499 AEC-tr-2296

THE PROBLEM OF THE ANGULAR DISTRIBUTION OF FISSION FRAGMENTS OF URANIUM AT HIGH ENERGY EXCITATIONS. O. V. Lozhkin, N. A. Perfilov, and V. P. Shamov. Translated by V. N. Rimsky-Korsakoff from Doklady Akad. Nauk S.S.S.R. 103, 407(1955). 3p.

The angular distribution of fission fragments of uranium was studied by using thick-layered photographic plates. Nuclear fine-grained emulsions of the type π-9 were saturated in a uranium salt solution and bombarded with 660-Mev protons. In all the observed cases of fission of uranium nuclei the direction of scattering of fragments with respect to the direction of the falling proton and the angle between the fragments were measured (the initial excitation energy of fission nuclei was measured by the angle between the fragments). All the fissions were divided into three groups according to the energy of excitation of the fission nuclei: 60, 150, and 320 Mev. The angular distribution of the fragments of uranium fission as a function of the initial energy of excitation is given. In the case of all the observed fissions the angular distribution can be approximately described by the function $I(\phi) = a + b \sin^4 \varphi$, where φ is the projected angle between the direction of the divergence of the fragments and the direction of the falling proton. (auth)

2

Shamov, V.P.

275 AEC-tr-2304

ON THE YIELD OF FISSION AND STAR FORMATION AFTER CAPTURE OF π^- MESONS BY THE NUCLEI U, Bi, AND W. N. A. Perfilov, O. V. Lozhkin, and V. P. Shamov. Translated by Morton Hamermesh from Doklady Akad. Nauk S.S.S.R. 103, 417-19(1955). 7p.

The ratio of fission and star formation probabilities after π^--meson capture by U, Bi, and W was studied by placing these elements, in the form of fine-grained oxides, in the central layer of a three-layer nuclear emulsion. The results of the experiment are tabulated and show the number of stars per fission for U_3O_8, Bi_2O_3, and WO_3 to be 0/2.4, 57, and 133, respectively. (B.J.H.)

62

2

SHAMOV, V. P.

539.172.13

643. THE FISSION OF URANIUM NUCLEI BY PROTONS OF ENERGY 460 MeV. N.S.Ivanova, N.A.Perfilov and V.P.Shamov.

~~Dokl. Akad.~~ Nauk SSSR, Vol. 103, No. 4, 573-5 (1955). In Russian.

Photographic emulsion plates loaded with uranium were irradiated by protons of energy 460 MeV. In an electron-sensitive emulsion, 46 fissions were found, of which 83% were accompanied by the emission of light charged particles (up to six in number, with an average of 1.65). In another emulsion with a proton-sensitivity limit of about 80 MeV, 102 fissions were found with an average of 1 particle emitted. Thus 40% of the particles have energies greater than 80 MeV. The angular distribution of these particles was predominantly forward. It is concluded that the majority of the particles originate in a nuclear cascade process in the uranium nucleus. Upper and lower limits to the mean excitation energy are roughly estimated to be 198 and 128 MeV respectively. The fission cross-section was found to be 1.2 ± 0.3 barn, so that about 70 ± 18% of uranium nuclei undergo fission on interacting with 460 MeV protons. The mean total path of the fission fragments is found to be the same as for fission by π-mesons and by slow neutrons. The kinetic energy of the fragments is therefore derived only from their Coulomb repulsion. J.B.Sykes

Radium Inst. im. Khlopin, AS USSR

SHAMOV, V. P.

539.172.13

644. MECHANISM OF THE FISSION OF HEAVY NUCLEI AT HIGH EXCITATION ENERGIES, V.P.Shamov.

Dokl. Akad. Nauk SSSR, Vol. 103, No. 4, 593-5 (1955). In Russian.

Nuclear photographic plates with a proton-sensitivity limit of about 30 MeV were loaded with uranium, bismuth or tungsten and irradiated by protons of 460 MeV and 660 MeV. For each energy, the mean number of charged particles, the ratio of alpha-particles to protons, the mean excitation energy and the fission cross-section are tabulated for each of the three elements. The alpha-particles are emitted isotropically, while the majority of the protons are directed forwards. A comparison of spectra shows that all the alpha-particles and about 70% of the protons are evaporated. The number of charged particles emitted is tabulated as a function of the initial excitation energy, showing a one-to-one correspondence. The mechanism of the fission process is analysed for each of the three elements investigated. It is found that fission occurs only after the nucleus has cooled by evaporating neutral and charged particles.

J.B.Sykes

SHAMOV, V. P., IVANOVA, N. S. and PERFILOV, N. A.

"Exposition of the Results of Investigation of Fission by the Method of Photoemulsions in Perfilov's Laboratory in the Leningrad Radium Institute", a report presented at the Conference on the Physics of Nuclear Fission, 19-21 January 1956, Atom Energ., No. 1, 1956.

SHAMOV, V.P.

Nuclear emulsion technique for determining the threshold of emissive fission. Atom.energ.supplement no.1:129-151 '57. (MIRA 10:10)
(Nuclear fission) (Photography, Particle track)

SHAMOV, V.P.

"The Use of Heavy Photographic Emulsions to Determine Emitting Fission Thersholds", Atomnaya Energiya, Vol 2, No I, Jan 57, p IOO.

SUM. I322

SHAMOV, V.P.

Distr: 4E3d

3402

FISSION OF URANIUM 19 AND PROTACTINIUM 19 AT HIGH EXCITATION ENERGIES/ V. P. Shamov (Radium Inst., Academy of Sciences, USSR). Zhur. Eksptl'. i Teoret. Fiz. 33, 346-53(1957) Aug. (In Russian)

Fission of U and Pa for initial excitation energies of 100 Mev is considered. The analysis is based on comparison of the yields of the uranium isotopes U^{234}—U^{232} and protactinium isotopes Pa^{231}—Pa^{221} (equal values of the parameter Z^2/A) produced in the disintegration of uranium U^{238} by 340 Mev protons. The results of the analysis point to emission nature of U and Pa fission in the indicated range of initial excitation energy. (tr-auth)

5, Rnl

AUTHOR PERFILOV N.A., SHAMOV V.P., LOZHKIN O.V. PA - 2651

TITLE The triple fission of uranium by fast particles. (Troynoye deleniye urana na bystrykh chastitsakh. - Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 1, pp 75 - 77 (USSR).

Received: 5/1957 Reviewed: 6/1957

ABSTRACT Experimental Data:

Plates saturated with uranium were irradiated by 660 -protons. On examination of the plates several fissions of the uranium were registered where multiple-charge particles were radiated with $Z > 4$. Among these particles a plane threefold fork was found. The traces of all three particles of this fork belong to multiple-charge particles: two belong to fission fragments of a heavy nucleus and the third possesses a much stronger darkening density than the traces of α-particles. The authors used a specially fine-grained emulsion with the limit of sensitivity of ~ 35 MeV for protons. The blackening density along these three traces was measured photometrically. The results found for total blackening are shown in form of a diagram and compared with the blackening of the traces of nitrogen ions. The nuclear charge number can be determined from the angle of inclination of the blackening curve. For one of the particles the value of $Z_{III} = 9,8 \pm 1$. was

CARD 1/2

SHAMOV, A. P.

"[illegible] OF PROTON-INDUCED Ag AND Br NUCLEI FISSION AT Ep=180-660 Mev".

Report by A. P. Shamov, presented at 2nd UN Atoms-for-Peace Conference, Geneva, 1-13 Sept. 1958.

21 (7)

AUTHOR: Shamov, V. P. SOV/56-35-2-2/60

TITLE: The Fission of Silver Nuclei by Protons of High Energy (Deleniye yader serebra protonami bol'shoy energii)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 2, pp 316-321 (USSR)

ABSTRACT: Such fission processes have already been investigated several times in the case of heavy and light nuclei, but not in the case of nuclei of medium weight. It was this fact that gave rise to the present work, for which the author used the nuclear emulsion "П-9 -sensitive" with a proton sensitivity of ~45 MeV, which had been irradiated with an intensive proton beam of different energy. (Irradiation was carried out on the synchrocyclotron of the Ob"yedinennyy institut yadernykh issledovaniy - (United Institute of Nuclear Research)). Measuring results:

d [cm]	E_p [MeV]	σ_f (AgBr) [cm^2]
0	660	$3.5 \cdot 10^{-28}$
10	500	$2.7 \cdot 10^{-28}$

Card 1/2

The Fission of Silver Nuclei by Protons of High Energy SOV/56 35-2 2/60

d [cm]	E_p' [MeV]	σ_f (AgBr) [cm^2]
20	300	$3.3 \cdot 10^{-26}$

(d = thickness of the copper filter E_p' = proton energy behind the filter, σ_f = fission cross section)

The other chapters deal with the final nuclei in dependence on the charge and the interaction process (spallation cascade-evaporation). The fission of silver nuclei leads to the formation of fragments of equal mass as well as to the emission of a large number of charged particles. In conclusion the author thanks Professor N. A. Perfilov as well as G. V. Lozhkin, V. I. Ostroumov, and V. F. Darovskikh for their advice and cooperation. There are 2 figures, 3 tables, and 5 references, 4 of which are Soviet.

