FIRSOV, V.D. (Michurinsk, Tambovskoy oblasti, Gogolevskaya ul., d.57, kv.7)

Open fracture and dislocation in the knee joint area. Ortop., travm. i protez. 25 no.7:47-48 Jl '64.

(MIRA 18:8)

1. Iz khirurgicheskogo otdeleniya Michurinskoy zheleznodorozhnoy bol'nitsy (nachal'nik - V.N.Korotkov).

FIRSOV, V.

ZAL'TSGEBER, O., kandidat meditsinskikh nauk; NUSBAUM, D., nauchnyy sotrudnik; FIRSOV.V.; KUZNETSOV, A., master proizvodstvennogo obucheniya.

Experience in the cooperation of science and practical work. Prof.-tekh.obr. 12 no.1:5-8 J '55. (MLRA 8:3)

1. Starshiy nauchnyy sotrudnik instituta im. F.F.Erismana (for Zal'tsgeber). 2.Starshiy master remeslennogo uchilishcha po mekhanizatsii sel'skogo khozyaystva No.14 (Moskovskaya oblast') (for Firsov).
(Moscow--Technical education)

FIRSOV, V., redaktor; YAKOVLEVA, Ye., tekhnicheskiy redaktor

[The collective farm chairman; sketches] Predsedatel' kolkhoza; ocherki. [Moskva] Moskovskii rabochii, 1956. 309 p. (MLRA 9:11)
(Collective farms)

FIRSOV, V.

"Stories of an airplane designer" by A.IAkovlev. Reviewed by V.Firsov.
IUn.tekh. 3 no.5:51 My '59. (MIRA 12:7)
(Airplanes--Design and construction)
(IAkovlev, A.)

FIRSOV, V.,inz.

Condensing equipment of heavy-duty steam turbines. Energetika Cz 12 no.2:83-84 F '62.

FIRSOV, V.

[redacted]memade resonance relay. IUn.tekh. 7 no.2:59 F '63. (MIRA 16:4)
(Electric relays)

FIRSOV, V.

Radio waves substituting for cord. IUn.tekh. 7 no.2:40-44 F '63.
(Models and modelmaking—Radio control systems)

FIRSOV, V.D. (poselok Usola Mariyskoy ASSR)

Comparison of the chemical activity of various metals. Khim. v shkole 13 no.5:55 S-O '58. (MIRA 11:9)
(Metals)

FIRSOV, V.F.

Conference on controlling silicosis. Gor.zhur. no.5:78 My '62.
(MIRA 16:1)

1. Predsedatel' Krasnoyarskoy kryaevoy komissii po bor'be s silikozom.

(Miners' phthisis)

SHEVCHUK, F.A., inzh.; FIRSOV, V.F., inzh.

Year-round operation of the GNV-1,25 acetylene generator. Suggested by F.A.Shevchuk, V.F.Firsov. Rats.i izobr.predl.v stroi. no.13:107-109 '59. (MIRA 13:6)

1. Magnitogorskoye montazhnoye upravleniye.
(Gas welding and cutting)

FIRSOV, V.F.

State of silicosis control in the mines of Krasnoyarsk Territory. Vop. bor' s sil. v Sib. no.1:89-92 '61 (MIRA16:12)

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical Analysis. Phase Transitions. B-8

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26102

Author : A.N. Nesmeyanov, B.Z. Iofa, A.A. Strel'nikov, V.G. Firsov
Title : Measurement of Pressure of Saturated Vapors of Solid Alloys by Method of Radioactive Indicators.

Orig Pub : Zh. fiz. khimii, 1956, 30, No 6, 1250-1257

Abstract : The pressure of saturated vapors of solid Zn, Cd and Sb and of alloys corresponding by the chemical composition to SbZn (I), Sb_2Zn_3 (II), Zn_3As_2 (III), and Cd_3As_2 (IV) was measured by Knudsen method in combination with the method of tagged atoms (the radioactive isotopes Sb^{124}, Zn^{65}, Cd^{109}, Cd^{*113} and As^{76} were used). In accordance with the activity of the deposit on the cooled surface above the evaporator, the vapor pressure was calculated by the formula p (mm of mercury column) = 17.14 $\cdot \frac{I}{\alpha}$ $\cdot \sqrt{VT}$ St KVM, where: I is the activity of the deposit in impulses per min., α is the specific activity of the substance in impulses per min., S is the area of the diaphragm in sq. cm, t is the duration of the exposition in sec., T is the

Card : 1/2

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26102

absolute temperature, M is the molecular weight of the substance vapor, K is Klausing's factor. Following equations of the dependence of the vapor pressure on the temperature were found:

log p Sb (mm of mercury column) = -1058.6/T + 11.044 (618 - -703°K);
log p Sb (80% Sb) = -9514.3/T + 9.720 (624 - 725°K);
log p Sb (65% Sb) = -947.0/T + 9.695 (616 - 715°K);
log p Sb (51% Sb) = -9350.3/T + 9.131 (623 - 729°K);
log p Zn = - 7039/T + 9.265 (622 - 665°K);
log p Zn (80% Zn) = -7287.1/T + 9.398 (526 - 633°K);
log p Zn (30% Zn) = -8057.3/T + 9.834 (556 - 658°K);
log p Zn (9.5% Zn) = -7874.8/T + 9.205 (570 - 660°K);
log p Cd = -5866.5/T + 8.748 (416 - 564°K);
log p Cd_3As_2 = -8292.5/T + 11.123 (511 - 648°K).

Comparing the vapor pressure above pure components with that above their alloys, the conclusion was arrived at that I and II dissociated completely before evaporation in the solid phase and that a solid pseudosolution formed on the surface. III and IV do not probably dissociate even in the vapors.

Card : 2/2 * log p Zn_3As_2 = -8658.1/T + 9.053 (601 - 751° K);

AUTHOR: FIRSOV,V.G. PA - 2268

TITLE: An Intense γ - Source with Automatic Control (Intensivnaa γ - istochnik s avtomaticheskim upravleniyem, Russian).

PERIODICAL: Atomnaia Energiia, 1957, Vol 2, Nr 2, pp 182 - 184 (U.S.S.R.).
Received: 3 / 1957 Reviewed: 5 / 1957

ABSTRACT: The present work describes an easy and simple construction of a Co^{60} source with an activity of 1000 curie. The illustrations attached show the total and a sectional view of this device. The source consists of a hollow cylinder of metallic cobalt which is mounted in a metallic tube. The cobalt is covered with a layer of pure aluminium. The samples are irradiated in an ampule and can be raised and lowered by means of a reversible electromotor. The source was transported by means of a special container shown here. The work of the mechanism mounted in the device is controlled from a wiring circuit by means of an electric scheme. The geometric relations of the source chosen here facilitate a maximum utilization of γ quantum fluxes. The intensity of the absorption of energy in a sample with a volume of 5 milliliters (which are mounted in the central part of the cylinder), in the case of measuring by means of a ferrosulphate dosimeter, amounted to $1{,}28.10^{21}$ eV/liter.min or 365 roentgen/sec.

Card 1/2 The field of γ -radiation in the horizontal plane is very constant,

but it decreases quickly in a vertical direction. A regulating device facilitates similar working conditions on the occasion of different experiments.

The operation of this radiation source is not dangerous. In the case of covered samples dose output was lower than 0,01 micro roentgen/sec in all points of the work space. In the case of uncovered samples, however, a narrow bundle with a dose output of about 27 micro roentgen/sec rises to the top, which, after passing through 15 cm, decreases to 0,05 micro roentgen/sec. The temperature in the center of the source, which was measured by means of a thermo-couple, amounts to 16,5° C with daily variations of not more than 1°. The temperature of the surrounding medium is, by the way, about 5 - 6° less. (3 illustrations).

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 9.7.1956
AVAILABLE: Library of Congress.

Card 2/2

FIRSOV, V. G., ERSHLER, B. V.

"Radiation Processes in Solutions of Tetravalent Uranium" p.60

Trudy Transactions of the First Conference on Radioaction Chemistry, Moscow, Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscow

89-4-4-5/28

AUTHORS: Firsov, V.G., Ershler, B.V.

TITLE: The Radiation Oxidation of the Solutions of Quadrivalent Uranium (Radiatsionnoye okisleniye rastvorov chetyrekhvalentnogo urana)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 4, pp. 344-348 (USSR)

ABSTRACT: If a nitric acid solution of quadrivalent uranium is irradiated with the γ-rays of Co^{60} in the case of the absence of O_2, the oxidation yield of U^{+4} is nearly 5,0. The solution is a $0,8NH_2SO_4$-solution, the U^{+4} concentration amounting to about ~100 mg equivalent/l.
The oxidation reaction of U^{+4} by H_2^+-ions was not observed, not even if the acid content of the solution is considerably increased or if the U^{+4} concentration is reduced. The yield becomes smaller with a reduction of U^{+4} concentration, mainly as a consequence of the recombination process of the radicals H and OH. From the experimental data it was possible to derive the functional connection between G (oxidation yield) and U^{+4}. For the three reactions H + OH, H + H and U^{+4} + OH also the velocity constants

Card 1/2

The Radiation Oxidation of the Solutions of Quadrivalent Uranium

89-4-4 2/28

were determined. With an increase of U^{+4} concentrations to more than 110 mg-equivalent/l, G was observed to decrease. This might be explained by a reaction of U^{+4} with the radical H. Various mechanisms are investigated, by means of which the uranyl ions might slow down U^{+4}-oxidation. Proceeding from this point of view the ratio of the reaction velocities of UO_2^{+2} + H and H + H as well as the ratios UO_2^{+2} + OH, H + OH and H + H were computed. There are 4 figures, 3 tables, and 9 references, 1 of which is Soviet.

