the receiving antenna. The scale of the instrument is linear between 10 and 30 microvolts. The calibrator of the generator is

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Microvoltmeter Based on Transistors

based on 2 transistors and is used for checking the gain stability of the amplifier. The layout of the instrument is illustrated in Figs. 3 and 4. There are four figures.

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ACC NR: AP7003118 SOURCE CODE: UR/0079/66/036/007/1348/1348

AUTHOR: Ponomarev, S. V.; Rogachev, B. G.; Lutsenko, I. F.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Synthesis of vinyloxystannanes

SOURCE: Zhurnal obshchey khimii, v. 36, no. 7, 1966, 1348

TOPIC TAGS: vinyl compound, organic synthetic process, organotin compound

ABSTRACT: In the reaction of trialkylalkoxystannanes with enolacetates of isobutyric and isovaleric aldehydes, probably as a result of steric hindrances, previously undescribed organotin O-derivatives of the enol form of the aldehydes are formed instead of the expected alpha-stannylated carbonyl compounds. Dropwise addition of trialkylmethoxystannane to the enolate of the corresponding aldehyde produced exothermic reactions, yielding vinyloxystannanes: triethyl-(beta,beta-dimethyl)-vinyloxystannane, triethyl(beta-isopropyl)vinyloxystannane, and tripropyl(beta,beta-dimethyl)vinyloxystannane. The infrared, ultraviolet, and proton magnetic resonance spectra of the compounds obtained are discussed. Reaction of triethyl(beta,beta-dimethyl)vinyloxystannane with methanol leads to transesterification of the O-organotin derivative. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 08Jan66 / ORIG REF: 001 / OTH REF: 001

UDC: 547.35

Card 1/1

0925 0074

ROGACHEV, Boris Vasil'yevich

[Manual on a charge method with measurement of a magnetic field] Rukovodstvo po metodu zariada s izmereniem magnitnogo polia. Moskva, Nedra, 1965. 100 p. (MIRA 18:5)

BOGACHEV, B.V.; SEDEL'NIKOV, E.S.

Using super low frequency range in geophysical prospecting. Razved. i okh. nedr 30 no.9:38-41 S '64.
(MIRA 17:12)

1. Tsentral'nyy nauchno-issledovatel'skiy gornorazvedochnyy institut tsvetnykh, redkikh i blagorodnykh metallov, Moskva.

S/169/61/000/011/019/065
D228/D304

AUTHOR: Rogachev, B.V.

TITLE: Wave pictures over tectonic dislocations

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 11, 1961, 22, abstract 11A200 (Tr. Tsentr. n.-i. gorno-razved. in-ta no. 33, 1959, 4 - 21)

TEXT: Examples are quoted for distinguishing tectonic dislocations of the fault-, step-, and graben-type from the seismic prospecting data of the KMPV (KMPV). Theoretical hodographs of the main waves were computed for different angles of the intersection of the observational profile and the line of tectonic disturbance. In addition, methods of determining the location of a fault from the peculiarities of the wave picture are indicated. [Abstractor's note: Complete translation].

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S/169/62/000/006/042/093
D228/D304

AUTHOR: Rogachev, B. V.

TITLE: Apparatus for electric prospecting by low-frequency current on transistors

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 6, 1962, 33-34, abstract 6A252 (Tr. Tsentr. n.-i. gornorazved. in-t, no. 34, 1959, 52-67)

TEXT: Two schemes of loop-run generators and three schemes of receivers with frame antenna are described. The apparatus can be used, too, in operations by the two loop, connected loop, variable magnetic-field intensity measurement, and charged body methods, etc. 1) The two-frequency receiver can be used to measure the components and the gradient angle of the variable magnetic field's total vector on frequencies of 480 and 1980 c/s. The receiver is a two-frequency multilimit microvoltmeter with an inner calibrator. A receiving loop, shielded from the electric field and fastened on a tripod, serves as the pickup. The receiver's size is 255 x 110 x

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Apparatus for electric ...

125 mm. The maximum sensitivity is 0.3 μv per scale division; the measurement error is not more than 2% of the corresponding upper measurement limit. 2) The microvoltmeter "Aldan-1" is intended for measuring magnetic field components on a frequency of 40 c/s. The device has an inner calibrator and a filter for suppressing commercial interference. The pickup is a receiving loop with rotary gear. The receiver's dimensions are 255 x 110 x 125 mm; the sensitivity is 0.3 μv per scale division. The receiver is characterized by its high performance stability at temperatures varying from -10 to +45°C. The measurement error is not more than 1% of the corresponding upper measurement limit. 3) The phase-amplitude compensator is intended for measuring the ratio of the amplitudes and the shift of phases between two directions. The device works off different antenna on a frequency of 480 c/s. For the amplitude ratios the scale reading precision is 0.1%; the accuracy amounts to 15' for the phase scale. The signal level on the loop where this accuracy is realized is 30 μv. The receiver's dimensions are 340 x 130 x 146 mm. 4) The portable miniature generator ПМГ-1 (PMG-1) runs on a loop, which is held in an aluminum shield, at frequencies of 480

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and 1980 c/s. 5) The portable miniature generator PMG-2 is intended for exciting a variable electromagnetic field on frequencies of 480 and 1980 c/s by means of a loop. The generator power of 7 watts allows assured reception with an "Aldan-1" type receiver at a distance of 80 m from the generator. [Abstracter's note: Complete translation.]