ASSOCIATION: Radiyevyy institut Akademii nauk SSSR (Radium Institute, AS USSR)

SUBMITTED: February 18, 1958

Card 2/2

SHAMOV, V.P.

Mechanism of the fission of uranium at high excitation energies.
Trudy Radiev.inst.AN SSSR 9:45-51 '59. (MIRA 14:6)
(Uranium) (Nuclear fission)

SHAMOV, V.P.

Fission of heavy nuclei ($Z \geq 73$) at high excitation energies. Trudy Radiev.inst.AN SSSR 9:52-54 '59. (MIRA 14:6)
(Nuclear fission)

SHAMOV, V.P.

Preparation of a solution containing bismuth for filling nuclear photoemulsions. Trudy Radiev.inst.AN SSSR 9:279-280 '59. (MIRA 14:6)

(Bismuth) (Photographic emulsions)

4

20195
S/194/61/000/005/010/078
D201/D303

12 2200

AUTHORS: Gorin, A.V., Grosman, V.A., Drapchinskiy, L.V., Rayevskiy, B.N., Romanov, L.P., Storozhenko, E.P., Fedorov, Yu.P., Shavrin, G.R. and Shamov, V.P.

TITLE: A mobile radiometric emergency laboratory using semiconductor devices

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 5, 1961, 31-32, abstract 5 A235 (Dokl. nauchn. konferentsii in-ta radiats. gigiyeny po itogam raboty za 1959, g., L., 1960, 18-19)

TEXT: A description is given of a complete mobile laboratory, mounted on the automobile УАЗ -450 А (UAZ-450 A) and which is to be used for detecting radioactive isotope contamination of certain areas or of separate objects. The laboratory equipment consists of the following: 1) automatic recorder of the level of γ-background from 10 to 10^5 microcurie/hr (ИРГ-ПГС-5)(IRG-PGS-5)); 2) 2

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D201/D303

A mobile radiometric emergency...

calculating machines (ИРГ-ПП-100)(IRG-PP-100)); 3) supplies 200-2000 V; 4) head screening (thickness 40 mm) for counters СТС-5 (STS-5) in cassettes or for the end-counter; 5) rate counter ИРГ-ИП-1 (IRG-IP-1) with counting rate up to 10^6 pulses/min; 6) beta-gamma portable scintillating radiometer with ФЭУ-25 (FEU-25) ИРГ-ПР-2 (IRG-PR-2). Power for the whole installation is supplied by the automobile battery. Power comsumption ~ 15 watt. The laboratory personnel consists of three operators and driver. [Abstracter's note: Complete translation]

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21(0) PHASE I BOOK EXPLOITATION SOV/2081

International Conference on the Peaceful Uses of Atomic Energy, 2d., Geneva, 1958

Doklady sovetskikh uchenykh; yadernaya fizika (Reports of Soviet Scientists; Nuclear Physics) Moscow, Atomizdat, 1959. 552 p. (Series: Its: Trudy, Vol. 1) 8,000 copies printed.

Eds. (Title page): A.I. Alikhanov, Academician; V.I. Veksler, Academician; and N.A. Vlasov, Candidate of Physical and Mathematical Sciences; Ed. of this volume: S.I. Drozdov and D.V. Zaretskiy, Candidates of Physical and Mathematical Sciences; Ed. (Inside book): G.L. Smolyan; Tech. Ed.: Ye.I. Mazel'.

PURPOSE: This collection of articles is intended for scientific research workers and other persons interested in nuclear physics. The volume contains 43 papers presented by Soviet scientists at the Second Conference on Peaceful Uses of Atomic Energy, held in Geneva in September 1958.

COVERAGE: It is divided into two parts. Part I contains 17 papers dealing with plasma physics and controlled thermonuclear reactions, and Part II contains 26 papers on nuclear physics, including problems of particle acceleration and of cosmic ray physics. The first paper by L.A. Artsimovich presents a review of Soviet work on controlled thermonuclear reactions. The remaining papers in Part I deal with particular problems in this field.

The papers in Part II deal in detail with various problems in nuclear physics, such as the fission of heavy atoms and their isotopes, and with the study of cosmic radiation by means of artificial earth satellites and rockets, described in a paper by S.N. Vernov. The Russian-language edition of the proceedings of the conference is published in 16 volumes. The first 6 volumes contain all the papers presented by Soviet scientists as follows: Volume (1), Yadernaya fizika (Nuclear Physics); Volume (2), Yadernaya reaktory i yadernaya energetika (Nuclear Reactor and Nuclear Power); Volume (3), Yadernoye goryucheye metally (Nuclear Fuel and Reactor Metals), Volume (4), Khimiya radioelementov i radiatsionnykh prevrashcheniy (Chemistry of Radioelements and of Radiation Transformations); Volume 5, Radiobiologiya i radiatsionnaya meditsina (Radiobiology and Radiation Medicine); Volume (6) Polucheniye i primeneniye izotopov (Production and Use of Isotopes). The other 10 volumes contain selected papers presented at the Conference by non-Soviet scientists. In the present volume discrepancies between the English and Russian language) edition of the proceedings have been noted in three articles where the texts are not identical; vis; Andrianov, et al, "High Current Pulsed Discharge"; Akhiyezer, et al, "High Frequency Plasma Oscillation"; and Bogolyubov, "Investigations of the Many-body Problem". The serial numbers of reports 2302 and 2504 are reversed in the English edition. Report 2211, by Simelnikov, et al, is numbered 2536 in the English edition.

TABLE OF CONTENTS:

Reports of Soviet Scientists; Nuclear (Cont.) SOV/2081

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13

[illegible] SSSR. Radiyevyy [illegible]

Trudy, t. IX (Transactions of the Radium Institute, Academy of Sciences USSR, Vol. 9) Moscow, Izd-vo AN SSSR, [illegible]. 187 p. Errata slip inserted. 1,700 copies printed.

Ed.: N.A. Perfilov, Doctor of Physical and Mathematical Sciences; Ed. of Publishing House: G.M. Aron; Tech. Ed.: A.V. Smirnova.

PURPOSE: The volume is intended for physicists.

COVERAGE: The book represents volume 9 of the Transactions of the Radium Institute and contains the results of studies conducted at the Institute chiefly from 195[illegible] to 1956. There are a number of articles dealing with the study of nuclear reactions occurring with particles of different energies ranging from several eV up to hundreds of MeV. Others treat different problems of the physics of neutrons. Results of studies of various neutron sources, neutron energy distribution in a moderator (water), and other problems connected with the theory of neutron interaction with matter are presented. The majority of the articles are concerned with problems of method. The authors provide a complete description of the construction of equipment and of the results of tests performed under laboratory conditions. No personalities are mentioned. References accompany individual articles.

PHASE I BOOK EXPLOITATION SOV/3[illegible]3

Akademiya nauk SSSR. Radiyevyy institut

Trudy, t. IX (Transactions of the Radium Institute, Academy of Sciences USSR, Vol. 9) Moscow, Izd-vo AN SSSR, 1959. [illegible]87 p. Errata slip inserted. 1,700 copies printed.

Ed.: N.A. Perfilov, Doctor of Physical and Mathematical Sciences; Ed. of Publishing House: G.M. Aron; Tech. Ed.: A.V. Smirnova.

PURPOSE: The volume is intended for physicists.