SUBMITTED: May 20, 1957

1. Uranium solutions--Oxidation 2. Uranium solutions--Effects of radiation 3. Nitric acid--Chemical reactions 4. Gamma rays --Chemical effects 5. Cobalt isotopes (Radioactive)--Performance

Card 2/2

AUTHORS: Ershler, B. V., Firsov, V. G. 62-58-5-18/27

TITLE: On the Radiochemical Oxidation of Bivalent Iron in Aqueous Solutions (O radiatsionno-khimicheskom okislenii dvukhvalentnogo zheleza v vodnykh rastvorakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 633 - 634 (USSR)

ABSTRACT: The unexpected acceleration of the oxidation of bivalent iron under the action of γ-radiation (in the presence of dissolved oxygen) was described in previous reports. This process took place with an intensified concentration of Fe^{2+} and of the H_2SO_4, HCl, H_3PO_4-acid. The present report gives more accurate data with respect to the dependence of the velocity of oxidation with bivalent iron in the presence of dissolved oxygen on the duration of effectiveness of the solution in contact with oxygen and the intensity of radiation. It was found that with small doses ($\leqslant$ 15 p:sec) the effect in the solutions remains generally small. The yield of the oxidation of the bivalent iron dissolved in water in dependence of

Card 1/2

On the Radiochemical Oxidation of Bivalent Iron in Aqueous Solutions 62-58-5-18/27

various factors was further investigated. There are 1 figure and 13 references, 6 of which are Soviet.

SUBMITTED: December 2o, 1957

1. Iron--Oxidation 2. Iron--Effects of radiation 3. Gamma rays --Applications 4. Oxygen--Applications

Card 2/2

FIRSOV, V.G.; ERSHLER, B.V.

Radiolysis of aqueous solutions of uranium (IV) and iron (II) sulfates at elevated temperatures. Zhur.fiz.khim. 35 no.8:1887-1888 Ag '61. (MIRA 14:8)
(Uranium sulfate)
(Iron sulfate)
(Radiation)

24061
S/020/61/138/004/022/023
B103/B203

5.4600

AUTHORS: Firsov, V. G. and Ershler, B. V.

TITLE: Usability of Allen's model in radiolysis of aqueous solutions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 884-885

TEXT: On the basis of published data, the authors attempted to prove the usability of the second approximation of the model by A. O. Allen (see below, Ref. 1) in radiolysis of titanium salts. The application of Allen's model permits two approximations: (1) the yields of H_2, H_2O_2, H, and OH do not depend on composition and concentration of the solution; (2) the irregular space distribution of primary radiolytical products is neglected. Assumption (1) was confirmed for many solutions by experiments and theoretical calculations. The correctness of assumption (2), however, has never been checked experimentally. It was theoretically discussed by B. V. Ershler and G. G. Myasishcheva [Abstracter's note: no reference given] for solutions containing H_2O_2, H_2, and O_2. B. V. Ershler (Ref. 8:

Card 1/5

Usability of Allen's model in ...

DAN, 129, 866 (1959)) has shown that the following two rules must hold in the case of validity of Allen's model and of the equations of homogeneous chemical kinetics for radiolytical processes: (1) If, for the steady state of the irradiated solution with a certain intensity I_1 of the absorbed radiation, the logarithm of the concentration of all particles in the solution was determined as a function of the logarithm of the concentration of any particle, then all these curves are shifted, on transition to the intensity I_2, along both axes in parallel to each other by the value $\log(I_2/I_1)^{1/2}$ without changing their shape. (2) If, for a radiolytical process with an intensity I_1, the yield of any particle was determined as a function of the logarithm of the concentration of another particle, then this curve is shifted, with an intensity I_2, in parallel along the axis by the value $\log (I_2/I_1)^{1/2}$ without changing its shape. The two "$I^{1/2}$ rules" (1) and (2) must hold for any reactions in an irradiated solution which corresponds to Allen's model if steady concentrations or yields therein are unique functions of the concentration of any particle.

Card 2/5

Usability of Allen's model in ...

Fig. 1 shows two dependence curves of the yield of radiolytical oxidation of solutions of Ti^{3+} sulfate of log $[Ti^{3+}]$ determined with exclusion of oxygen in irradiation in a cobalt source. Curve 1 was plotted at $I_1 = 0.0364 \cdot 10^{19}$ ev/l·sec, curve 2 at $I_2 = 1.00 \cdot 10^{19}$ ev/l·sec. In fact, the two curves agree rather accurately in their shape, are parallel, and the distance between them on the log $[Ti^{3+}]$ axis, 0.70-0.72, corresponds well to the value $\log(I_2/I_1)^{1/2} = 0.72$. From this confirmation of the $I^{1/2}$ rule, the authors conclude that Allen's model gives a good approximation for the solution of the salts of trivalent titanium. The dependence of the yield on the radiation intensity evidently proves directly that an interaction exists between the particles formed in different tracks. The proof of the $I^{1/2}$ rule shows that this interaction is well expressed by equations of homogeneous kinetics. The authors continue their study of Allen's model to detect, by the methods of the $I^{1/2}$ rule, those systems and ranges of concentration and intensities in which this method for the analysis of mechanisms of radiolytical processes can be used. There are 1 figure and 8 references: 1 Soviet-bloc and 7 non-Soviet-bloc. The three references to the English-language publications read as follows: Ref. 1: A.O.Allen,

Usability of Allen's model in ...

J.Phys.and Coll.Chem. 52,479 (1948); Ref. 2: A.O.Allen et al. ibid.56,575 (1952); Ref. 3: A.O.Allen, Rad.Res.,1,85 (1954).

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics of the Academy of Sciences USSR)

PRESENTED: January 23, 1961, by A. I. Alikhanov, Academician

SUBMITTED: January 23, 1961

Card 4/5

25323 S/020/61/138/005/023/025
B101/B231

5.4600

AUTHOR: Firsov, V. G.

TITLE: The inhibiting effect of the uranyl ion on the radiation-chemical oxidation of bivalent iron

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 5, 1961, 1155-1157

TEXT: Starting from the inhibiting effect of the uranyl ion on the oxidation of U^{IV} solutions, already investigated by the author (Ref. 1: Atomn. energiya, 4, no. 4, 343 (1958)) it was the aim of the present paper to conduct studies of the uranyl-ion effect on the oxidation of Fe^{2+}, a reaction which has long before been examined in detail. Completely degasified mixtures of $FeSO_4$ and uranyl sulfate were exposed to Co^{60} radiation in quartz ampuls, intensity $1.5 \cdot 10^{19}$ ev/l·sec. The ground-in stopper of the ampuls was provided with a capillary tube which secured the pressure compensation without oxygen access. The influence of UO_2^{2+}

Card 1/5

concentration on the oxidation of Fe^{2+} at different pH is represented in Fig. 1. The reactions (I) - (V) for the radiolytic oxidation of aqueous Fe^{2+} solutions are put down:

$$(n+2k)\,H_2O \equiv (m+2l)\,H_2O = nH + m\,OH + k\,H_2 + l\,H_2O_2; \quad (I)$$

$$Fe^{2+} + OH \rightarrow Fe^{3+} + OH^-; \quad (II)$$

$$Fe^{2+} + H_2O_2 \rightarrow Fe^{3+} + OH + OH^-; \quad (III)$$

$$H + H^+ \rightarrow H_2^+; \quad (IV)$$

$$Fe^{2+} + H_2^+ \rightarrow Fe^{3+} + H_2. \quad (V)$$

The inhibiting effect of UO_2^{2+} is explained by the reactions: $UO_2^{2+} + H \longrightarrow UO_2^+ + H^+$ (VI); $UO_2^+ + OH \longrightarrow UO_2^{2+} + OH^-$ (VII). The inhibiting effect of Fe^{3+} remained unconsidered due to the fact that experimentally only the initial yields of oxidation were determined. On the assumption $G_{H_2^+} = 0$, it is deduced from (I)-(VII) that G is a function of only two components of the solution, that is of H^+ and of UO_2^{2+}:

$(k_4/k_6)\{[H^+]/[UO_2^{2+}]\} = (0.5G - k)/(n + k - 0.5G) = F(G)$ (1). This equation permits to calculate the characteristics of Fig. 1, the values for n and k having been taken from Ref. 1. The result shows a linear dependence of F(G) on the ratio $[H^+]/[UO_2^{2+}]$. The straight line passes through the origin of the coordinates, and exhibits the slope $k_4/k_6 = 0.84 \pm 0.04$. The broken-line curve shown in Fig. 1 corresponds to half the Fe^{2+} concentration, and falls in fairly well with the theoretical characteristic which proves that G is not dependent on the Fe^{2+} concentration. The good agreement between theory and experiment with $[UO_2^{2+}]$ and $[H^+]$ being altered by two magnitude orders proves the applicability of the Allen model (see below). The author mentions a lecture held by N. B. Miller, V. I. Veselovskiy, and V. A. Vorotyntsev before the II All-Union Conference on Radiation Chemistry, 1960, and thanks B. V. Ershler for a discussion. There are 3 figures and 11 references: 5 Soviet-bloc and 6 non-Soviet-bloc. The three most important references to English-lan-

guage publications read as follows: A. O. Allen, Rad. Res., 1, 85 (1954); A. O. Allen, H. A. Schwarz, Proc. Intern. Conf. on the Peaceful Uses of Atomic Energy, Geneva, 14, 179 (1955); W. G. Rothschild, A. O. Allen, Rad. Res., 8, 101 (1958).