Card 3/3

ROGACHEV, D.L.

Category : USSR/Solid State Physics - Structural Crystallography E-3

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3693

Author : Zaslavskiy, A.I., Rogachev, D.L.
Title : Determination of the Laue Class and Orientation of an Unfaced Crystal from One Photograph of the Stationary Crystal in Polychromatic Radiation

Orig Pub : Kristallografiya, 1956, 1, No 2, 159-164

Abstract : The determination of the Laue class and of the orientation of an unfaced crystal is usually performed by taking three photographs in a flat cassette. This article proposes that this determination be performed for crystals giving a rich interference pattern by using a single photograph in a cylindrical cassette. The spherical coordinates of the reflexes and of the points of intersection of the zonal curves are determined with the aid of a grid of curves ρ = const and φ = const. The data obtained are plotted directly on a Fedorov sphere, thereby simplifying the work and reducing the time of determination.

Card : 1/1

GINZBURG, I.V.; ROGACHEV, D.L.; ANTONYUK, Ye.S.; NALIVKIN, A.B.

Holmquistite, a mineral of the rhombic amphibole group. Izv.Kar.i Kol.fil.AN SSSR no.5:62-76 '58. (MIRA 12:9)

1. Geologicheskiy institut Kol'skogo filiala AN SSSR.
(Holmquistite)

20-119-5-

AUTHORS: Ginzburg, I. V., Rogachev, D. L., Bendareva, A. M.

TITLE: New Data on Holmquistite (Novyye dannyye o gol'mkvistite)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 5, pp. 1013-1016 (USSR)

ABSTRACT: Lithium-amphibole is on the Kola peninsula mainly spread in the contact-zone of spodumene-pegmatites and the anorthosites and amphibolites containing them. Holmquistite is a metasomatic mineral. In the exocontact it is in paragenesis with biotite, ordinary hornblende, labrador-andesine, clinozoisite, quartz, tourmaline and with the ore minerals. In the endocontact it is sometimes associated with andesine-oligoclase, quartz, biotite, apatite and sometimes with spessartite, schorl and ore minerals. Monomineral separations of holmquistite are sometimes observed at the immediate contact of the veins. Holmquistite is considered as monoclinic (refs 2-5), but according to the position of the indicatrix it can be considered rhombic (according to I. V. Ginzburg, 1948). This uncertainty of its symmetry caused the present investigation. Holmquistite crystals in

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the pegmatite-endocontact were selected for it and x-ray-structurally investigated. Columella-shaped, headless crystals form two types: bounded by a prism (110) or by a prism (hk0) and a pinacoid. The present holmquistite is violet: light with a tinge of pink in the cross section and dark with a tinge of blue in longitudinal sections. The coloring, the pleochroism, and the angle of the optical axes vary. Its optical orientation corresponds to the rhombic amphiboles. 18 elements were spectroscopically found in this holmquistite (by L. S. Kuznetsov): Mg, Si, Fe, Al (strong lines), Li, Na, Mn, Ca (weak lines), Ga, K, Cr, Ti, Zn, Cu (traces of lines); besides these O, H, F and C were chemically proved. In contrast to other holmquistites (references 4,5) no K_2O was determined here and CO_2 in tiny blisters of liquid and gas was for the first time detected here. By a calculation (reference 6) of data of the chemical analysis (table 1) 2 variants of the chemical formula of holmquistite (I and II) were established. They are in a simplified form (III and IV) compared with the anophyllite and other amphibole formulae (references 2,3,7,8). Further the

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symmetry, the parameter of the unit cell and of the spatial group were determined. Figure 1 shows the stereographic projection according to which the crystal belongs to the rhombic syngony of Laue of class D_{2h}. Radiographs of the vibrations were taken. The investigated amphibole which belongs to typical holmquistites is no doubt rhombic and not monoclinic. Other holmquistites (references 4,5) might also belong to the rhombic minerals. The classification of the amphiboles is to be corrected accordingly and the synonym lithium-glaucophane (references 7,11) is to be abolished. There are 1 figure, 2 tables, and 11 references, 6 of which are Soviet.