COVERAGE: The book represents volume 9 of the Transactions of the Radium Institute and contains the results of studies conducted at the Institute chiefly from 195[illegible] to 195[illegible]. There are a number of articles dealing with the study of nuclear reactions occurring with particles of different energies ranging from several eV up to hundreds of MeV. Others treat different problems of the physics of neutrons. Results of studies of various neutron sources, neutron energy distribution in a moderator (water), and other problems connected with the theory of neutron interaction with matter are presented. The majority of the articles are concerned with problems of method. The authors provide a complete description of the construction of equipment and of the results of tests performed under laboratory conditions. No personalities are mentioned. References accompany individual articles.

85345

9,7500

S/120/60/000/005/013/051
E192/E382

AUTHORS: Rayevskiy, B.N., Romanov, L.R. and Shamov, V.P.

TITLE: A Counting Decade Based on Transistors

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No. 5, pp. 62 - 64

TEXT: A detailed circuit diagram of the device is shown in Fig. 1. The decade consist of four bistable circuits and a diode reset key. The bistable circuits are based on transistors type П14 (P14). The circuits are reset to zero by momentarily applying the supply voltage to the collector of the lefthand-side transistor via a diode. Unlike in the standard decade circuits, a direct feedback is provided from the output of the bistable circuit T_1 to the input of the circuit T_4 and by providing a diode key between T_1 and T_2. The decade operates as follows. Normally, all the bistable circuits are in their rest position, which is characterised by the lefthand-side transistor being closed and the righthand-side transistor conducting. A voltage of

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S/120/60/000/005/013/051
E192/E382

A Counting Decade Based on Transistors

-10 V is applied to the key diode from the collector of the lefthand-side transistor of T_4. The divider R_{10} and R_{11} keeps the anode potential of this diode at -8V; consequently, the diode is conducting. Thus, the key transmits positive pulses to the input of T_2. The pulses appearing at the second input of T_4 cannot operate it since its righthand-side transistor is open. The eighth pulse triggers T_4 so that its lefthand-side transistor becomes conducting and the righthand-side transistor is closed. The voltage at the key diode will thus be increased to -1.5 V and the key becomes nonconducting to positive pulses. The ninth pulse changes the state of T_1; while the tenth pulse returns T_1 and T_4 to their rest position. The decade now produces a positive output pulse and returns it to its original state. The resolving time of the decade is 7 μs and the power consumed by it is 0.15 W. The decade was constructed as a plug-in unit

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S/120/60/000/005/013/051
E192/E382

A Counting Decade Based on Transistors

and its photograph is shown in Fig. 2.
There are 2 figures and 5 references: 3 Soviet and 2 English.

ASSOCIATION: Institut radiatsionnoy gigiyeny (Institute of Radiation Hygiene)

SUBMITTED: September 17, 1959

Card 3/3

86740

9,2520 (1154 ONLY)
9,4141
9,4140

S/120/60/000/006/015/045
E041/E335

AUTHORS: Bezmenov, O.M., Lebedev, O.V. and Shamov, V.P.

TITLE: Wide-band Transistor Preamplifier

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No. 6, pp. 56 - 57

TEXT: The circuit of Fig. 1 is to match the high output resistance of the photomultiplier of a scintillation gamma-ray spectrometer with the low characteristic impedance of a coaxial cable. The great attraction of the transistor circuit is its freedom from microphony. The two transistors $П_3$ and $П_4$ form an emitter follower analogous to the White circuit, well known for tubes. The base current of the lower transistor, whose high AC resistance constitutes the emitter load of the upper transistor, is stabilized by the silicon stabilistor $П_5$. The transistors are alloy-diffusion types П-402 (P-402) or П-403 (P-403). The load on the amplifier is a 150 ohm resistor connected by 20 m of coaxial

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S/120/60/000/006/015/045
E041/E335

Wide-band Transistor Preamplifier

cable. The overall gain, including the cable, is 0.92. The input resistance of the amplifier is 250 kΩ in parallel with 16 pF. The output resistance of the amplifier is 8.6 Ω. The circuit will handle without distortion pulses between +0.4 and -3.5 V, at temperatures up to +70 °C. The rise time does not exceed 2×10^{-8} sec with a very small overshoot. Fig. 3 shows the effect on the rise time of the output signal ($\tau_{\phi} \cdot 10^{-8}$ μs) on the capacitance (C_H, μμF) connected in parallel with the load resistor (150 ohm); the rise time of the input signal is 3.8×10^{-8} sec. To obtain the best results the transistors are carefully selected. Π_1 and Π_2 should have high β, Π_3 can have an average β while Π_4 is not critical. The diode Д-810 (D-810) can be changed

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S/120/60/000/006/015/045
E041/E335

Wideband Transistor Preamplifier

if R_6 and R_7 are modified to give a through-current of 1.5 - 2.0 mA. The operation is proof against supply fluctuations of ± 10%. A.N. Pisarevskiy is thanked for valuable comments. There are 3 figures and 4 references: 1 Soviet and 3 English.

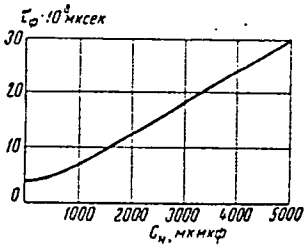

Рис. 3. Зависимость времени нарастания выходного сигнала от величины емкости, присоединенной параллельно нагрузке 150 *ом*. Время нарастания сигнала на входе $3{,}8 \cdot 10^{-8}$ *сек*

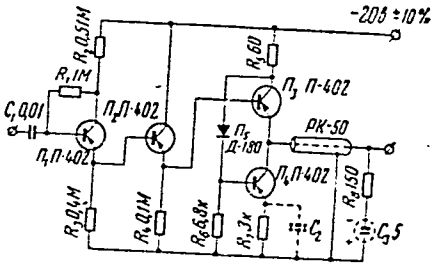

Рис. 1. Схема предусилителя

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S/120/60/000/006/015/045
E041/E335

Wide-band Transistor Preamplifiers

ASSOCIATION: Institut radiatsionnoy gigiyeny (Institute of Radiation Hygiene)

SUBMITTED: November 9, 1959

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S/194/61/000/001/011/038
D216/D304

AUTHORS: Lebedev, O.V. and Shamov, V.P.

TITLE: Portable counter using decatron tubes

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 1, 1961, 1, abstract I E3 (Gigiyena i sanitariya, no. 7, 1960, 63-64)

TEXT: A counter using decatrons has been designed for working with nuclear radiation counters. The memory storage capacity is 10^6 - 1 pulses and the computing speed is 3×10^6 pulses per min. There is an intensimeter and a regulated 0 - 1.6 kV EHT supply for the counters. The total supply power is 35 W and the dimensions are 320 x 195 x 135 mm^3.

Card 1/1

PERFILOV, N.A.; IVANOVA, N.S.; LOZHKIN, O.V.; MAKAROV, M.M.; OSTROUMOV, V.I.; SOLOV'YEVA, Z.I.; SHAMOV, V.P.

Fragmentation of Ag and Br nuclei by 9 Bev. protons. Zhur.eksp.i teor.fiz. 38 no.2:345-350 F '60. (MIRA 14:5)

1. Radiyevyy institut Akademii nauk SSSR.
(Protons) (Nuclear reactions)

83718

S/056/60/038/004/011/048
B019/B070

24.6600

AUTHORS: Arifkhanov, U. R., Makarov, M. M., Perfilov, N. A., Shamov, V. P.

TITLE: Production of Fragments 19 Under the Action of 100-Mev Protons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1115-1122

TEXT: The authors have investigated the fragment production of the nuclei of a photoemulsion. The emulsion used was of type Π-9 (η) (P-9 (ch)), which allowed the observation of the charged products of nuclear fragmentations, and a visual study of the multiply charged particles with $Z \geqslant 3$, of α particles, or protons. The experiments were carried out at the synchrocyclotron of the OIYaI (Joint Institute of Nuclear Research). Fig. 1 shows the experimentally observed fragment production cross section as function of the photon energies for heavy and light nuclei. Fig. 2 shows the reduced probability for the departure of fragments from a heavy nucleus as a function of the number of prongs of a star. In the fragmentation of Ag and Br, the following fragments

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83718

Production of Fragments Under the Action of 100-Mev Protons

S/056/60/038/004/011/048
B019/B070

were found: Li (30), Be (14), and B (5). In the fragmentation of C, N, and O the following fragments were found: Li (20), Be (12), and B (5). Fig. 3 shows the energy distribution of the Li and Be fragments for heavy and light nuclei; Fig. 4 shows the distribution of the fragments according to their range, and Fig. 5 shows the angular distributions of the fragments. The fragmentation cross section for the heavy nuclei of the emulsion is given to be 1.93 ± 0.64 millibarns and of the light nuclei 1.16 ± 0.36 millibarns. The results of O. V. Lozhkin and N. A. Perfilov (Ref. 6) and M. G. Meshcheryakov (Ref. 14) among others are also mentioned. From the discussion of the results the authors conclude that for the energy range of the incident protons (~100 Mev) investigated here the fragments of secondary nucleons are formed by quasi-elastic scattering on moving nucleon complexes. There are 8 figures, 1 table, and 18 references: 7 Soviet, 8 US, 1 Japanese, 1 French, and 1 German.