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics, Academy of Sciences USSR)

PRESENTED: January 23, 1961, by A. I. Alikhanov, Academician

SUBMITTED: January 23, 1961

ERSHLER, B.V.; FIRSOV, V.G.

The 1 1/2 Law on the radiolytic oxidation of iron ions by hydrogen atoms, and the mechanism of the process. Dokl. AN SSSR 139 no.3:662-664 Jl '61. (MIRA 14:7)

1. Predstavleno akademikom A.N. Frumkinym.
(Iron) (Oxidation) (Radiation)

FIRSOV, V.G.; KRSHLER, B.V.

Mechanism of radiolysis in titanium salt solutions. Zhur. fiz. khim. 36 no.3:661-662 Mr '62. (MIRA 17:8)

32821

S/020/62/142/001/020/021
B145/B101

21.4100
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AUTHORS: Firsov, V. G., and Ershler, B. V.

TITLE: Slow reaction step in oxidations by hydrogen atoms according to the Weiss mechanism

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 1, 1962, 145-147

TEXT: The effect of the concentration of added U(IV) and of the pH on the yields of radiolytic oxidation of aqueous Fe(II) and U(III) solutions by H atoms was investigated quantitatively to examine whether the theoretical predictions could be proved experimentally on the basis of the Weiss mechanism. Fe(II) is oxidized in the reactions:
$Fe(II) + OH \rightarrow Fe(III) + OH^-$; $Fe(II) + H_2O_2 \rightarrow Fe(III) + OH + OH^-$;
$Fe(II) + H_2^+ \rightarrow Fe(III) + H_2$; The reaction $H + H^+ \xrightarrow{k_4} H_2^+$ is the slow step of reaction in the Weiss mechanism. If k_6 is the rate constant of the concurrent reaction $U(IV) + H \rightarrow U(III) + H^+$, the following equation is obtained for the yield G of the Fe(II) oxidation:

Card 1/3

Slow reaction step in oxidations...

$k_4[H^+]/k_6[U(IV)] = (\frac{1}{2} G - k)/(n + k - \frac{1}{2} G)$, (I), n and k being defined by equation $(n + 2k)\ H_2O \longrightarrow nH + mOH + kH_2 + lH_2O_2$. A comparison of the dependence of G on pH in U(IV) concentrations of $4.87 \cdot 10^{-3}$ to $103.37 \cdot 10^{-3}$ moles/liter with the curves calculated according to equation I showed good agreement. In this case, the Fe(II) concentration was $2 \cdot 10^{-3}$-$106 \cdot 10^{-3}$ N. Co^{60} was used as source of radiation, the intensity of absorbed radiation being $1.60 \cdot 10^{19}$ ev/liter·sec. In accordance with the theory, the curve has the same form as that obtained in a previous paper (DAN, 138, 1155 (1961)), in which UO^{2+} instead of U(IV) was used as acceptor. According to the Weiss mechanism, the value of the quotient k_4/k_6 does not depend on the used active acceptors of the H_2^+ ion, which was proved experimentally when Fe(II) was replaced by U(III). The value k_4/k_6 calculated from the total yield $G_{U(IV) + U(III)}$ of the oxidation of U(IV) and U(III) was 1.35 in this case, whereas it was 1.25 when Fe(II) was used. For ~ 0.1 N U(IV) solution with an H^+ concentration of $\simeq 2$, and with a content of ~1% of U(III), $G_{U(IV) + U(III)}$ was 8-8.2; this

Card 2/3

Slow reaction step in oxidations...

corresponds to the G value of Fe(II) solutions. $G_{U(IV) + U(III)}$ does not change with increasing U(III) concentration. In a pure U(IV) solution, the slow step might be the reaction of uranium with the H_2^+ ions. There are 2 figures, 1 table, and 5 references: 4 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: T. Rigg, G. Stein, J. Weiss, Proc. Roy. Soc., A211, 375 (1952).

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics of the Academy of Sciences USSR)

PRESENTED: April 3, 1961, by A. N. Frumkin, Academician

SUBMITTED: March 11, 1961

Card 3/3

AUTHOR: [illegible]LIBOV, V. G.; Byakov, V. M.

TITLE: Chemical reactions involving muonium. A method for determining rate constants and other reaction parameters

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 3, 1964, 1074-1083

TOPIC TAGS: muon, positive mu meson, muonium, chemical reaction kinetics, reaction rate, hydrogen, meson reaction

ABSTRACT: It is shown that the various hitherto unexplained effects accompanying the depolarization of positive muons in matter can be explained by assuming that the hydrogenlike muonium atom produced [illegible]depolarization enters into chemical reaction with the matter, and that the orientation of the positive-muon spin is conserved as a [illegible]s shown on the basis of this assumption that by measuring

Card 1/3

the asymmetry coefficient of positive-muon decay it is possible to determine the absolute rate constants of reactions between hydrogen atoms and various acceptors. Inasmuch as the method is not limited with respect to the aggregate state of the material or the temperature, it can be used to determine the reaction-rate constants in gases, liquids, and probably even solids. In the latter case the effect of the internal magnetic fields must be taken into account. In addition, the activation energies of processes in different states can be determined by a single procedure; this possibility is a unique feature of the method. Several other chemical-reaction parameters that can be investigated with the aid of this method are also mentioned, including steric factors and the possibility of the tunneling [illegible]. "The authors thank A. O. Vaysenberg, S. S. Gershteyn, V. I. Gol'danskiy, and V. G. Nosov for valuable remarks and a useful discussion." Orig. art. has: 1 figure and [illegible] formulas.

[illegible] N: Institut teoreticheskoy i eksperimental'noy fiziki

L 12048-65

ACCESSION NR: AP4046428

(Institute of Theoretical and Experimental Physics)

SUBMITTED: 06Apr64 ENCL: 00

SUB CODE: GC, NP NR REF SOV: 008 OTHER: 010

Card 3/3

ACCESSION NR. AP4025112 S/0020/64/155/003/0636/0639

AUTHOR: Gol'danskiy, V. I. (Corresponding member); Firsov, V. G.; Shantarovich, V. P.

TITLE: Determining the kinetic constants of the interaction between positronium and inorganic ions

SOURCE: AN SSSR. Doklady*, v. 155, no. 3, 1964, 636-639

TOPIC TAGS: chemical kinetics, velocity constant, positronium, radiation chemistry, unpaired electron, interaction constant, annihilation gamma quanta, hydrogen ion, spatial distribution, wave function, quantum leakage, tunnel effect

ABSTRACT: New possibilities for determining the rate constant of very fast chemical processes in a condensed phase have been found in the experiments designed to investigate the chemistry of the positronium (Ps). The resulting experimental data have been divided into two basic groups: substances reacting strongly with Ps and reducing its lifetime, and substances with a small interreaction constant. The first group is further divided into two subgroups, depending on the effect of various additions to the angular correlation of annihilation gamma-quanta. (The experiments in angular correlation were made by

Card 1/2

ACCESSION NR: AP4025112

B. G. Yegiazarov). In the case of high-valence ions, the mentioned interaction amounts to a positronium oxidation. The sub-barrier transition of an electron from a positronium atom to an acceptor may be more probable than the transition from a hydrogen atom since in the case of a positronium the resonance conditions of the electron levels in the initial and final states should be less inflexible inasmuch as the positron, as a light and penetrating particle, can effectively absorb the recoil energy connected with the difference in the level positions. The above data implies the possible utilization of the investigations of the positron annihilation for determining the kinetic constants of fast processes in a condensed phase, and possibly for acquiring additional information on the role of quantum leackages in chemical reactions. "The authors are grateful to V. G. Levich and N. D. Sokolov for their interest in the work and the discussion of the results". Orig. art. has: 5 formulas and 2 tables.

ASSOCIATION: Institut khimicheskoy fiziki, Akademii nauk SSSR (Institute of Chemical Physics, Academy of Science, SSSR)

SUBMITTED: 25Nov63 DATE ACQ: 17Apr64 ENCL: 00
SUB CODE: PH, CH NO. REF.SOV: 005 OTHER: 009

Card 2/2

FIRSOV, V.G.

Enterprises of the heavy machinery industry work for the major chemical industrial complexes. Mashinostroitel' no.8:2-3 Ag '64. (MIRA 17:10)

1. Nachal'nik upravleniya tyazhelogo mashinostroyeniya Soveta narodnogo khozyaystva Leningradskogo ekonomicheskogo rayona.

L 01240-67 EWT(m)/T

ACC NR: AT6031145 SOURCE CODE: UR/3138/65/000/388/0003/0028

AUTHOR: Babayev, A. I.; Myasishcheva, G. G.; Obukhov, Yu. V.; Roganov, V. S.; Firsov, V. G.; Balats, M. Ya.