ASSOCIATION: Kol'skiy filial Akademii nauk SSSR (Kola Branch of the AS USSR)

PRESENTED: November 2, 1957, by D. I. Shcherbakov, Member, Academy of Sciences USSR

SUBMITTED: November 1, 1957

DORFMAN, M.D.; ROGACHEV, D.L.; GOROSHCHENKO, Z.I.; USPENSKAYA, Ye.I.

Canacite, a new mineral. Trudy Min.muz. no.9:158-166 '59.
(MIRA 12:6)

(Khibiny Mountains--Calcium silicates)

ROGACHEV, D.L.; ANTSYSHKINA, A.S.; PORAY-KOSHITS, M.A.

Some zirconium sulfates. Zhur.strukt.khim. 6 no.5:791-792 S-O '65. (MIRA 18:12)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova. Submitted April 24, 1965.

GORYACHEV, A.A.; IGNAT'YEV, O.S.; ROGACHEV, D.L.

Synthesis of chkalovite. Dokl. AN SSSR 146 no.5:1179-1181 O '62.
(MIRA 15:10)

1. Institut khimii i tekhnologii redkikh elementov i mineral'nogo syr'ya Kol'skogo filiala im. S.M.Kirova AN SSSR.
(Chkalovite)

BONDAREVA, A.M., ROGACHEV, D.L., SAKHAROV, A.S.

Alkali amphibole containing lithium from the contact zone of the Lovozero massif. Zap. Vses. min. ob-va 88 no.6:710-712 '59.
(MIRA 13:8)

1. Geologicheskiy institut Kol'skogo filiala AN SSSR.
(Lovozero Tundras--Amphibole)
(Lovozero Tundras—Lithium)

SEMAKOV, P.; POGUDIN, N.; LOSHCHININ, D.; ROGACHEV, F.; CHATSKIY, P.; MAKAROVICH, A.; BEKETOV, I.; ROZENFEL'D, B. BIBIK, N.

This is for our beloved country. Sov.protreb.koop. 5 no.8:6-7 Ag '61. (MIRA 14:7)
(Cooperative societies) (Socialist competition)

L 13526-63 EWP(k)/EWT(d)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-4 JD

ACCESSION NR: AP3002603 S/0122/63/000/006/0058/0060

AUTHOR: Melamed, V. I. (Candidate of technical sciences, Docent); Rogachev, F. I. (Engineer)

TITLE: A study of the micropolishing process

SOURCE: Vestnik mashinostroyeniya, no. 6, 1963, 58-60

TOPIC TAGS: micropolishing, surface roughness, carbonated water coolant

ABSTRACT: The micropolishing method was tested on a lathe and on a special grinder for U-shaped parts. It was desired to polish specimens with original surface roughness of the 7th to 9th class. [Abstracter's note: roughness classes are not explained.] The difference between the usual polishing and micropolishing methods is that in the latter the part to be polished rotates at a high speed while the polishing wheel rotates slowly. An attachment designed by Institut mashinovedeniya AN SSSR (Institute of Science of Machines, Academy of Sciences, USSR) for use on the lathe model 1616 was used in experiments. Various types of steel bars with different diameters were polished by the new method. A second set of experiments was

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ACCESSION NR: AP3002603

made on the semiautomatic lathe LZ-26C, designed for polishing the grooves for inner rings of double spherical ball bearings. Different kinds of polishing wheels were tested and various cutting fluids were used in the experiments. The authors conclude that this method improves surface smoothness and that carbonated water should be used as a coolant. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 15Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 004 OTHER: 000

Card 2/2

MELAMED, V.I., kand. tekhn. nauk, dotsent; ROGACHEV, F.I., inzh.

Investigating the process of microgrinding. Vest. mashinostr. 43 no.6:58-60 Je '63. (MIRA 16:7)

(Grinding and polishing)

MELAMED, V.I.; ROGACHEV, F.I.

Determining the depth of workhardened metal layer by the method of cutting thin shavings and measuring the thermoelectric power. Trudy Sem.po kach.poverkh. no.5:248-255 '61. (MIRA 15:10)

(Surface hardening--Measurement)

FRENKEL', Semen Shmul'yevich; PASTUKHOV, V.M., nauchnyy red.; ROGACHEV, F.V., red.; SOROKINA, S.L., red.; DORODNOVA, L.A., tekhn. red.

[Laboratory exercises and problems on milling work] Laboratornye raboty zadachi po frezernomu delu. Moskva, Vses. uchebno-pedagog. izd-vo Proftekhizdat, 1961. 180 p. (MIRA 15:3)
(Milling machines) (Technical education)

BUNDIN, Aleksandr Tikhonovich; REMEZOV, N.S., nauchnyy red.; ROGACHEV, F.V., red.; DORODNOVA, L.A., tekhn. red.