ASSOCIATION: Radiyevyy institut Akademii nauk SSSR (Radium Institute of the Academy of Sciences, USSR)

SUBMITTED: November 26, 1959

Card 2/2

21(7)

AUTHORS: Perfilov, N. A., Lozhkin, O. V., Shamov, V. P.

S/053/60/070/01/001/007
B006/B017

TITLE: The Processes of Fragmentation and Fission in the Interaction Between High-energy Particles and Nuclei

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol 70, Nr 1, pp 3-56 (USSR)

ABSTRACT: The present paper gives a detailed survey on the fundamental problems of nuclear fragmentation and fission. From the large number of publications available in this field individual examples are chosen and discussed to illustrate the chapters. In the introduction the cascade evaporation model used for describing nuclear reactions induced by particles with energies ranging from 10^2 to 10^4 Mev is discussed and the conclusions drawn from this model are investigated individually. Part I deals with fragmentation. Fragmentation is any form of nuclear disintegration on which multiply-charged particles with $Z > 3$ are formed. The individual sections of this part deal with 1) fragmentation cross section; a three-page table and a number of well selected diagrams illustrate the effects influencing the cross sections. 2) The multiplicity in the fragmenta-

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tion process; 3) the nature of the fragments produced, 4) energy distribution of the fragments (Figs 11, 12, 13); 5) angular distribution of the fragments (Fig 14, Table 3); 6) the properties of the residual nuclei; 7) the mechanism of fragmentation (nuclear cascade process, particle evaporation of the excited nucleus, process of asymmetrical nuclear fission, hypotheses on the fragmentation process). Part II deals with the characteristics and the experimental results of nuclear fission at high excitation energies. Section 1: fission cross sections; section 2: angular distribution of the fission fragments, section 3: mass spectra in fission (Figs 19, 20, 21); section 4: fission mechanism and the methods of its determination (investigation of the energy spectrum and of the number of charged particles - photomethod; analysis of the ranges of the fragments in the case of different primary excitation energies; investigation of the angular correlations of the emitted particles with the fragments; Monte Carlo method). For each of these methods which are individually described the authors give examples (mainly taken from western publications). In the paper

The Processes of Fragmentation and Fission in the Interaction Between High-energy Particles and Nuclei

S/053/60/070/01/001/007
B006/B017

only N. S. Ivanova, V. Sedorov, Ye. Grigor'yev, V. N. Mekhedov, O. V. Lozhkin, and V. I. Ostroumov as well as R. Filov are mentioned among the large number of non-Soviet scientists. There are 25 figures, 9 tables, and 214 references, 74 of which are Soviet.

Card 3/3

PERFILOW, N.; LOZKIN, O.; SZAMOW, W.

Fragmentation processes in interactions of high energy particles and nuclei. Postepy fizyki 12 no.2:115-153 '61.

1. Instytut Radowy Akademii Nauk ZSRR.

S/186/61/003/001/018/020
A051/A129

AUTHORS: Starik, I.Ye., Shamov, V.P., Arslanov, Kh.A., Zharkov, A.P., Murashov, G.M.

TITLE: Scintillation technique of counting natural radio-carbon and its application to the determination of the absolute age

PERIODICAL: Radiokhimiya, v 3, no 1, 1961, 101-113

TEXT: The present article deals with a method developed by the authors for liquid-scintillation counting of natural radio-carbon, intended for determining the absolute age. The following scheme was used for the chemical preparation of the sample:

$$\begin{array}{l} \text{carbonate samples} + HCl \searrow \\ \qquad\qquad\qquad\qquad\qquad CO_2 \xrightarrow{+NH_4OH} (NH_4)_2CO_3 \\ \text{organic samples} + O_2 \nearrow \end{array}$$

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$$(NH_4)_2CO_3 + Sr(NO_3)_2 \longrightarrow SrCO_3 \xrightarrow{+\,Mg} SrC_2$$

$$SrC_2 + H_2O \longrightarrow C_2H_2$$

$$3C_2H_2 \xrightarrow[25\ atm.,\ 65^oC]{Ni(CO)_2\left[P(C_6H_5)_3\right]_2} C_6H_6$$

$$C_2H_2 + C_6H_6 \xrightarrow[65^o]{Al,\ AlCl_3,\ HCl} C_6H_5C_2^*H_5$$

A coincidence scintillation counter was designed for counting C^{14}, and benzene and ethylbenzene were used as the liquid scintillator solvents, synthesized according to the above-given scheme. Combined with a highly-effective counter these can be used to determine the absolute age up to 37,000 years in the case of ethylbenzene, and 48,000 years in the case of benzene. In selecting a scintillation counting method the authors base their attempts on finding a substance which is easily prepared and does not require large

amounts of carbon, so that the advantages of both the proportionate and scintillation methods could be combined. Ethylbenzene and benzene chosen by the authors as the carriers of the natural carbon activity are said to render the scintillation method applicable to young samples and in the case of old ones increase the sensitivity of the method. Ethylbenzene is recommended from the following considerations: 1) 22.3% from the sample can be introduced into the ethylbenzene molecule; 2) the ethylbenzene molecule itself is an excellent solvent of liquid scintillators, being inferior only to the very best solvents, such as toluene, xylene; 3) its preparation and purification are simple and do not require complex apparatus or reagents difficult to obtain; 4) for its synthesis a relatively low amount of carbon, 8-15 g, is required. The apparatus used by the authors to count natural C^{14} is described: the photomultipliers function at room temperature, the complete amplification of the amplifier is 400. The counting rate of the noise pulses at an effectiveness of the count of natural C^{14} equalling 60-65% is 0.5 pulses/min. An upper level discriminator is used to lower the counting rate of the background determined by the cosmic and external radiations in the given apparatus. Fig 1 is a block-diagram of the described

apparatus and Fig 2 shows the principal circuit of coincidences. The tubes of the apparatus are fed by stabilised sources of anode and incandescent voltage, and the photomultipliers by a BC-9(VS-9)-type high-voltage source. The positive pulses from the exits of two non-overloaded amplifiers are fed to the inputs of the diode low-level discriminators (λ_2, λ_9, in Fig 2). The limiting (λ_1, λ_8) diodes are used for eliminating the negative pulse outputs fed to the low-level discriminator inputs. The selected photomultiplier should satisfy the following requirements: 1) a high sensitivity of the photocathode, 2) a high total sensitivity, 3) a low noise level, 4) stability over long periods of service, 5) a good temporary resolving power. The adjustment of the counter for the C^{14} spectrum is carried out according to the γ-line of Cs^{137}. The discriminators of the lower level are installed so that the number of the noise pulses at the output of the circuit of coincidences would be equal to 0.5-1 pulses/min. The sample is counted in a 15.5 cm^3-volume cuvette made of optic quartzite. The preparation of ethylbenzene and benzene from the carbon of the investigated material involves the following chemical steps: 1) formation of CO_2 from the sample, 2) production of strontium carbonate from CO_2 of the sample, 3) reduction of the

strontium carbonate to strontium carbide, 4) decomposition of strontium carbide, separation of acetylene from hydrogen and purification of acetylene, 5) synthesis of ethylbenzene from acetylene, 6) purification of ethylbenzene and benzene. The samples to be measured are carbonates or organic substances (coal, wood, peat, etc.). In both cases the carbon of the sample is separated out in the form of CO_2. The formation of CO_2 from the carbonate samples is performed by the decomposition of the sample with hydrochloric acid. If the investigated sample is an organic material, the formation of CO_2 is carried out by heating the sample in an oxygen flow. The single synthesis of large amounts of acetylene (up to 30 l) is carried out according to the Suess method (Ref 4), the main advantage of which is said to be the almost quantitative yield of acetylene (95%). The synthesis of ethylbenzene is carried out according to the method of hydroalkylation of benzene with acetylene in the presence of metallic Al, $AlCl_3$ and hydrogen chloride (Ref 16). The authors conducted a complete synthesis of benzene from the investigated material according to Reppe's method (Ref 13). The catalyst for the synthesis of benzene by the given method is a compound of a mixed type having both an organic as well as an inorganic nature: $Ni(CO)_2[P(C_6H_5)_3]_2$.