ORG: none

TITLE: Experimental investigation of the chemical reactions of muonium

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 388, 1965. Eksperimental'noye issledovaniye khimicheskikh reaktsiy myuoniya, 3-28

TOPIC TAGS: muonium, muon chemical interaction, muonium interaction, atomic muonium, assymetry coefficient, angular positron distribution, binary mixture, competing acceptor method

ABSTRACT: Measurements were made of assymetry coefficients in the angular distribution of escaping positrons $\mu^+ - e^+$ for several compounds and their binary mixtures. The results obtained were used to compute the constants of the rate of interaction between atomic muonium and substance. To augment the accuracy of the results and to clarify the mechanism of the process, a method of competing

Card 1/2

ACC NR: AT6031145 5

acceptors was used for reactions in parallel. The dependence of the coefficient of assymetry on the intensity of the magnetic field was determined for several compounds. The data are discussed from the point of view of the chemical interaction of muonium. The authors thank Academician A. I. Alikhanov and V. A. Lyubimov for their interest in this work, V. I. Volkov for his assistance in carrying out the measurements, and A. O. Vaysenberg and L. N. Kondrat'yev for their helpful evaluations and discussion of the work. Orig. art. has: 4 tables and 11 figures. [Based on authors' abstract] [SP]

SUB CODE: 07, 20/ SUBM DATE: 15Oct65/ ORIG REF: 006/ OTH REF: 012/

awm

L 52962-65 EWT(m)/T/EWA(m)-2

ACCESSION NR: AP5010516 UR/0056/65/048/004/1179/1183

AUTHOR: Firsov, V. G.

TITLE: Chemical reactions involving muonium. Identification of the products of interaction with matter

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 4, 1965, 1179-1183

TOPIC TAGS: muonium, muonium chemistry, muonium reaction product, muon spin precession

ABSTRACT: This is a continuation of earlier work by the author (with V. M. Byakov, ZhETF v. 47, 1074, 1964), devoted to the chemical activity of the muonium atom. This article is devoted to the dependence of the precession of the positive muon [illegible] the chemical compound into which the muon enters, in various magnetic fields. Inasmuch as in experiments the spin precession is usually observed in a [illegible] magnetic field, the behavior of the chemical reaction products in this [illegible] treated in greater detail. It is shown that the determination of the frequency and the amplitude of precession in various magnetic fields makes it possible

Card 1/2

L 52962-65

ACCESSION NR: AP5010516

6

to identify the products of the chemical reactions by the classes of the compounds and to determine their relative contributions. The groups of products can be subdivided into electronic and mesonic components, with the composition of the compo- [illegible] depending on the magnitude of the external [illegible] The electronic [illegible] includes the muonium atom [illegible] The [illegible] includes MuH or MuF and MuH [illegible] can be [illegible] basis of the precession f[illegible] [illegible] nuclear spins. It is concluded that [illegible] external magnetic field it is necessary to [illegible] interaction. The diatomic molecules of muonium can be arranged in the following series: [illegible] > MuD > MuBr > MuI > MuCl. "I am deeply grateful to Academician A. I. Alikhanov for interest in the work and to O. A. Vaysenberg, S. S. Gershteyn, Corresponding Member AN SSSR V. I. Gol'danskiy, and O. B. Firsov for valuable remarks and useful discussion." Orig. article has: 2 figures, 1 formula, and [illegible] table.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki (Institute of Theoretical and Experimental Physics).

SUBMITTED: 17Nov64 ENCL: 00 SUB CODE: NP

NR REF SOV: 004 OTHER: 005

Card 2/2

GOL'DANSKIY, V.I.; FIRSOV, V.G.; SHANTAROVICH, V.P.

Effect of complex formation on reactions of positronium with inorganic ions. Kin.i kat. 6 no.3:364-365 My-Je '65.
(MIRA 18:10)

1. Institut khimicheskoy fiziki AN SSSR i Institut teoreticheskoy i eksperimental'noy fiziki AN SSSR.

L 24820-66 EWT(d)/EWT(m)/EWP(h)/EWP(l)/ETC(m)-6 DIAAP JD/JG

ACC NR: AP6006954 (A) SOURCE CODE: UR/0381/65/000/006/0041/0046

AUTHORS: Shtan', A. S.; Chernobrovov, S. V.; Firstov, V. G.; Sul'kin, A. G.

ORG: none

TITLE: Problems in radiation defectoscopy 19

SOURCE: Defektoskopiya, no. 6, 1965, 41-46

TOPIC TAGS: gamma ray, x ray, radiometry, exposure meter, stereoscopic photography, defectoscope / RID-21 defectoscope, RK-2 defectoscope, UGD-3 defectoscope, IRA-1 pulse device, RUP-120-5 defectoscope, RUP-200-5 defectoscope, RUP-150/500-10 defectoscope

ABSTRACT: The automation and mechanization problems in radiation defectoscopic techniques are discussed in some detail. Among the more important problems in this area are those pertaining to control of feeding parts to the radiation area, to radiation of parts with programmed controls, to developing of films, and to decoding the recorded information. The development of automatic gamma-ray and x-ray exposure meters is considered to be of great importance in the Soviet countries. Stereoscopic photography applied to radiation defectoscopy is another new development in the Soviet countries; it has the advantage of three-dimensional visualization of defects in the various parts under investigation. There seems to be a great need for improving the quality of auxiliary defectoscope equipment. In

Card 1/2 UDC: 620.179.152

L 24820-66
ACC NR: AP6006954 3

particular, there is a distinct lack of high energy, 1 to 2000-kv x-ray equipment. Recent trends in construction of γ- and x-ray equipment have centered on monoblock devices of series RUP-120-5 and 200-5, on a new universal device of series RUP-150/500-10, and pulse devices IRA-1. Portable cesium-137 radiometers are currently popular. Among the new developments are devices with special safeguards against radiation hazards, including automatic on-off control systems. A new series of radioisotope defectoscopes are now being marketed under the markings of RID-21, RK-2, and UGD-3. To improve the control capability on these defectoscopes, it is suggested that xerography be tried for significantly reducing exposure times. All in all, advanced automatic defectoscopes can be very useful in machine design, metallurgy, shipbuilding, and the aviation industry.

SUB CODE: 14, 18/ SUBM DATE: 04Sep65

Card 2/2

L 22404-66 EWP(e)/EWT(m)/T WH
ACC NR: AP6006791 SOURCE CODE: UR/0386/66/003/001/0003/0004

AUTHOR: Babayev, A. I.; Balats, M. Ya.; Myasishcheva, G. G.; Obukhov, Yu. V.; Roganov, V. S.; Firsov, V. G.

ORG: Institute of Theoretical and Experimental Physics (Institut teoreticheskoy i eksperimantal'noy fiziki)

TITLE: Observation of atomic muonium in crystalline quartz

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 1, 1966, 3-4

TOPIC TAGS: quartz, muon, positron, angular distribution, spin, magnetic moment, relaxation process

ABSTRACT: The asymmetry coefficient (c') in the angular distribution of the positrons from the decay of mesons stopped in crystalline quartz at room temperature was measured in the meson beam of the OIYaI synchrocyclotron with the aid of apparatus used to observe μ^+-meson spin precession in a magnetic field. Four cycles of the sinusoidal precession curve, with a frequency corresponding to the magnetic moment and spin of the μ^+ meson, were traced at a magnetic field intensity 50.0 ± 0.3 oe for ~6 μsec after the stopping of the μ^+ meson in the target. The asym-

Card 1/2

L 22404-66
ACC NR: AP6006791

metry coefficient corrected for the energy spectrum of the emitted positrons, for the counter geometry, and for the beam polarization was equal to $c' = 0.065 \pm 0.006$ (the total number of μ^+ mesons stopped in the target was 4×10^9, and the product of the solid angle by the counter efficiency was ~1/30). At a magnetic field intensity 2.70 and 1.35 oe the obtained precession corresponded to the frequency of revolution of atomic muonium with exponentially damped amplitude and with relaxation time 0.3--0.4 μsec. The experimental asymmetry coefficient, extrapolated to zero time, was $a_0' = 0.09$--0.13 without correction for the beam polarization. A more detailes investigation of the precession of atomic muonium was hindered by the presence of intensity modulation, connected with the fine structure of the accelerator pulse. Work on the investigation of the phenomenon is being continued.

SUB CODE: 20/ SUBM DATE: 03Nov65

Card 2/2

L 36381-66 EWT(m)/T WVH

ACC NR: AP6014026 SOURCE CODE: UR/0056/66/050/004/0877/0889 66 60 B

AUTHOR: Babayev, A. I.; Balats, M. Ya.; Myasishcheva, G. G.; Obukhov, Yu. V.; Firsov, V. G.; Roganov, V. S.