[Mechanization and automatization of forging processes] Mekhanizatsiia i avtomatizatsiia protsessov kovki i goriachei shtampovki. Moskva, Vses. uchebno-pedagog. izd-vo Trudrezervizdat, 1959. 150 p. (MIRA 14:9)

(Forging machinery)

ABAKUMOV, Mikhail Mitrofanovich; KUZ'MIN, V.V., nauchnyy red.; ROGACHEV, F.V., red.; NESMYSLOVA, L.M., tekhn. red.

[Attachments for lathes] Prisposobleniia dlia tokarnykh stankov. Moskva, Vses. uchebno-pedagog. izd-vo Proftekhizdat, 1961. 101 p. (MIRA 14:8)

(Lathes--Attachments)

KRYMSKIY, Ivan Ivanovich; SOKOLOV, I.G., nauchnyy red.; ROGACHEV, F.V., red.; SAZIKOV, M.I., red.; BARANOVA, N.N., tekhn. red.

[Guide for the equipment of a training section in forging processes] Rukovodstvo po oborudovaniiu uchebnogo kabineta kuznechnogo proizvodstva. Moskva, Proftekhizdat, 1962. 54 p. (MIRA 15:5)

(Forging--Study and teaching)
(Visual education--Equipment and supplies)

LACHINOV, Nikolay Vladimirovich; MELEYEV, A.S., nauchnyy red.; ROGACHEV, F.V., red.; TOKER, A.M., tekhn.red.

[Installation and repair of heat engineering equipment] Montazh i remont teplotekhnicheskogo oborudovaniia. Moskva, Vses.uchebno-pedagog.izd-vo Proftekhizdat, 1960. 478 p. (MIRA 14:3)

(Boilers)

MIKHAYLOV, Sergey Mikhaylovich; KANYGIN, Viktor Sergeyevich; PASTUKHOV, V.M., nauchnyy red.; ROGACHEV, F.V., red.; SUSHKEVICH, V.I., tekhn.red.

[Operational training of lathe operators in plants; methodological instruction materials] Proizvodstvennoe obuchenie tokarei na predpriiatiiakh; instruktsionno-metodicheskie materialy. Moskva, Vses.uchebno-pedagog.izd-vo Proftekhizdat, 1960. 101 p. (MIRA 14:4)

(Turning)

RODICHEV, F.V.

PERYSHKIN, Aleksandr Vasil'yevich; TRET'YAKOV, Nikolay Petrovich; USPAZOV, Mikhail Alekseyevich, redaktor; RODICHEV, F.V., redaktor; OSTRIROV, N.S., tekhnicheskiy redaktor

[Physics] Fizika. Izd. 2-e, ispr. i dop. Moskva, Vses. uchebno-pedagog. izd-vo Trudrezervizdat, 1955. 435 p. (MLRA 8:10)
(Physics)

ROGACHEV, G.D.

Submerged-type electric centrifugal pumps. Vod. i san. tekh. no.7: 17-19 Jl '56. (MLRA 9:10)

(Centrifugal pumps)

ROGACHEV, G.N.

Wall paper of a physics club. Fiz. v shkole 22 no.2:78 Mr-Ap '62. (MIRA 15:11)

1. 1-ya shkola-internat, g. Suzdal'.
(Physics--Study and teaching)

ROGACHEV, Ivan Davydovich

[Dodder and its control] Sary chyrmook zhana aga karshy kuroshuunun charalary. Frunze, Kyrgyzstan mamlekettik basmasy, 1962. 16 p. [In Kirghiz] (MIRA 17:11)

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ROGACHEV, I.I.