L 6860-65 EWT(m)/EPF(c)/EPR/EWP(j)/T/EWP(q)/EWP(b) Pc-4/Pr-4/Ps-4 LJP(c)/ AFWL/ESD(t)/RAEM(t) RM/WW/JD

ACCESSION NR: AR4044269 S/0272/64/000/006/0160/0161

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika. Otdel'ny*y vy*pusk, Abs. 6.32.1133

AUTHOR: Gutkevich, S. G.; Lebedev, O. V.; Pisarevskiy, A. N.; Selyaninova, N. S.; Shamov, V. P.

TITLE: New methods for the packing of scintillators

CITED SOURCE: Sb. Stsintillyatory* i stsintillyats. materialy*. Khar'kov, Khar'kovsk. un-t, 1963, 236-238

TOPIC TAGS: scintillator, single crystal, stilbene, tolane/OK-50 glue

TRANSLATION: There is described a method of packing of single crystals with the help of glue OK-50. The method ensures transparent, colorless, and very durable gluing of scintillators NaI(Tl), CsI(Tl), KI(Tl), stilbene, tolane, and plastic crystals with glass, improves their resolving power, and makes it

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L 6860-65
ACCESSION NR: AR4044269

possible to prepare very thin films of scintillators and to use for packing thin-walled containers which cannot be taken apart. The method is recommended for introduction into industrial production.

SUB CODE: OP, SS ENCL: 00

Card 2/2

SHAMOV, V. P.; MALYKHIN, I. M.

"Method for Calculation of Absorbed Doses from Bioassay Data in Cases of Chronic Ra-226 Intake."

report presented at the Symp on Assessment of Radioactive Body Burdens in Man, Heidelberg, 11-16 May 64.

L 53897-65

ACCESSION NR: AP5017369 UR/0240/64/000/010/0096/0104

15
B

AUTHOR: Shamov, V. P.

TITLE: Concerning the maximum allowable concentration of strontium-90 in food products

SOURCE: Gigiyena i sanitariya, no. 10, 1964, 96-104

TOPIC TAGS: radiobiology, radiostrontium, radioisotope, radiation biologic effect, food sanitation, air pollution

Abstract: The author is a member of the International Commission on Radiation Protection which, at its Stockholm meeting (date not given) proposed revision of the values of the maximum allowable concentrations in air and food products for such radioactive isotopes as had sufficient data on their biological effects. The present article deals with Sr^{90} and an editorial preface states that it is published for discussion since its conclusions, insofar as the general population is concerned, must be considered still controversial.

The available data concerning the maximum allowable concentration of Sr^{90} calculated according to various models representing its accumulation in the human body is summarized and tabulated, with a distinction made

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L 53897-65

ACCESSION NR: AP5017369

between professional workers and the general public. The Commission's decision was that the maximum allowable concentration of Sr^{90} could be safely increased four to seven times, specifically four times in drinking water. Orig. art. has 26 formulas.

ASSOCIATION: Leningradskiy nauchno-issledovatel'skiy institut radiatsionnoy gigiyeny (Leningrad Scientific Research Institute of Radiation Hygiene)

SUBMITTED: 28Jun63 ENCL: 00 SUB CODE: LS, CB

NO REF SOV: 000 OTHER: 000 JPRS

Card 2/2

L 63802-65 EWT(m)/EWA(h)

ACCESSION NR: AP5021769 UR/0240/64/000/011/0104/0111

16
15
B

AUTHOR: Shamov, V.P.

TITLE: Problem of the maximum permissible concentrations of uranium in water and air

SOURCE: Gigiyena i sanitariya, no. 11, 1964, 104-111

TOPIC TAGS: air pollution, water pollution, uranium, radioactive contamination, isotope

19

ABSTRACT: In connection with a review of the established values of the maximum permissible concentrations of uranium in water and air, the author presents the views of the International Commission of Radiological Protection in regard to standards that are to be applied with respect to the concentrations of the various isotopes of uranium. He points out that the intention exists of increasing by a factor of 5 the maximum permissible concentration of U^{230} - U^{236} present in the form of insoluble compounds in the air, and by a factor of 10 the maximum permissible concentrations of U^{238} and of natural U present in the form of insoluble compounds in the air.

Card 1/2

L 63802-65

ACCESSION NR: AP5021769

In discussing the maximum permissible concentrations of soluble uranium compounds in water for use by the population, the author points out that the presently accepted value of the coefficient of resorption of uranium from the gastrointestinal tract into the blood ($f_1 = 10^{-4}$) and that of the effective energy in the gastrointestinal tract are far from being precise and should be revised. He states that calculation of standards on the assumption that $f_1 = 10^{-2}$ for $U^{230} - U^{236}$ would be justified.

Orig. art. has: 11 formulas, 2 tables.

ASSOCIATION: Leningradskiy nauchno-issledovatel'skiy institut radiatsionnoy gigiyeny (Leningrad Scientific Research Institute of Radiation Hygiene)

SUBMITTED: 18Apr63 ENCL: 00 SUB CODE: LS,CB

NR REF SOV: 000 OTHER: 000 JPRS

Card 2/2

L 10618-66

ACC NR: AP5027300 SOURCE CODE: UR/0241/65/010/010/0010/0014

AUTHOR: Yershov, E. B.; Karan, A. A.; Spirin, V. D.; ~~Shamov, V. P.~~ 26 B

ORG: Scientific Research Institute of Radiation Hygiene, Leningrad (Nauchnoissledovatel'skiy institut radiatsionnoy gigieny)

TITLE: Experimental determination of absorbed dose from alpha-emitters in contact media

SOURCE: Meditsinskaya radiologiya, v. 10, no. 10, 1965, 10-14

TOPIC TAGS: radiation dosimetry, alpha particle, ~~medical nuclear application, applied mathematics, mathematic prediction, anatomic model~~ irradiation, radiation biologic effect, histology

ABSTRACT: Present calculation of absorbed radiation doses and their distribution in tissues upon internal irradiation by alpha particles does not sufficiently consider the layer between the active and the passive medium, that is, the secretion layer in intestinal irradiation. This work involves study of factors influencing the dose and experimental determination of the absorbed dose according to the depth of the irradiated tissue, either without filter between the contact media or for any filter thickness, by means of an alpha spectrometer and calculation. The model for the active medium was a thick layer of pressed

Card 1/3 UDC: 615.849.7-031

L 10618-66

ACC NR: AP5027300

talc with evenly distributed Pu^{239}, and that for the passive layer was koloxylin lamellae simulating cellular layers of various thickness. Even distribution of radioactive isotope and irradiation throughout the media was assumed. Based on the spectra obtained and insertion of values into the formula

$$E = \frac{\sum_i E_i \cdot N_i}{\sum_i N_i} \quad (1)$$

where E_i is the energy of alpha particles corresponding to the i-channel; N_i the number of alpha particles with E_i energy, and further calculation in consideration of Δd layer, the formula

$$D\Delta d = \frac{E\Delta d \cdot 1{,}6 \cdot 10^{-6}}{\Delta d \cdot t \cdot 100} \left(\frac{rad/min}{RAD/min}\right). \quad (5)$$

was arrived at for the dose absorbed in layer Δd. It is concluded that this method of simulation permits determination of the distribution of the quantity of dose absorbed according to the depth of the irradiated medium (mucosal cover of the gastrointestinal tract) from the known thickness of the filter layer (secretion layer in the tract). The mean energy of alpha particles leaving the thick emitter is equal to 0.56 of

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L 10618-66

ACC NR: AP5027300

the maximal value. Energy liberation beyond the boundary of the source of a thickness equal to the path of alpha particles is 14% of the maximal energy liberation within this layer. In the absence of an absorbing filter the amount of absorbed dose on each cellular layer compared to the mean dose over the whole path is equal to:

$$D_{I} = 2{,}64 \cdot \bar{D}_{Ra}; \quad D_{II} = 1{,}26 \cdot \bar{D}_{Ra}; \quad D_{III} = 0{,}48\bar{D}_{Ra};$$

$$D_{IV} = 0{,}1 \cdot \bar{D}_{Ra}.$$

The indices I, II, III and IV designate the corresponding cellular layers. Orig. art. has: 5 formulas and 4 figures.