ORG: Institute of Theoretical and Experimental Physics (Institut teoreticheskoy i eksperimental'noy fiziki)

TITLE: Experimental investigation of chemical reactions of muonium 19

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 4, 1966, 877-889

TOPIC TAGS: muonium, positron, angular distribution, magnetic field, chemical reaction, atomic muonium, positron distribution

ABSTRACT: The asymmetry coefficients in the angular distribution of positrons, emitted in μ-e-decays were measured for a number of compounds and their binary mixtures. The rate constant for interaction between the atomic muonium and matter were computed on the basis of the results obtained. The method of competing acceptors for parallel reactions was employed with the aim of raising the accuracy of measurements and elucidating the mechanism of the processes. The dependences of the asymmetry coefficients on the magnetic field strength were measured for a number of compounds. The data were discussed within the framework of the chemical reactions with muonium. The authors express their thanks to Academicians A. I. Alikhanov and

Card 1/2

L 36381-66

ACC NR: AP6014026

6

V. A. Lynbimov for their support and interest in this work, V. I. Volkov for assistance with measurements, and A. M. Brodsko, A. O. Vaysenberg, V. I. Gol'dansk, and L. N. Kondrat'yev for valuable comments and useful discussions. Orig. art. has: 11 figures, 2 formulas, and 4 tables. [Based on authors' abstract.] [NT]

SUB CODE: 20, 11/ SUBM DATE: 01Nov65/ ORIG REF: 008/ OTH REF: 013

Card 2/2

FIRSOV, V.G.
25(5) p.3 PHASE I BOOK EXPLOITATION SOV/1392

Leningrad. Inzhenerno-ekonomicheskiy institut

Organizatsiya i planirovaniye ravnomernoy raboty mashinostroitel'nykh predpriyatiy; Mezhvuzovskoye soveshchaniye. Doklady (Organization and Planning of Uniform Work in Machine-building Enterprises; Conference of Vuzes. Reports) Moscow, Mashgiz, 1958. 366 p. (Series: Its: Trudy, vyp.22) 4,000 copies printed.

Eds.: S.A. Volkov, and K.G. Tatevosov.; Tech. Ed.: L.V. Sokolova.; Managing Ed. for Literature on Machine-building Technology (Mashgiz): Ye.P. Naumov, Engineer.

PURPOSE: This collection of articles is intended for engineering and technical personnel in machine-building establishments, and for scientific workers and students of institutes and departments of engineering and economics.

COVERAGE: This collection of articles contains reports by workers from vuzes, scientific research institutes, and industrial establishments presented at the conference of vuzes on the subject: "Organization and Planning of Uniform Operations in Machine-building Establishments." These reports discuss general problems encountered in organization, analysis, and theory of uniform production, as well as problems in schedule planning, technical preparation, and production specialization.

Card 1/ 3

TABLE OF CONTENTS:

Card 3/8

DOLITSKIY, N.I.; FIRSOV, V.G., inzh., retsenzent

[Technical and economic indices of the manufacture of stationary steam turbines] Tekhniko-ekonomicheskie pokazateli proizvodstva statsionarnykh parovykh turbin. Moskva, Izd-vo "Mashinostroenie," 1964. 303 p.
(MIRA 17:8)

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

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 1098

Author : Gogoberidze, D.B., Firsov, V.I., Yavorskiy, I.V.
Title : X-ray Goniometer LITMO-11 (RG-48).

Orig Pub : Sb. statey Leningr. in-ta tochnoy. mekhan. i optiki, 1955, vyp. 18, 24-30

Abstract : Description of an x-ray goniometer representing an improvement over the previous model RG-17. The diameter of the cylindrical cassette is 80 mm, the film dimensions are 160 x 200 mm, the distance from the film plane to the crystal is 50.4 mm, and the size of the flat film is 160 x 160 mm.

Card : 1/1

FIRSOV, V.I.; INYUSHIN, V.M.

DNA content in the nucleus of the wheat oosphere. TSitologiia 5 no.5:574-577 S-O '62. (MIRA 18:5)

1. Kafedra darvinizma i genetiki Kazakhskogo gosudarstvennogo universiteta, Alma-Ata.

FIRSOV, Vladimir Kirillovich; ALEKSANDROV, L.A., red.; GALAKTIONOVA, Ye.N., tekhn. red.

[Fixed assets and working capital of an automotive transportation enterprise] Osnovnye i oborotnye fondy avtotransportnogo predpriiatiia. Moskva, Nauchno-tekhn. izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog RSFSR, 1962. 31 p. (MIRA 15:3)

(Transportation, Automotive--Finance)

L 13964-65 EWP(e)/EPA(s)-2/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) Pq-4/Pt-10/Pu-4
ESD(gs)/ESD(·) JD/WW/JG/WH

ACCESSION NR: AP4046372 S/0020/64/158/003/0582/0585

AUTHOR: Kaygorodskiy, I. I.; Sil'vestrovich, S. I.; Firsov, Y. M. B

TITLE: Strengthening of glass by hardening in molten metal

SOURCE: AN SSSR. Doklady*, v. 158, no. 3, 1964, 582-585

TOPIC TAGS glass heat treatment, glass hardening, molten metal treatment, glass strengthening, sheet glass, Pyrex glass

ABSTRACT: A new, more efficient method of strengthening glasses having varied thermal expansion coefficients has been developed and investigated. The method consists in heat treating (hardening) glass in low-melting molten metals such as wood alloy or tin and then [illegible] it with hydrofluoric acid. Data from bending tests indicated [illegible] with high or low coefficient [illegible] glass and 3C-5K or Pyrex, [illegible] by the new method. [illegible] achieved in thin (1.3-mm) sheet glass [illegible] heat-treated glasses, as compared to the heat treatment with the most

Card 1/2

L 13964-65

ACCESSION NR: AP4046372

efficient liquid polyorganosiloxane. Data on comparative degrees of hardening for Pyrex glass indicated a much higher strengthening [illegible] the treatment with wood alloy [illegible] This fact is explained [illegible] glass in molten metal. [illegible] thermal conductivity and very [illegible] can make possible a high-temperature [illegible] ment resulting in limitation of thermoelastic strain in glass products. The possibility of achieving even higher strength in glasses having important practical applications (Pyrex, common thin glass) is mentioned. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Chemical-Technical Institute)

SUBMITTED: 24Apr64 ENCL: 00

SUB CODE: MT NO REF SOV: 012 OTHER: 000

Card 2/2

EWP(e)/EWP(i)/EWP(j)/EWP(b) Pc-4/Pc-4 RM/WW

AR 00 236 S/0081/65/000/002/M009/M009

SOURCE: Ref. zh. Khimiya. Sv. t., Abs. 2M80

[illegible]dskiy, I. I.; Stl'vestrovich, S. I.; Firsov, V. M.

[illegible] of glasses quenched in [illegible] gaseous media

CITED SOURCE: Sb. tr. Mosk. khim.-tekhnol. in-ta im. D. I. Mendeleyeva, vyp. 45, 1964, 145-153

TOPIC TAGS: glass strength, glass quenching, glass hardening, quenching fluid, polyorganosiloxane, polyethylhydrosiloxane, laboratory glass, electrovacuum glass

TRANSLATION: This article presents the results of the first stage of a study on [illegible] of industrial chemical laboratory glasses (KS-34 and Ts-32) and electrovacuum glasses (BD-1 and ZS-5K), the compositions of which are given, by [illegible] on polyorganosiloxane (liquids No. 2, 4 and 5) and polyethylhydrosiloxane (GKZh-94) liquids which differ in their nature, properties and [illegible] capacities. The degree of hardening of the glass samples (this with a [illegible] section) was determined by means of a special polarimeter as the [illegible] generated in a direction perpendicular to their longitudinal axis

Card 1/2

L 49006-65

ACCESSION NR: AM5007236

The results showed that it is possible to strengthen various glasses, differing [illegible] composition and properties, quite appreciably by quenching them in liquid [illegible]polyorganosiloxanes; the effects of the thermal conditions of the quenching [illegible] and the peculiarities of the chemical composition of the glass on the [illegible] its strengthening are elucidated [illegible]

[illegible]khaylova

[illegible] SSR. MT, C

ENCL: 00

Card 2/2

SIL'VESTROVICH, S.I.; FIRSOV, V.M.; GLADKOV, A.V.

Change in the structural and physical state of glass hardened in molten metal. Dokl. AN SSSR 162 no.3:552-555 My '65. (MIRA 18:5)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva. Submitted December 11, 1964.

L 41359-66 EWP(e)/EWT(m)/EWP(j) RM/WH

ACC NR: AT6022496 SOURCE CODE: UR/2539/64/000/045/0145/0153

AUTHOR: Kitaygorodskiy, I. I.; Sil'vestrovich, S. I.; Firsov, V. M. 40 B+1

ORG: none 15 6

TITLE: Study of the strength of glasses annealed in polyorganosiloxane liquids

SOURCE: Moscow. Khimiko-tekhnologicheskiy institut. Trudy, no. 45, 1964. Issledovaniya v oblasti khimii i tekhnologii silikatov (Studies in the field of silicate chemistry and technology), 145-153

TOPIC TAGS: glass, polysiloxane, annealing, GLASS PROPERTY, DURABILITY, TOUGHNESS

ABSTRACT: Studies on the toughening of industrial glass used in chemical laboratories (KS-34 and Ts-32) and in vacuum tubes (BD-1 and 3S-5k) were carried out by annealing the glasses in polyethylsiloxane liquids No. 2, 4 and 5, and polyethylhydrosiloxane liquid GKZh-94. The study pertained only to the influence of the thermal conditions on the degree of annealing (determined polarimetrically), and hence on the toughness of the glasses. It was found that by annealing glass of the same chemical composition in different liquids or under different temperature conditions, one can vary the rate of cooling of the glass, the nature of its stress state, and hence, the degree of toughening. The best thermophysical conditions for annealing were found in liquid No. 4, and the greatest tendency toward toughening in this liquid was displayed by Ts-32 glass, which differs from the other investigated glasses both in its linear expansion coeffi-

Card 1/2

ACC NR: AT6022496

cient (90 x 10^{-7}) and glass transition (softening) temperature, 675°. The results of the study not only demonstrated that glasses of various compositions and properties can be substantially toughened by annealing in polyorganosiloxane liquids, but also revealed the influence of the thermal conditions of such annealing and chemical nature of the glasses on the character and effect of their toughening. Orig. art. has: 6 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 012

Card 2/2

FIRSOV, V. P.