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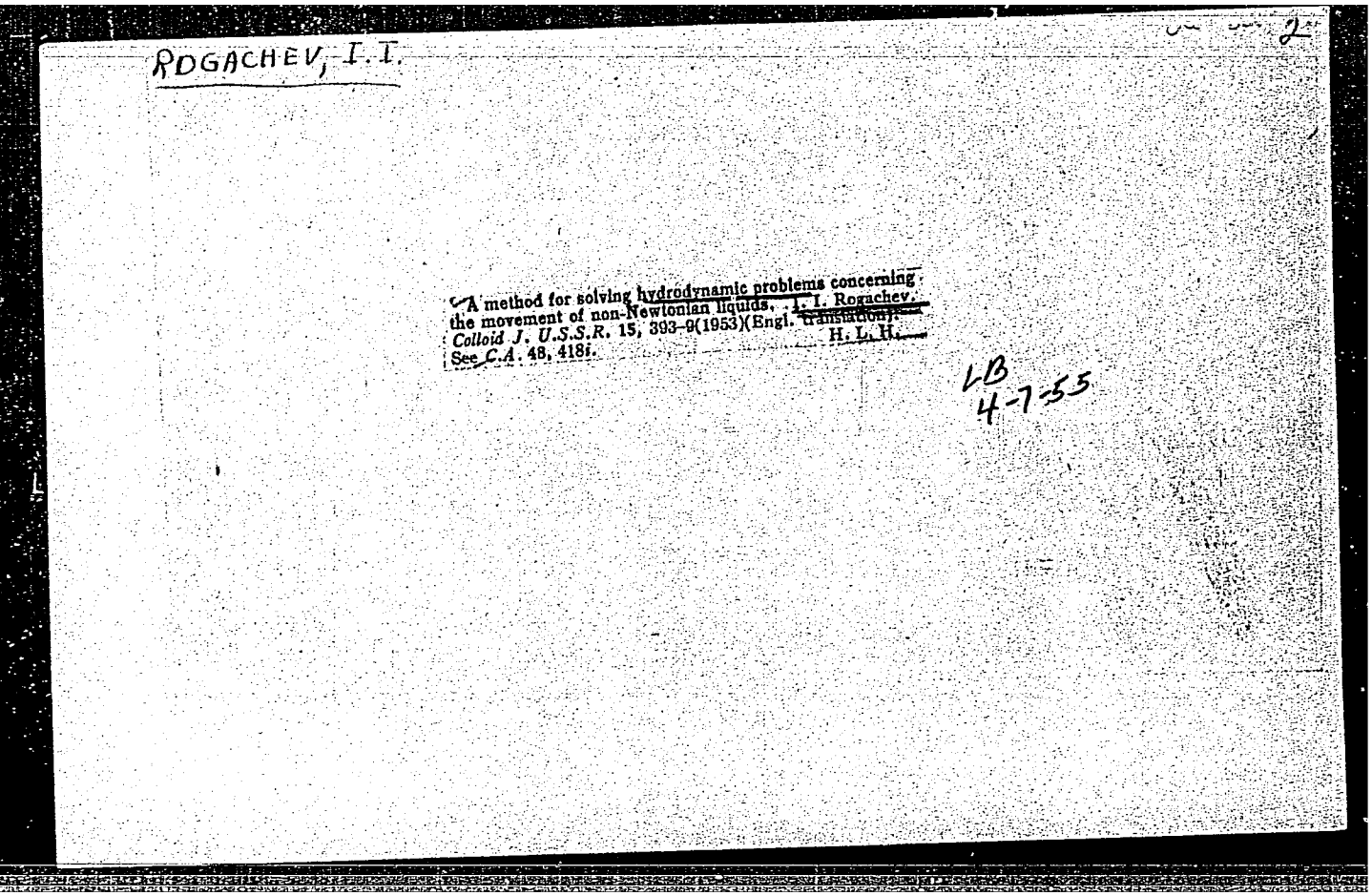
Chem Abs V48
1-25-54
Jenual + Physical
Chemistry

A method for solving hydrodynamic problems concerning the movement of non-Newtonian liquids. I. I. Rogachev. *Kolloid. Zhur.* 15, 384-90(1953).—If a liquid has 2 different viscosity values for shearing stresses above and below a crit. stress, it behaves as a mixt. of 2 immiscible liquids. Equations are derived for its motion in a concentric-cylinder viscometer, in a capillary, and around a vibrating paddle.

LB 6/6/54

Kolomensk Pedagog. Inst.



ROGACHEV, I. I.

"A method for solving hydrodynamic problems concerning the movement of non-Newtonian liquids," I. I. Rogachev, *Colloid J. U.S.S.R.* 15, 393-9(1953)(Engl. translation). H. L. H.
See *C.A.* 48, 4181.

LB
4-7-55

TRUKHEV, T. I.

"Phenomenological Hydrodynamics of a Non-Newtonian Fluid." Sub 25 Jun 51, Moscow State Pedagogical Inst imeni V. I. Lenin.

Dissertations presented for science and engineering degrees in Moscow during 1951.

Cand Phys-Math Sci

SO: Sum. No. 440, 9 May 55.

BODIN, Aleksandr Platonovich; ROGACHEV, Il'ya Fedorovich; KHAVICH, Yefim Abramovich; ZELENETSKAYA, L.V., red.; SAYTANIDI, L.D., tekhn. red.

[Organization of the installation of electric equipment in rural electric power systems] Organizatsiia elektromontazhnykh rabot na sel'skikh elektroustanovkakh; spravochnoe rukovodstvo. Moskva, Izd-vo M-va sel'.khoz.RSFSR, 1961. 210 p. (MIRA 14:12)
(Rural electrification)
(Electric power distribution--Equipment and supplies)

MORGULIS, P.S., dotsent, kand.tekhn.nauk; ROGACHEV, I.I., dotsent, kand. fiziko-matematicheskikh nauk

Programs of technical subjects taught in teachers colleges. Uch. zap.Kol.ped.inst. Politekh.ser. 4 no.1:87-94 '59. (MIRA 14:4)
(Teachers, Training of) (Technical education)

Rogachev, I.M.

48-7-7/21

AUTHORS: Dzhelepov, B.S., Preobrazhenskiy, B.K., Rogachev, I.M., Tishkin, P.A.