SUB CODE: 06 / SUBM DATE: 12Aug64/ ORIG REF: 000/ OTH REF: 003

HW

Card 3/3

L 10806-66 EWT(m)/T IJP(c)

ACC NR: AP5027306 SOURCE CODE: UR/0241/65/010/010/0067/0073

AUTHOR: Belle, Yr. S.; Kostikov, Yu. I.; Shamov, V. P.; Shapiro, E. L.

ORG: Lenigrad Scientific Research Institute of Radiation Hygiene, Ministry of Health, RSFSR Leningradskiy Nauchno-issledovate'skiy institut radiatsionnoy gigieny Ministerstva zdravookhraneniya RSFSR)

TITLE: Radiometic properties of the large liquid scintillation counter BZhSS-1

SOURCE: Meditsinskaya radiologiya, v. 10, no. 10, 1965, 67-73

TOPIC TAGS: scintillation counter, gamma counter, scintillation spectrometer, radiation instrument, radiobiologic instrumentation, experiment animal/BzhSS-1 scintillation counter

ABSTRACT: The article describes the counter and illustrates it in a figure. Its 4π dimension and large measuring volume permits considerable amplification of the criterion of radiometric quality, n^2/n background. It is particularly suitable for measuring low gamma radiation in experimental animals up to a large rabbit and other objects of similar size. A procedure for finding the optimal differential registration channel is given. The instrument has spectrometric semi-registration channel is given.

UDC: 612.014.482:621.387.4

Card 1/2

L 10806-66

ACC NR: AP5027306

resolution equal to 39 and 21% for Cs^{137} and K^{40} respectively and thus does not allow analysis of complex gamma radiation spectra. Activities of 5.10^{-11} to 5.10^{-3} curies can be measured. Isosensitivity of the larger part of the measuring volume is shown to be high and is seen particularly upon moving the source. The configuration of the object hardly influences the measuring results. Increased specimen volume will lead to self-absorption and attemuation of initial gamma irradiation producing a slight drop in the count. This is shown on aqueous phantoms. For those up to 0.5 liter this does not depend on radiation energy and amounts only to a few percent. This counter has been used for radiobiologic and radiation protection studies and has been found highly reliable. Reproducibility was increased 10-20 times compared to radiochemical methods, and the number of measured objects reached 6000 per year. Its use for prevital radioactivity determination in experimental animals afforded studies of isotope metabolism in the organism. Orig. art. has: 10 figures.

SUB CODE: 06, 07/ SUBM DATE: 05Jan 65/ ORIG REF: 001/ OTH REF: 002

Card 2/2

L 27580-66 EWT(m)

ACC NR: AP6018375 SOURCE CODE: UR/0241/65/010/005/0082/0083

30
B

AUTHOR: Malykhin, V. M.; Shamov, V. P.

ORG: none

19

TITLE: Method of calculating the irradiation dose and maximum permissible concentration of fresh fission activity in different parts of the gastrointestinal tract

SOURCE: Meditsinskaya radiologiya, v. 10, no. 5, 1965, 82-83

TOPIC TAGS: digestive system, radiation dosimetry, beta radiation

ABSTRACT: Formulas are presented for calculating the dose loads for different periods of consumption of a ration charged with fragments. The doses are calculated for an initial level of 1 microcurie of total beta-activity (A) for a ration one hour old

$$q_1 = 1(\mu c A_{\Sigma}; \Omega + 1),$$ where Ω is the moment of fission.

The results of the calculations combined with the data on the dose loads for other critical organs can be used to standardize the consumption of nutrients and water according to various dose criteria (e.g., 20 ber for 10 days of consumption, 30 ber for 30 days, etc.). The corresponding maximum permissible concentrations in microcuries are obtained by dividing the dose criterion by the dose from 1 μ cA_{Σ} in the initial ration.

Card 1/2 UDC: 616.33/34-001.29-613.2

L 27580-66

ACC NR: AP6018375

0

The data were compared with the results obtained by Greitz, who used a somewhat different method. They deviated by less than 10% for the most critical regions, the ascending and descending intestines. Orig. art. has: 1 figure and 4 formulas. [JPRS]

SUB CODE: 06, 20 / SUBM DATE: 15Mar64

Card 2/2 CC

[illegible]

Indirect determination of the content of Sr^{90} in the human body. Med. rad. [illegible] (MIRA 18:[illegible]

1. Leningradskiy [illegible] radiatsionnoy gigiyeny [illegible] SSSR.

[illegible], [illegible] N, A.A.; [illegible], V.I.; [illegible]AMOV, V.P.

Experimental determination of the absorbed dose from α-emitters in contact media. Med. rad. 10 no.10:10-14 O '65.
(MIRA 18:12)

. Submitted August 12, 1964.

BELLE, Yu.S.; KOSTIKOV, Yu.I.; SHAMOV, V.P.; SHAPIRO, E.L.

Radiometric properties of the large liquid scintillation counter BZhSS-1. Med. rad. 10 no.10:67-73 O '65. (MIRA 18:12)

1. Leningradskiy nauchno-issledovatel'skiy institut radiatsionnoy gigiyeny Ministerstva zdravookhraneniya RSFSR. Submitted January 5, 1965.

L 01065-66 EWT(m) DIAAP DM

ACCESSION NR: AP5014543

UR/0089/65/018/005/0519/0520
539.12 39.121.64

AUTHOR: Yershov, E. B.; Karan, A. A.; Shamov, V. P.

14B

TITLE: Concerning the energy distribution of alpha particles emitted from a thick source

19

SOURCE: Atomnaya energiya, v. 18, no. 5, 1965, 519-520

TOPIC TAGS: Alpha emitter, thick source, energy distribution, moderating ability, range energy ratio

ABSTRACT: In view of the difficulty of preparing thin screens to measure the moderating ability of a substance and the range/energy ratio of alpha particles in the investigated substance, the authors consider the possibility of determining the range-energy relation for a thick flat emitter on the basis of an analysis of the form of its alpha-particle spectrum. The spectrum was measured with an alpha chamber and a 100-channel pulse-height analyzer. The pressed working compound (area ~ 3 cm^2, thickness ~ 2 mm) was placed in a holder and contained uniformly distributed P^{239} atoms in a mass of talcum powder. The empirical form of the spectrum was obtained by breaking up the measured spectrum into four energy ranges, with a separate empirical formula obtained for each. By using the fact that talcum has

Card 1/2

L 01065-66

ACCESSION NR: AP5014543

moderating properties close to those of aluminum, it is found that the range-energy curve obtained from the empirical relations of the present work is in good agreement with calculations by others for aluminum. It is thus concluded that the proposed method makes it possible to find, with sufficient degree of accuracy, the moderating characteristics of any complicated substance which serves as a bulky base for a thick alpha source. Orig. art. has: 1 figure and 1 formula.

ASSOCIATION: none

SUBMITTED: 18Mar64

ENCL: 00

SUB CODE: NP

NR REF SOV: 002

OTHER: 002

Card 2/2 DP

L 28021-66 EWT(m)

ACC NR: AP5026456 SOURCE CODE: UR/0089/65/019/004/0401/0403

AUTHOR: Malykhin, V. M.; Moiseyev, A. A.; Shamov, V. P.

ORG: None

TITLE: Internal radiation doses in man induced by Sr-90

SOURCE: Atomnaya energiya, v. 19, no. 4, 1965, 401-403

TOPIC TAGS: radiation biologic effect, radiation injury, strontium

ABSTRACT: The retention of strontium-90 in man and the effect of radiation doses on the bone tissue is discussed and calculated. The Sr-90 retention q (in nanocurie) was calculated by using the following formula:

$$q(t)=\frac{1}{100}Rf_1f_2Ae^{-\lambda(t-1)}\frac{t^{1-n}-1}{1-n}=$$
$$=BRe^{-\lambda(t-1)}(t^{1-n}-1),$$

Here, R - Sr-90 content in man-ration based on 1 pcu/day at the beginning; B-constant; t-time; A and n-parameters of power function; decay constant $\lambda = 7 \times 10^{-5}$ day $^{-1}$; absorbed isotope fractions $f_1 = f_2 = 0.3$. The results of calculations are plotted in Fig. 1 showing the power function curve 1 (with A = 0.522, n = 0.175), the power function curve 2

Card 1/2 UDC: 577.391.087

14(5)

SOV/152-59-2-31/32

AUTHOR: Shamov, Ye. Ye.