3906. PRACTICAL EXPERIENCE OF THE [illegible]

PUZANKOV, V.M.; FIRSOV, V.P.; KEYLIN, G.S.

Mechanization and automatization of productive processes at the "Krasnogvardeets" Plant. Med. prom. 13 no.8:6-8 Ag '59. (MIRA 13:8)

(DRUG INDUSTRY)

KONOVALOV, V.P.; FIRSOV, V.P.; KOVRIZHIN, A.K.

Reliable powered supports and equipment complexes for Kuznetsk Basin mines. Ugol' 38 no.3:46-48 Mr. '63. (MIRA 18:3)

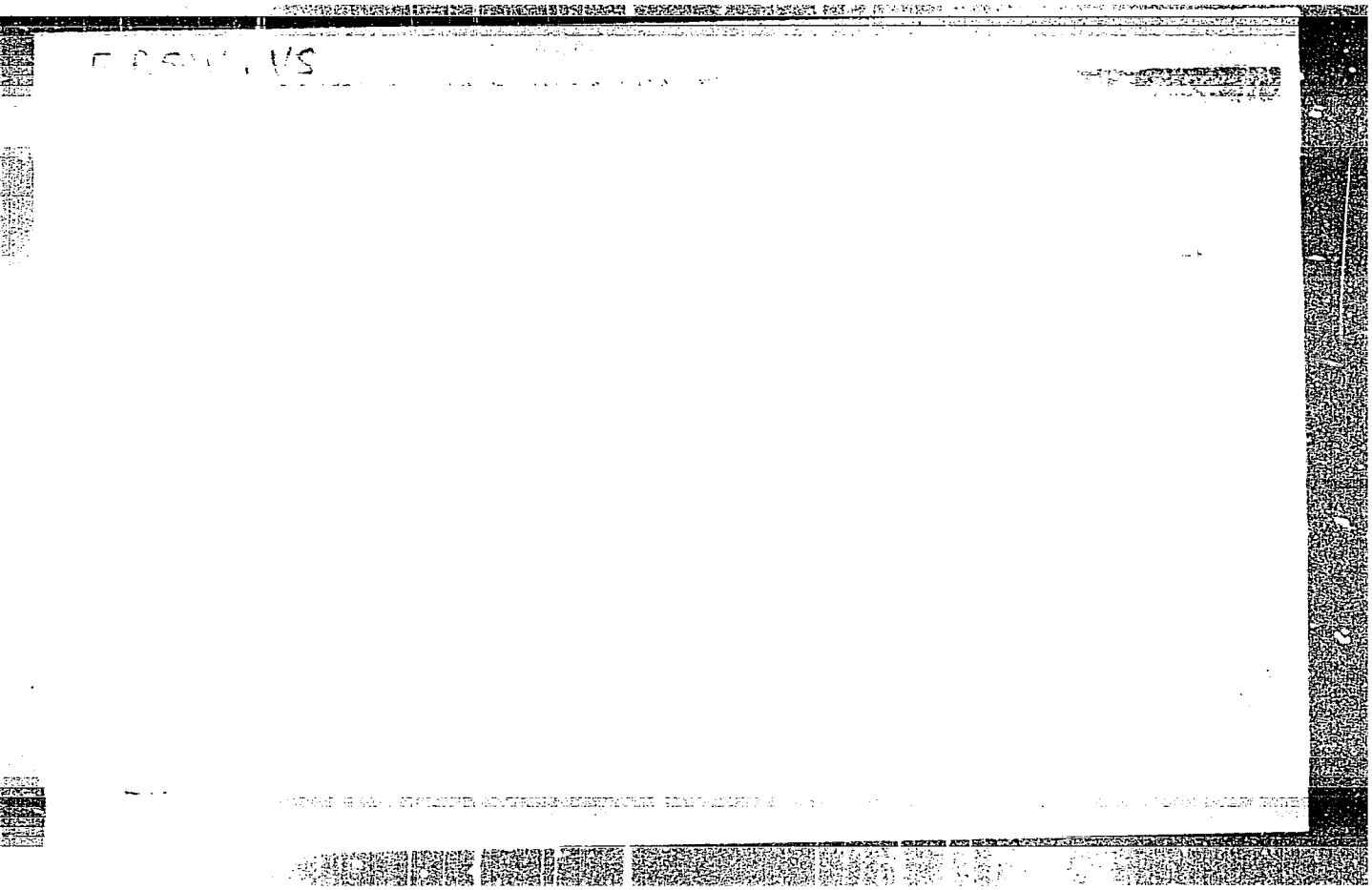
1. Shakhta "Abashevskaya 3-4" Kuznetskogo ugol'nogo basseyna (for Konovalov). 2. Kuznetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Firsov, Kovrizhin).

VOLKOV, A.N., kand. tekhn. nauk; FIRSOV, V.P., inzh.

Results of the industrial tests of an experimental specimen of the A-3 unit. Sbor. KuzNIUI no.10:4-18 '64. (MIRA 18:9)

DMITR[illegible], P.N., inzh.; LEPSKIY, N.S., inzh.; FIRSOV, V.P., inzh.

Experimental operation of the OMKT and KM-81 cutter-loaders in Kuznetsk Basin mines. Sbor. KuzNIUI no.10:19-32 '64.
(MIRA 18:9)



AUTHOR: Firsov, V. V. SOV/138-58-11-9/14

TITLE: Accelerated Vulcanisation of Inner Tubes by Steam Heating From Both Sides of the Tube (Uskorennaya vulkanizatsiya yezdovykh kamer dvukhstoronnim obogrevom parom)

PERIODICAL: Kauchuk i Rezina, 1958, Nr 11, pp 30 - 32 (USSR)

ABSTRACT: Experiments were made first to find shortest vulcanising time and maximum steam pressure which would give satisfactory tubes with standard vulcanising with external heating only. Steam pressure in the vulcaniser at 6.4 atm enabled "Giant"-sized tubes (9.00 - 16, 8.25 - 16) to be vulcanised in 9 minutes and "Auto" tubes (4.00 - 16, 6.00 - 16 and 5.50 - 16) in 7 minutes. With lightweight motor-cycle tubes (3.25 - 19, 2.50 - 19 and 3.75 - 19), higher pressures and steam temperatures in the vulcanising moulds gave a large number of rejects with the tubes which contain 50% natural rubber.

Experiments were made with these lightweight motor-cycle tubes using steam inside the tube as well as externally. With steam at 6.4 atm (94 psi) inside and outside the tube vulcanising time was only 6 1/2 minutes. However, in order to ensure adequate moulding pressure on the reinforcing ribbon and at the valve, it was found best to

Card1/3

Accelerated Vulcanisation of Inner Tubes by Steam Heating from Both Sides of the Tube

apply 5 atm (73.5 psi) pressure in the mould and 6.4 atm (94 psi) pressure inside the tube.
The steam conditions above were then applied to "Giant"- and to "Auto"-sized tubes, enabling vulcanisation to be completed in 6.5 and 5.5 minutes, respectively. With the larger-sized tubes, vacuum is applied after vulcanisation in order to exhaust steam and vapour from the inside of the tube. The layout of the vulcanising plant with vacuum main and steam supply to the inside of the tube is shown in Figure 1. Figure 2 shows a jig for injecting steam into the tube through the valve which protrudes through the opening in the jig which forms part of the vulcanising mould. The system of double-sided heating was put into operation at the Leningrad Tyre Factory in May, 1956, and enabled vulcanising times to be reduced 26% to 54%, according to the size of the tubes and gives improved quality and very few rejects through lack of moulding pressure during vulcanisation. It is expected that further

Accelerated Vulcanisation of Inner Tubes by Steam Heating from Both Sides of the Tube

reduction in vulcanising time by these methods will be obtained with tubes made from mixes based on divinyl-styrol rubbers. There are 2 figures.

ASSOCIATION: Leningradskiy shinnyy zavod (Leningrad Tyre Factory)

Card 3/3

FIRSOV, Ye. F.; CHERTKOV, N. N.; SHKLYAROV, S. E. (Kursk)

Clinical aspects and diagnosis of apical Pancoast's tumor of the lung. Klin. med. no.9:90-94 '61. (MIRA 15:6)

1. Iz kurskogo oblastnogo onkologicheskogo dispansera (glavnyy vrach T. S. Kondrasheva) i kurskoy oblastnoy klinicheskoy bol'nitsy (glavnyy vrach L. A. Chunikhin)

(LUNGS—TUMORS)

FIRSOV, Ye. F.