TITLE: The Spectrum of the Conversion Electrons of No^{160} (Spektr konversionnykh elektronov No^{160})

PERIODICAL: Izvestiya Akad. Nauk SSSR, Ser. Fiz., 1957, Vol. 21, Nr 7, pp. 962 - 965 (USSR)

ABSTRACT: The spectra of the conversion electrons of the erbium and holmium fractions were investigated by means of two lense spectrometers. These fractions had been won from tantalum which was irradiated with the energy of 660 MeV.

1.) The spectrum of the conversion electrons of a one day isotope was investigated in several series as long as the source did not decay. After 24 hours, after the elimination of the source, the spectrum manifested itself as shown in figure 1. The half-decay period for the lines which are given in table 1 lie in the domain of 25 to 30 hours which justifies the assumption that all lines of table 1 belong to one isotope. The comparison with published data shows that the observed activity is probably con-

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The Spectrum of the Conversion Electrons of Ho^{160}

nected with Er^{160}. It was shown in earlier works that Ho^{160} in the ground and isomeric states is obtained from the decay of Er^{160}.

2.) The holmium fraction was investigated by means of a two--lense spectrometer. Two preparations were investigated: The first one contained besides Ho^{160} an admixture of Er^{160}, therefore the decay curves have a complicated form. The second source was again cleaned; first the erbium fraction was eliminated and after 25 hours the pure holmium Ho^{160}; the intensity of all lines agreed with the period $5,3 \pm 0,2$ hours. Moreover 4 series of measurements in energy intervals of 2 - 200 keV were carried out. The total view of the obtained electron spectrum is represented on figure 2. Table 2 records the line energies and their id entification. There are 2 tables, 2 figures and 5 references, 3 of which are Slavic.

ASSOCIATION: Leningrad State University imeni A.A.Zhdanov
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Rogachev, I. M.

AUTHORS: Dzhelepov, B. S., Preobrazhenskiy, B. K., Rogachev, I. M., Tishkin, P. A. 48-22-2-3/17

TITLE: The Conversion Electron Spectrum of the Dysprosium Fraction (Spektr konversionnykh elektronov disprozivevoy fraktsii)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958, Vol. 22, Nr 2, pp. 126-134 (USSR)

ABSTRACT: Conversion spectra of the neutron-saturated dysprosium isotopes were investigated here. The dysprosium fraction was chemically and chromatographically separated from the tantalum target bombarded with fast protons in the synchro-cyclotron ОИЯИ. The irradiation lasted several hours, the separation of the rare earths took place 20-30 hours after the termination of the irradiation. The situation was more complicated than was to be assumed according to the Siborg tables. In the conversion spectrum the authors determined lines whose intensity decreased with half lifes of: a) 7,5 ÷ 11 hours, b) 38 hours and c) 4,7 days. Due to the difficult situation explanations are here given according to groups of half-lifes. The Dy-fraction was investigated in two β-spectrometers with magnetic lenses (magnetic-lens

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spectrometer). 1.) In the spectrum of the dysprosium--fraction 15 electron-lines whose intensity decreased with a half-life of 7,5 $\pm$ 1 hours were determined in the range of 3 $\pm$ 150 keV. All lines repeated themselves in 6 series (performed with 2 sources). The value of the half-life of 7,5 hours was determined according to the decrease in intensity of the lines with 7,4 keV. The electron lines with 5,36 and 42 keV are L-MM, K-LL, K-L, and M Auger--electrons, the lines with 13,5, 57,5, 64,0, 74,0 and 81,0 keV were identified as conversion electrons K, L and M of the transitions with 65,5 and 82,5 keV in Tb. The electron lines with 48,0, 92,0, 98 and 142 keV apparently are K and L conversion electrons which correspond to the transitions with 100 and 150 keV, whereas the line with 132 keV apparently corresponds to the K-electrons of the transition with 184 keV. All transitions given here were for the first time observed by the authors. - 2.) Beside the lines with a time of decrease in intensity of about 10 hours 5 weak electron lines with a time of decrease in intensity of about 38 hours were determined in the β-spectrometer with single lens. For the time being it was not possible to ascribe these lines to a certain isotope. - 3.) After these

lines (with 10 hours) weaker lines of the conversion electrons, the intensity of which decreased with a half life of (4,5 ± 0,2) days became distinctly visible. K-, L- and M-electrons of the transitions with 63 and 87 keV, L- and M-electrons of the transition with 57 keV, K- and L-electrons of the transitions with 149, 163, 180 and 200 keV, K-electrons of the transitions with 60 and 262 keV were determined. Some of these lines could not be identified. - It is shown that the activity decreasing with a period of 4,5 days can be ascribed to the terbium isotopes. It seems that at least 4 terbium isotopes with a half-life period of about 5 days exist: Tb^{153} (T = 5,1 days), Tb^{155} (T = 5,6 days), Tb^{157} (T = = 4,7 days) and Tb^{161} (T = 6,8 days). Summarizing the authors state that it is possible that Tb^{157} has a half-life of about 5 days, that it is accumulated from Dy^{157} (T = = 8,2 hours) and that some conversion lines corresponding to the period of $\sim$ 5 days might belong to it. The decay-scheme was discussed with L. K. Peker, K. Ya. Gromov helped with the organisation of the works, A. Bagdanov and