TITLE: Economy and Efficiency in the Use of Derricks of 53 m Height (Ekonomicheskaya effektivnost' primeneniya vyshek vysotoy 53 m)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, 1959, Nr 2, pp 121 - 125 (USSR)

ABSTRACT: In the present article the question of the economical use of derricks of 53 m height in drilling deep wells by a great number of chiselings is discussed. In order to solve this problem, the following index system is suggested: 1) Additional investment made necessary by the use of derricks of 53 m height, instead of 41 m. 2) Reducing construction costs in making wells. 3) Pay-off period for additional investments. 4) Speeding up drilling operations. After the end of drilling operations on the oilfield of Ozek-Saut (Stavropol' Sovnarkhoz) comparisons were made of the efficiency of derricks of 41 and 53 m height, respectively (Table 2). The use of derricks of 53 m height resulted in a considerable reduction of the time required for lowering and lifting. With the same

Card 1/3

Economy and Efficiency in the Use of Derricks of 33 m Height SOV/112-59-2-31/32

ASSOCIATION: Groznenskiy neftyanoy institut (Groznyy Petroleum Institute)

SUBMITTED: October 31, 1958

Card 3/3

L 08746-67 EWT(1) JK

ACC NR: AP6034524 SOURCE CODE: UR/0016/66/000/010/0094/0097

3

AUTHOR: Shamov, Yu. A.

ORG: Department of Infectious Diseases, Dagestan Medical Institute, Makhachkala (Kafedra infektsionnykh bolezney Dagestanskogo meditsinskogo instituta)

TITLE: Typhoid fever among vaccinated persons

SOURCE: Zhurnal mikrobiologii, epidemiologii i immunobiologii, no. 10, 1966, 94-97

TOPIC TAGS: ~~human ailment~~, typhoid fever, vaccine, active immunity, IMMUNOLOGY, INFECTIVE DISEASE

ABSTRACT: The onset, course, and number of relapses of typhoid fever in a group of vaccinated and in a group of nonvaccinated patients were studied. The vaccinated group had received either dry alcoholic divaccine or Vi antigen. Acute onset of the disease occurred more frequently in the vaccinated group, but severe forms of the disease were found less frequently than in the nonvaccinated group. Clinical course, mortality rate, and duration of hospital stay were the same for both groups. Relapses occurred more frequently in vaccinated than in nonvaccinated patients. Orig. art. has: 1 table. [W.A. 50]

SUB CODE: 06/ SUBM DATE: 27Jan66/ ORIG REF: 011/ OTH REF: 001

UDC: 616.927-036.1-06:616.927-084.47

Card 1/1 bc

SHAMOVA, A.M.

Case of isolation of plague and pseudotuberculosis cultures from rodents in an area with an enzootic plague focus. Izv. Irk. gos. nauch.-issl. protivochum.inst. 21:63-67 '59. (MIRA 14:1)
(MONGOLIA—PLAGUE) (MONGOLIA--PSEUDOTUBERCULOSIS)

[illegible]

Study of a [illegible]
Altai, Dokl., [illegible], [illegible] precious [illegible], [illegible]
9-10 [illegible] (MIRA [illegible])

[illegible], I. M.: Master Med Sci (diss) -- "The comparative physiology of the effect [illegible] phyr[illegible]in on the cardiac and respiratory conditioned reflexes". Leningrad, 1959. (Inst for Experimental Med of the Acad Med Sci USSR, First Leningrad [illegible] Inst im Acad I. P. Pavlov), 200 copies (KL,Nr 12, 1959, 130)

ARBUZOV, S.Ya.; BAZANOV, V.A.; NEKRACHALOV, I.Ya.; PATALOVA, V.N.; PETELINA, V.V.; SHAMOVA, E.K.

Distribution of sulfur mercamine in the organs and tissues of irradiated and non-irradiated animals. Med.rad. no.5:62-66 '61. (MIRA 14:11)

1. Iz otdela radiobiologii (zav. - prof. S.Ya. Arbuzov) Instituta eksperimental'noy meditsiny AMN SSSR.
(ETHYLAMINE) (RADIATION PROTECTION)

SHAMOVA, G. V.

Shamova, G. V. - "Change in the color of the skin as a means of determining the condition of blood circulation of the extremities in obliterating endarteritis," In the symposium: V. N. Shamov, Kiev, 1949, p. 117-36

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949)

SHAMOVA, G.V.

Determination of the state of peripheral circulation in endarteritis obliterans with the method of reactive hyperemia. Vopr. neirokhir. 16 no.1:48-51 Jan-Feb 52. (CIML 21:4)

1. Of the First Department of Faculty Surgery imeni S.P. Fedorov, Military Medical Academy imeni S.M. Kirov.

SHAMOVA, G.V.

Familial torsion dystonia. Och.klin.nevr. no.1:61-70 '62. (MIRA 15:9)

(DYSTONIA)

DAVIDENKOV, S.N.; SHAMOVA, G.V.

Spinal insults in discopathies. Och.klin.nevr. no.1:123-130 '62. (MIRA 15:9)

(SPINAL CORD--DISEASES) (INTERVETEBRAL DISK--DISEASES)

SHAMOVA, G.V.

Clinical aspect of Dercum's disease. Ocn. klin. nevr. no.23 155-172 '64 (MIRA 18:1)

SHAMOVA, T.I. (Novosibirsk)

Quiz system of measuring students' knowledge in physics. Fiz. v shkole 22 no.2:62-64 Mr-Ap '62. (MIRA 15:11)
(Physics--Study and teaching)

SHAMOVSKAYA, E.Z.

Hemorrhagic encephalitis. Zhur. nevr. i psikh. 60 no.3:280-285 '60. (MIRA 14:5)

1. Kafedra nervnykh bolezney (zav. - prof. D.T.Kuimov) Novosibirskogo meditsinskogo instituta.
(ENCEPHALITIS)

POTAP'YEVSKIY, A.G.; KORITSKIY, V.A.; Prinimali uchastiye: KOCHEV, V.S.; MAKAROV, M.E.; VAYNSHEYN, A.L.; KULIKOV, N.K.; SHELOVSKAYA, I.V.; PAKHAL, S.A.; FEDOTOVA, L.P.; TATARINOV, G.V.

Ob-458m attachment for welding in CO_2 using PS-300, PSO-300, and PS-500 transformers. Avtom.svar. 15 no.10:68-70 O '62. (MIRA 15:11)

(Electric welding—Equipment and supplies)

PHASE I BOOK EXPLOITATION SOV/4893

Vsesoyuznoye soveshchaniye po fizike, fiziko-khimicheskim svoystvam ferritov i fizicheskim osnovam ikh primeneniya. 3d, Minsk, 1959

Ferrity; fizicheskiye i fiziko-khimicheskiye svoystva. Doklady (Ferrites; Physical and Physicochemical Properties. Reports) Minsk, Izd-vo AN BSSR, 1960. 655 p. Errata slip inserted. 4,000 copies printed.

Sponsoring Agencies: Nauchnyy sovet po magnetizmu AN SSSR. Otdel fiziki tverdogo tela i poluprovodnikov AN BSSR.

Editorial Board: Resp. Ed.: N. N. Sirota, Academician of the Academy of Sciences BSSR; K. P. Belov, Professor; Ye. I. Kondorskiy, Professor; K. M. Polivanov, Professor; R. V. Telesnin, Professor; G. A. Smolenskiy, Professor; N. N. Sholʼta, Candidate of Physical and Mathematical Sciences; E. M. Smolyarenko; and L. A. Bashkirov; Ed. of Publishing House: S. Kholyavskiy; Tech. Ed.: I. Volokhanovich.

PURPOSE: This book is intended for physicists, physical chemists, radio electronics engineers, and technical personnel engaged in the production and use of ferromagnetic materials. It may also be used by students in advanced courses in radio electronics, physics, and physical chemistry.