Use of pneumoperitoneum in the diagnosis of tumors of the abdominal organs. Vop. onk. 7 no.6:62-67 '61. (MIRA 14:12)

1. Iz Kurskogo oblastnogo onkologicheskogo dispansera (glavn. vrach - T. S. Kondrasheva).

(ABDOMEN--TUMORS)
(PNEUMOPERITONEUM, ARTIFICIAL)

ASTAF'YEV, V.I.; FIRSOV, Ye.F.; SHKLYAROV, S.Z. (Kursk)

Hyperthrophic osteoarthropathy in pulmonary neoplasms (Marie-Bamberger syndrome). Klin.med. 40 no.6:90-95 Je '62.
(MIRA 15:9)

1. Iz kliniki gospital'noy khirurgii (zav. - prof. A.V. Kholod) Kurskogo meditsinskogo instituta (rektor - prof. A.V. Savel'yev) i Kurskogo oblastnogo onkologicheskogo dispansera (glavnyy vrach T.S. Kondrasheva).
(LUNGS--TUMORS) (BONES--DISEASES) (JOINTS--DISEASES)

FIRSOV, Ye.F. (Kursk, ul. Krasnoarmeyskaya, d.71-a, kv.3)

Diagnostic possibilities of pneumoperitoneum in the recognition of some diseases of the liver and gallbladder. Vest.rent. i rad. 38 no.1:47-51 Ja-F'63. (MIRA 16:10)

1. Iz kafedry rentgenologii i meditsinskoy radiologii (zav. prof. B.G.Mikhaylovskiy) Kurskogo meditsinskogo instituta i Kurskogo oblastnogo onkologicheskogo dispansera (glavnyy vrach T.S.Kondrasheva).

KHOLOD, A.V.; ASTAF'YEV, V.I.; FIRSOV, Ye.F.; SHUKLIN, B.G. (Kursk)

Diagnosis and treatment of diaphragmatic relaxation. Klin. med. 41 no.4:25-32 Ap '63. (MIRA 17:2)

1. Iz kafedry gospital'noy khirurgii (zav. - prof. A.V. Kholod) Kurskogo gosudarstvennogo meditsinskogo instituta, Oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach L.A. Chunikhin) i Oblastnogo onkologicheskogo dispansera (glavnyy vrach T.S. Kondrasheva), Kursk.

FIRSOV, Ye. I.

"Use of Luminescent Indicators in Medicine,"

report presented at the Hygiene Section of the All-Union Conf. of Medical Radiology, Moscow, 30 Jan - 5 Feb 56.

Firsov, Ye. I.

48-12-12/15

AUTHORS: Firsov, Ye. I., Bashilov, A. A.

TITLE: Investigation of the Decay of Pr^{144}-, Rh^{106}-, Cs^{134} by Means of a Luminescence-Spectrometer (Izucheniye raspada Pr^{144}, Rh^{106}, Cs^{134} pri pomoshchi lyuminestsentnogo spektrometra)

PERIODICAL: Izvestiya AN SSSR, Seriya Fizicheskaya, 1957, Vol. 21, Nr 12, pp. 1633 - 1640 (USSR)

ABSTRACT: The authors constructed a one-channel-spectrometer with NaJ(Tl)- and CsJ(Tl)-crystals, and with photo-multipliers ФЭУ-19 M and ФЭУ-12 . The following were also used in the investigation: a 50-channel-amplitude-analyzer on the potentialoscope of the construction of O. V. Vyazemskiy (LETI) and a 56-channel-analyzer with mechanical recording devices constructed in the laboratory of the authors. Filters of different thickness and sources of different activity were used in the investigation of the different intervals of γ-ray-energies. The preparations were carefully chemically purified. 1.) The spectrum of the Pd^{144}-γ-rays in the range 0,7 → → 2,2 MeV was investigated in the 50-channel-analyzer with a potentialoscope. Peaks with energies of 2,18, 1,49, 1,1 and 0,7 MeV with the relative intensities 100, 30, 2 and 150 were observed. Weak γ-lines with 1,7 and 2,8 MeV with the relative intensities

Card 1/4

Investigation of the Decay of Pr^{144}-, Rh^{106}- , Cs^{134} by Means of a Luminescence--Spectrometer

of 2 and 2,5 (1,18 MeV - 100) were also determined in the investigation of the spectrum of 2 to 3 MeV in the one-channel and in the 56-channel analyzer. Here the line 1,7 MeV was very badly resolved, as it lies on the decline of the Compton distribution from the 2,18 MeV-line. γ-rays with 1,1 , 1,7 and 2,8 MeV had earlier not been observed. The value of the energy of the peak 1,1 MeV lies near the difference 2,18 MeV - 2 mc^2 = 1,16 MeV, i.e. the energy of the pair formed by the γ-rays with 2,18 MeV in the crystal. The control investigation showed that the peak at 1,1 MeV is to be considered a summary peak of the line 1,1 MeV and the absorption--maximum of electron-positron pairs of the γ-rays of 2,18 MeV. γ-γ-coincidences 0,7 - 1,49 MeV and 1,1 - 1,7 MeV were determined on the two-channel-spectrometer of the rapid and slow coincidences. The control-measurements confirm the results. The results obtained here do not contradict the decay-schemes obtained in the references 2, 4, and 5, but at the same time permit essentially to supplement the latter. Thus, in order to place the transitions with 2,8 MeV in the scheme, a level with an appropriate energy which can be excited by the ß-transition with the limiting energy of about 200 keV is to be introduced. The γ-transition 1,1 MeV can be ranged between the levels 2,8 and 1,7 MeV. 2.) The investigation of the

Card 2/4

48-12-12/15

Investigation of the Decay of Pr^{144}-, Rh^{106}-, Cs^{134} by Means of a Luminescence--Spectrometer

Rh^{106}-radiation-spectrum was performed by means of the one-channel--spectrometer and the 50-channel-analyzer with a potentialoscope. The γ-spectrum was investigated up to about 4,5 MeV. 16 γ-lines with the following energies were observed: 0,513, 0,624, 1,045, 1,13, 1,55, 1,77, 1,85, 1,96, 2,09, 2,28, 2,42, 2,66, 2,93, 3,05, and 3,42 MeV. The approximate value of the relative intensities in this connection were: 100, 50, 8, 1, 1, 1, 0,5, 0,3, 0,5, 0,07, 0,3, 0,1, 0,01, 0,008, and 0,005. In order to range the γ-transitions with 3,05 and 3,42 MeV in the decay-scheme, levels with corresponding energies must be introduced. It is shown that the presence of excited levels 1,76 and 1,85 MeV is not absolutely necessary, but also not out of the question. 3.) Two energy-intervals of the γ-radiation of Cs^{134}, namely 0 → 1,4 MeV and 1,3 → 2,1 MeV were investigated. In the former peaks corresponding to a γ-radiation with 1,37, 1,17, 1,039, 0,8, 0,6, 0,32, 0,21, and 0,1 MeV were observed. The interpretation of the peaks of 0,32, 0,21 and 0,1 MeV is difficult, as a reverse scattering (back-scattering) and an X-radiation occurs in this range of the peaks. The results ofthe investigation confirm the existence of a number of assumed levels. The γ-transitions with 1,64, 1,75, 1,85, and 2,03 MeV

Card 3/4

48-12-12/15

Investigation of the Decay of Pr^{144}-, Rh^{106}-, Cs^{134} by Means of a Luminescence--Spectrometer

found here are to be considered direct transitions of the levels with corresponding energy. The existence of the levels 0,6, 1,4, and 1,96 MeV is indisputable. The level 1,367 MeV is to be introduced and the γ-line 1,367 MeV is to be considered a direct transition from this level to the ground state of the Ba^{134}-nucleus. There are 8 figures, and 43 references, 3 of which are Slavic.

ASSOCIATION: Central Scientific Radiological Research Institute (Tsentral'nyy nauchno-issledovatel'skiy rentgeno-radiologicheskiy institut)

AVAILABLE: Library of Congress

Card 4/4

FIRSOV, Ye. I., Cand Phys-Math Sci-- (diss) "Study of the gamma - spectra of certain radioactive isotopes [redacted] by means of a luminescent gamma-spectrometer." [redacted] Len, 1958. 8 pp. (Len State Ped Inst im A.I. Gertsen.) 100 copies. (KL, 12-58, 96)

SOV/120-58-5-10/32

AUTHORS: Vyazemskiy, V. O., Drapchinskiy, L. V., Pisarevskiy, A. N., Trifonov, V. V. and Firsov, Ye. I.

TITLE: A Non-Overloading Amplifier with a Wide-Channel Discriminator (Neperegruzhayushchiysya usilitel' s shirokokanal'nym diskriminatorom)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 5, pp 40-44 (USSR)

ABSTRACT: The device described consists of the following principal parts: 1) a non-overloading linear amplifier comprising a pre-amplifier, a phase inverter, pulse-forming networks, an output amplifier and a power amplifier; 2) an integrating wide channel pulse discriminator consisting of a lower and upper gate, a charging diode, a resetting triode, an anti-coincidence circuit, the output univibrators of the integrating and differentiating channels followed by power amplifying stages; 3) supply sources. The non-loading amplifier is based on the circuit described by Fairstein (Ref.3) and its circuit diagram is shown in Fig.1. The pre-amplifier of

Card 1/3

A Non-Overloading Amplifier with a Wide-Channel Discriminator

this unit is based on a cathode coupled circuit, while the phase inverter consists of one tube with anode and cathode resistances. The pulses are formed after the inverter by means of RC networks or by a short circuited delay line (.5 μ sec duration). The final amplifier consists of 5 tubes; the first 3 form a "triple" and are provided with a negative feedback; the 4th tube operates as a cathode follower. The output signal of the amplifier is applied to an external pulse analyser and to the discriminator of the device. The discrimination level can be varied from 5 to 105 V in steps of 1 V; the voltage divider circuit is shown in Fig.2. The instrument is designed for the operation with a scintillation counter. The maximum gain of the amplifier is 2×10^6 and the effective noise amplitude at the output of the amplifier is less than .04 V. The pulse rise time is .15 μ s and the pulse duration is: a) 2, 5, 10 or 20 μ s if RC networks are used, and b) 1 μ s if a delay line is used. The overloading coefficient of the amplifier is over 100. The amplifier is asymmetrical in that it does not amplify negative pulses. The amplitude characteristic of the

A Non-Overloading Amplifier with a Wide-Channel Discriminator

amplifier is shown in Fig.3, from which it is seen that its output is linear from 2 to 120 V. The instrument is supplied with +300 V at 130 mA and with -250 V at 20 mA. The paper contains 3 figures and 3 English references.