The Conversion Electron Spectrum of the Dysprosium Fraction 48-22-2-3/17

A. I. Yashchuk, Student-Diplomants (which prepare for their diplomas) helped with the work.
There are 5 figures, 3 tables, and 9 references, 3 of which are Soviet.

ASSOCIATION: Fizicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A. A. Zhdanova (Institute for Physics in the Leningrad State University imeni A. A. Zhdanov)

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1. Dysprosium isotopes-Conversion spectra 2. Dysprosium isotopes-Irradiation 3. Rare earth elements-Separation

Card 4/4

AUTHORS: Dzhelepov, B. S., Preobrazhenskiy, B. K., SOV/48-22-8-5/20
Rogachev, I. M., Tishkin, P. A.

TITLE: Conversion Electron Spectrum of the Cerium Fraction (Spektr konversionnykh elektronov tseriyevoy fraktsii)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 8, pp. 931 - 934 (USSR)

ABSTRACT: The activity of the cerium fraction in all sources obtained by the authors by irradiation at different times was small. At the beginning of the measurements the counting rate of the most intensive conversion line was 900 pulses per minute. The spectrum of the conversion electrons is shown in figures 1 and 2. Table 1 gives the energies of the lines, their possible identification and their relative intensities. The 15 electron lines that are found are classified into 3 groups according to their half-life. The intensities of the electron lines with energies of 126,2 and 159,1 keV decreased very slowly. These lines are apparently produced by the K- and (L + M) conversion electrons of the well known γ-transition hv=165 keV of the Ce^{139} isotope ($T_{1/2}$ = 140 days). The

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intensity of the electron lines 212,8 and 248 keV decreased with a half-life of 33 hours. These lines can be identified as K- and (L + M) conversion lines of γ-transition. The value of the ratio K/(L + M) indicates a multipole type E3 (Table 2). An isomeric state with an energy of 256 keV corresponding to a half-life of 34,5 hours (Ref 7) exists in the isotope Ce^{137}. The authors are of opinion that considering the comparability of the decay energy (half-life energy) and of the multipole order energy of the observed transition with the data of the isomeric transition in Ce^{137} the activity with a half-life of 33 hours could be ascribed to Ce^{137}. These data do not contradict the decay scheme suggested by Brosi and Kestelle. The intensity of the remaining lines decreased with a half-life of 17 hours. The evidence obtained by the authors is not sufficient to ascribe the lines with a $T_{1/2}$ of 17 hours to one definite Ce-isotope or to one of its daughter products, or to set up decay schemes. The authors express their gratitude to the synchrocyclotron staff and to I.A.Yutlandov. There are 2 figures, 2 tables, and 8 references, 4 of which are Soviet.

Conversion Electron Spectrum of the Cerium Fraction SOV/48-22-8-5/20

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy Institut Leningradskogo gos. universiteta im. A.A.Zhdanova (Scientific Research Institute of Physics at the Leningrad State University imeni A.A.Zhdanov)

Card 3/3

ROGACHEV, I.M.; NIKITIN, M.K.

Conversion electron spectrum of a Pd fraction (in the low energy range). Izv. AN SSSR. Ser. fiz. 28 no.1:72-75 Ja '64. (MIRA 17:1)

ACCESSION NR: AP4010294 S/0048/64/028/001/0072/0075

AUTHOR: Rogachev, I.M.; Nikitin, M.K.

TITLE: Conversion electron spectrum of the Pd fraction /from spallation of silver/ (Low energy region). /Report, Thirteenth Annual Conference on Nuclear Spectroscopy held in Kiev 25 Jan to 2 Feb 1963/

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v.28, no.1, 1964, 72-75

TOPIC TAGS: conversion electron, conversion electron spectrum, palladium isotope, palladium 103, palladium 100, rhodium 103, rhodium 100, electron spectrum

ABSTRACT: The study was concerned with the low-energy part (up to 100 keV) of the conversion electron spectrum of the Pd fraction separated chemically from a silver target bombarded with 660-MeV protons on the synchrocyclotron of the OIYaI (Joint Institute for Nuclear Research at Dubna). The Pd activity was deposited on a tantalum plate and then transferred by thermal evaporation under high vacuum onto a lightly aluminized mica sheet 2 microns thick. The spectrum was recorded by means of a magnetic lens β-spectrometer with intermediate acceleration. The measurements were started two days after separation of the Pd fraction. The electrons were de-

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ACC. NR: AP4010294

tected by a Geiger counter. In all, 12 lines were observed; none of these increased in intensity with time. The decay periods are grouped about two values: 4.-5.2 days and 18 days. The lines with $T_{1/2}$ = 18 days are associated with the decay of Pd^{103} (conversion of the 39.6-keV transition in Rh^{103}). Some of the other conversion lines are tentatively attributed to the decay of Pd^{100} and Rh^{100}. Orig.art.has: 2 tables and 2 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: NS NR REF SOV: 003 OTHER: 002

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ROGACHEV, I.M.; CHECHEV, V.P.; KATYKHIN, G.S.