ASSOCIATION: Radiyevyy institut AN SSSR (Radium Institute of the USSR Academy of Sciences)

SUBMITTED: November 18, 1957.

SOV/120-58-6-15/32

AUTHORS: Vyazemskiy, V. O., Drapchinskiy, L. V., Pisarevskiy, A. N., Trifonov, V. V. and Firsov, Ye. I.

TITLE: A Counting Instrument Employing Dekatrons (Pereschetnyy pribor s ispol'zovaniyem dekatronov)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 6, pp 78-81 (USSR)

ABSTRACT: Since a dekatron is a comparatively new device and since its parameters depend to a large extent on the trigger circuit employed to effect the transfer from one cathode to the next, a detailed investigation of the triggering methods was carried out. The authors tried a number of triggering circuits and found that the most successful one was that employing a double triode in which one of the anodes was provided with a delay capacitance; the circuit is shown in Fig.1. The dekatron employed was of the type 10/SG1S and had 2 systems of guide electrodes. The actual counter (see the diagram of Fig.5) consisted of the following elements: 1) a binary counting decade based on vacuum tubes, 2) 4 counting decades based on dekatrons, 3) a timer, 4) a circuit for controlling the timer and the input gate circuit, 5) a gating circuit, 6) an intensity meter, 7) a quartz crystal calibrator, 8) a power supply source, and 9) a mechanical register.

Card 1/3

A Counting Instrument Employing Dekatrons

The operation of the equipment is as follows. An input pulse is applied to the gating circuit which is in the form of a univibrator; the circuit can be blocked by the bi-stable device which also controls the timer. The pulses from the anode of the gating univibrator are applied to the binary decade. The output from the decade is used to trigger the first dekatron, which in turn drives the following dekatrons. The counting can be stopped automatically after a pre-set time interval which is determined by the timer. The basic time intervals are 3, 6 and 15 sec; by employing 2 dekatrons it is also possible to obtain counting intervals of 60, 150, 300, 600 and 1500 sec. The average counting rate is recorded by the intensity meter which is capable of measuring the rates ranging from 200 to 5×10^4 pulses per minute. The instrument can be checked by employing the quartz

A Counting Instrument Employing Dekatrons

crystal oscillator which operates at 75 kc/s. The device has a resolving time of 12 μs. The authors express their gratitude to Yu. A. Nemilov for making this work possible and for his interest in it. The paper contains 8 figures and 4 references; 2 of the references are English and 2 are Soviet.

ASSOCIATION: Radiyevyy institut AN SSSR (Radium Institute of the Soviet Academy of Sciences)

SUBMITTED: November 18, 1957.

FIRSOV, Ye.I.

Studying the gamma spectra of certain radioisotopes with the aid of a luminescent spectrometer. Uch zap. Ped inst Gerts. 197:160-175 '58. (MIRA 16:9)

(Radioisotopes—Spectra)
(Gamma rays)

GORODINSKIY, G.M.; POKROVSKIY, V.N.; FIRSOV, Ye.I.

Neutron-deficient Gd and Eu isotopes with mass numbers 145 and 147.
Uch zap. Pod inst Gerts. 197:176-179 '58. (MIRA 16:9)
(Gadolinium isotopes—Spectra)
(Europium isotopes—Spectra)

PISAREVSKIY, A.N.; SOSHIN, L.D.; FIRSOV, Ye.I.

Using the P-N junctions in recording nuclear radiations (survey).
Prib. i tekh.eksp. 6 no.6:14-20 N-D '61. (MIRA 14:11)

1. Institut fiziki AN BSSR.
(Nuclear counters)

ACCESSION NR: AP4041011 S/0120/64/000/003/0035/0039

AUTHOR: Bogdanov, A. P.; Firsov, Ye. I.

TITLE: Multichannel coincidence spectrometer based on AI-100-1

SOURCE: Pribory* i tekhnika eksperimenta, no. 3, 1964, 35-39

TOPIC TAGS: spectrometer, coincidence spectrometer, multichannel spectrometer, multichannel coincidence spectrometer, gamma spectrometer

ABSTRACT: A multichannel multipurpose gamma-spectrometer is described which permits measuring the gamma-radiation and gamma-gamma-coincidence spectra and determining the lifetime of excited states within 1—100 microsec (possibly longer). The spectrometer has a "fast-slow"-coincidence scheme and is designed with standard Soviet equipment. NaI(Tl), 20 x 30-mm crystals combined with FEU-29 photomultipliers serve as radiation detectors. Pulse-height analysis is performed by a single-channel AADO-1 and a multichannel (in

Card 1/2

ACCESSION NR: AP4041011

another branch) AI-100-1 analyzer. Schemes of the output-data unit of AI-100-1 feeding the EPP-09 recorder and the time-measuring attachment are given. A fast coincidence circuit intended for slow (resolution, 5×10^{-8} sec) scintillators is described. A single Co^{60} spectrum and a Co^{60} coincidence spectrum illustrate the spectrometer operation. Orig. art. has: 8 figures

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics, AN BelSSR)

SUBMITTED: 11Jul63 ENCL: 00

SUB CODE: NP NO REF SOV: 003 OTHER: 000

Card 2/2

ACCESSION NR: AP4042726 S/0250/64/008/006/0376/0378

AUTHOR: Bogdanov, A. P., Firsov, Ye. I.

TITLE: The feasibility of using a luminescence spectrometer to study the gamma-rays from the (n, Gamma) reaction

SOURCE: AN BSSR. Doklady*, v. 8, no. 6, 1964, 376-378

TOPIC TAGS: spectrometer, luminescence spectrometer, Gamma ray, gamma spectrometer, (n, Gamma) reaction, thermal neutron, neutron radiation capture, spectrometer resolution, background attenuation

ABSTRACT: A luminescence spectrometer with a NaI(Tl) crystal was added to the system used in a channel, tangential to the reactor core, to study the gamma-rays emitted in thermal-neutron radiation capture. The luminescence spectrometer was used to supplement the magnetic spectrometer and improved the performance of the system by increasing the resolution and attenuating the gamma-ray background. The instrument combines the 70 x 70 cm crystal with a photomultiplier, has a Cs^{137} -line resolution of 13%, and allows the isotope sample to be reduced to 30-40g. Pulses from the multiplier are sent into an AI-100-1 multichannel amplitude analyzer. The analyzer is provided with an EPP-09

Card 1/2

ACCESSION NR: AP4042726

automatic-spectrum tape recorder. The gamma-ray beam from the isotope sample being studied is shaped by collimators set in the channel, passes through the vacuum chamber of the magnetic spectrometer and reaches the crystal. The innovation was found to be an effective means of studying the (n, δ) reaction. Orig. art. has: 1 figure.

ASSOCIATION: Institut fiziki AN BSSR (Physics Institute, AN BSSR)

SUBMITTED: 09Dec63 ENCL: 00

SUB CODE: NP NO REF SOV: 001 OTHER: 000

2/2
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ACCESSION NR: AP4045692 S/0250/64/008/008/0514/0515

AUTHOR: Rudak, E. A.; Firsov, Ye. I.

TITLE: Determination of the spin in the 0.416 Mev energy level of the Fe-55 nucleus from the (d, p) and (n, Gamma) reactions

SOURCE: AN BSSR. Doklady*, v. 8, no. 8, 1964, 514-515

TOPIC TAGS: electron spin, Fe-55 nucleus, iron atom, deuteron bombardment, neutron bombardment, (d.p) reaction, (n.Gamma) reaction

ABSTRACT: The authors discuss the possibility of a single-valued determination of the spin in the 0.416 Mev energy-level of the Fe^{55} nucleus by juxtaposing the intensity of the protons from the Fe^{54} (d, p) Fe^{55} reaction and the intensity of the γ-rays from the Fe^{54} (n,γ) Fe^{55} reaction which correspond to transitions to identical levels of the product nucleus. Referring to the work of Bocklelman, and Lane and Wilkinson, they indicate the validity of the expression

$$(\Gamma_n^2/\Gamma_{dp}^2)\,a/(\Gamma_n^2/\Gamma_{dp}^2)\,b = r_a^2/r_b^2, \qquad (1)$$

for the neutron bands γ_{dp}^2 and $\gamma_{n\gamma}^2$ determined from (d, p) and (n, γ) reactions,

Card 1/2

ACCESSION NR: AP4045692

provided that the wave functions of the initial and final state of both reactions can be represented in the form of the product of a wave function of the target nucleus and a wave function of a neutron revolving about the target nucleus. A diagram is presented which shows nuclear decay for Fe^{55} from a captured state to the 0.416 Mev excitation level and then the basic state during an Fe^{54} (n, γ_0) Fe^{55} reaction. Orig. art. has: 1 figure.

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics, AN BSSR)

SUBMITTED: 20Jan64 ENCL: 00 SUB CODE: NP

NO REF SOV: 002 OTHER: 004

Card 2/2