β_0-Transition in Pb^{210} decay. Vest. LGU 18 no.22:92-96 '63. (MIRA 17:1)

DZHELEPOV, B.S.; ROGACHEV, I.M.

Determining the multipolarity of transitions in Yb^{171} at an energy of 19.3 Kev. Vest. LGU 17 no.4:56-58 '62. (MIRA 15:3)
(Ytterbium--Spectra)

D'YAKOV, B.B.; ROGACHEV, I.M.

Intensities of groups on Auger K-electrons from rare earth elements. Izv. AN SSSR. Ser. fiz. 26 no.2:191-196 F '62. (MIRA 15:2)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A.A.Zhdanova.
(Auger Effect)
(Rare Earths)

34169
S/048/62/026/002/003/032
B101/B102

24.6820

AUTHORS: D'yakov, B. B., and Rogachev, I. M.

TITLE: Intensities of Auger K-electron groups of rare-earth elements

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 2, 1962, 191-196

TEXT: The energy of Auger electrons was measured with a magnetic-lens beta-ray spectrometer of the Kafedra yadernoy spektroskopii LGU (Department of Nuclear Spectroscopy of LGU). The electrons were accelerated with an electric field on the section of the flight-path section parallel to the axis of the apparatus between two lenses. The counter, filled with argon and alcohol vapor (ratio 1:1, pressure 26 mm Hg), was sealed by a collodion film with a transmission threshold of 3-4 kev. Electrons of more than 27 kev were completely transmitted. The apparatus was calibrated by the A- and F-lines of ThB and the L 58-line of Dy^{159}. The relative half-width of these lines was 2.0 %. Samples were obtained by chromatographic separation of the rare earths from a tantalum target which was bombarded

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Intensities of Auger K-electron...

with 660-Mev protons in the synchrocyclotron of OIYaI. Results of measurement: Ce^{139}: (K - LL):(K - LX) = 1.0 : (0.47 ± 0.06). The K - XY group was not separable from the background. Nd^{140}: (K - LL) : (K - LX) : (K - XY) = 1 : (0.55 ± 0.03) : (0.13 ± 0.03). Sm^{145}: (K - LL) : (K - LX) = 1 : (0.4 ± 0.1). The K - XY group did not appear. Dy^{159}: (K - LL) : (K - LX) = 1 : (0.46 ± 0.05). The K - XY group did not appear. Ho^{160*}: (K - LL) : (K - LX) = 1 : (0.53 ± 0.15). K - XY could not be determined owing to the superposition of the L60 and K86 lines. Er^{165}: (K - LL) : (K - LX) : (K - XY) = 1 : (0.55 ± 0.05) : (0.09 ± 0.03). Tu^{166}: (K - LL) : (K - LX) : (K - XY) = 1 : (0.59 ± 0.06) : (0.24 ± 0.07). Further findings:

	(K - LX) : (K - LL)	(K - XY) : (K - LL)
La	0.44 ± 0.10	
Pr	0.55 ± 0.03	0.13 ± 0.02
Pm	0.55 ± 0.10	
Tb	0.46 ± 0.05	
Dy	0.59 ± 0.10	
Ho	0.55 ± 0.06	0.09 ± 0.03
Er	0.59 ± 0.06	0.24 ± 0.07

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Intensities of Auger K-electron...

The data for (K - LX) : (K - LL) fit the experimental curve of M. A. Listengarten (Izv. AN SSSR, Ser. fiz., 24, 1041 (1960)) satisfactorily. M. K. Nikitin, G. S. Kotykhin, and G. S. Novikov are thanked for their chromatographic work. There are 4 figures, 1 table, and 12 references: 9 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: Gray, P., Phys. Rev., 101, 1306 (1956); Burford, A. O., Perkins, J. F., Haynes, S. K., Phys. Rev., 99, 3 (1955).

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Card 3/3

ROGACHEVSKIY, I.N., kand.tekhn.nauk, inzhener-podpolkovnik

Prospects for improving the flying characteristics of planes; from the foreign press. Vest.protivovozd.obor. no.3:40-43 Mr '61. (MIRA 14:7)

(Airplanes)