COVERAGE: The book contains reports presented at the Third All-Union Conference on Ferrites held in Minsk, Belorussian SSR. The reports deal with magnetic transformations, electrical and galvanomagnetic properties of ferrites, studies of the growth of ferrite single crystals, problems in the chemical and physicochemical analysis of ferrites, studies of ferrites having rectangular hysteresis loops and multicomponent ferrite systems exhibiting spontaneous rectangularity, problems in magnetic attraction, highly coercive ferrites, magnetic spectroscopy, ferromagnetic resonance, magneto-optics, physical principles of using ferrite components in electrical circuits, anisotropy of electrical and magnetic properties, etc. The Committee on Magnetism, AS USSR (S. V. Vonsovskiy, Chairman) organized the conference. References accompany individual articles.

SOV/4893

Ferrites (Cont.)

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VASILEVSKAYA, E.S.; SYRKIN, L.N.; SHAMOVSKAYA, M.A.

Methods and apparatuses for the measurement of dynamic magnetostruction parameters. Trudy inst. Kom.stand.mer i izm. prib no.64:311-320 '62. (MIRA 16:5)
(Magnetic measurements—Equipment and supplies)

SHAMOVSKAYA, S.L. (g. Gor'kiy)

Excursion to an acetylen plant. Khim.v shkole 10 no.3:40-42 My-Je '56. (MLRA 9:8)

(Acetylene) (Industrial tours)

124-1957-1-354

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 44 (USSR)

AUTHOR: Shamovskiy, B. Ya.

TITLE: Determination of the Drag Coefficient in the Presence of a Sudden Expansion of Gas (Opredeleniye koeffitsiyenta soprotivleniya pri vnezapnom rasshirenii gaza)

PERIODICAL: Tr. Novosibir. s.-kh. in-ta 1955, Nr 9, pp 245-258

ABSTRACT: In an earlier work, the Author had derived an expression for the drag coefficient of the flow of a compressible fluid through a diaphragm. He now proposes that a similar expression be utilized as the starting point of the derivation of a formula to determine the drag coefficient corresponding to a sudden expansion of a compressible gas. In the expression for the diaphragm the overall drag coefficient ξ_r of a diaphragm is given in terms of two components, namely, the drag coefficient attributable to the flow of the gas through an aperture in the diaphragm, $\xi_{\text{диаф}}$ and the drag coefficient attributable to the sudden expansion of the gas, $\xi_{\text{расш}}$. The Author proposes that the coefficient $\xi_{\text{расш}}$ be determined from a generalized form of the

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124-1957-1-354

Determination of the Drag Coefficient in the Presence (cont.)

Bernoulli equation as written for a compressible gas. Since the value of is known from the A's earlier work and can be obtained from the Bernoulli equation, the quantity can be determined. Formulas are derived for the determination of the velocity coefficient, the through-flow, and the jet constriction. It is shown that the velocity coefficient for a compressible gas can be assumed to be equal to the velocity coefficient of an incompressible liquid.

I. Ye. Idel'chik

1. Gas--Expansion 2. Coefficient--Determination

Card 2/2

KUNITSYN, N.M., kand.tekhn.nauk; SHAMOVSKIY, E.Kh., kand.tekhn.nauk; YAKOVLEV, I.M., inzh.; SOROKO, L.N., inzh.

Designing a broad cutter for the flame cleaning of metal. Izv. vys. ucheb. zav.; chern. met. no.3:154-160 Mr '58. (MIRA 11:5)

1.Sibirskiy metallurgicheskiy institut i Kuznetskiy metallurgicheskiy kombinat.

(Metal cleaning) (Metal-cutting tools)

SHAMOVSKIY, E.Kh., kand. tekhn. nauk, dots.; YAKOVLEV, I.M., inzh.; KAFTANOVA, Z.K., inzh.

Splash removal during the flame cleaning of metal. Izv. vys. ucheb. zav.; chern. met. no.4:117-125 Ap '58. (MIRA 11:6)

1. Sibirskiy metallurgicheskiy institut.
(Metal cleaning) (Gas welding and cutting)

SOV/148-59-2-24/24

25(1)

AUTHOR: Shamovskiy, E.Kh. Candidate of Technical Sciences, Docent

TITLE: Increase of the Endurance of Equipment Parts (Povysheniye iznosoustoychivosti detaley oborudovaniya)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1959, Nr 2, pp 177-180 (USSR)

ABSTRACT: A conference on welding engineering was convened in January 1959 by the Kemerovo sovnarkhoz. The Conference was attended by representatives from NTOChM and the Siberian Metallurgical Institute. The Conference heard the following reports: M.S.Aleksandrovich on the necessary development of welding engineering; Docent E.Kh. Shamovskiy on achievements in welding engineering in the USSR: G.F. Rybachkin on "Strengthening of Parts by Welding-on Hard Alloys in Soviet Metallurgical Plants and Outlooks on the Further Development and Introduction of this Method"; V.M. Shalamov on the introduction of automatic welding in small-scale production; A.V. Bystrov on "Experiences of Introducing Automatic Welding-On For Worn-Out Parts in USSR

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18(5) SOV/135-59-9-19/23

AUTHOR: Shamovskiy, E. Kh., Candidate of Technical Sciences

TITLE: The First Siberian Conference on Welding

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 9, p 45 (USSR)

ABSTRACT: The first Siberian Conference on Welding was convened in Barnaul by the sovnarkhoz and the Institut elektrosvarki imeni Ye. O. Patona An USSR (Institute for Electric Welding imeni Ye. O. Paton As UkrSSR) from April 22-24, 1959. At this conference the development of welding science and engineering in Siberia was discussed. More than 400 engineering workers of the Altay, Irkutsk, Kemerov Krasnoyarsk, Novosibirsk, Omsk and Tomsk sovnarkhozes participated, as well as scientific workers of the Institut elektrosvarki i VNIIAVTOGEN (Institute for Electric Welding and VNIIAVTOGEN). The Conference was opened by the Chairman of Altay sovnarkhoz, Ya. A. Nazarov. B. Ye. Paton discussed welding in the USSR for the period 1959-1965. Candidate of Technical Sciences A. N. Shashkov, Director of VNIIAVTOGEN spoke on gas flame treating of metals,

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and Candidate of Technical Sciences V. V. Shevernitskiy on welding designs. Candidate of Technical Sciences D. A. Dudko discussed gas-electric welding and D. M. Rabkin looked at the welding of non-ferrous metals. Candidate of Technical Sciences I. I. Frumin spoke on the durability of welding machine components.

SHAMOVSKIY, E.Kh.; YAKOVLEV, I.M.

Wide-range coke-oxygen cutter for flame machining and scarfing of cold carbon metal. Izv. vys. ucheb. zav.; chern. met. 4 no.10:165-169 '61. (MIRA 14:11)

1. Sibirskiy metallurgicheskiy institut.
(Metal cleaning) (Gas welding and cutting)

SHAMOVSKIY, E.Kh.

Developing the design of a mechanical oxygen-coke torch for the flame scarfing of cold carbon metal. Izv. vys. ucheb. zav.; chern. met. 5 no.8:193-199 '62. (MIRA 15:9)

1. Sibirskiy metallurgicheskiy institut.
(Gas welding and cutting)

SHAMOVSKIY, E.Kh.; ZYKOV, A.D.; KAFTANOVA, Z.K.; KRAVCHENKO, L.Ya.; FROLOV, N.P.; ZHURAVKIN, Ye.A.; GORBATYUK, V.L.

Mechanizing the flame scarfing of blooms. Metallurg 7 no.8:24-27 Ag '62. (MIRA 15:9)

1. Sibirskiy metallurgicheskiy institut i Kuznetskiy metallurgicheskiy kombinat.
(Steel ingots) (Metal cleaning)

[illegible], [illegible], kand. tekhn. nauk; [illegible]; [illegible]: [illegible]; SHAMOVSKIY, D.F., inzh.; GOFMAN, F.M., kand. tekhn. nauk [illegible].

Consultations. Svar. proizv. no.1:[illegible]-48 [illegible].

(MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov (for Zaytsev). 2. Sibirskiy metallurgicheskiy institut (for Shamovskiy).

SIMONOVSKIY, Ivan, [illegible] tekh. nauk

Using coke gas in the pre-heating flame of a machine cutter for flame cleaning. Svar. proizv. no.3:23-24 Mr '65. (MIRA 18:5)

1. Sibirskiy metallurgicheskiy institut.

SHAMOVSKIY, E.Kh.

Mechanization of slag cleaning. Metallurg 10 no.10:32-33 O '65. (MIRA 18:10)

1. Sibirskiy metallurgicheskiy institut.

[illegible] KOLOSOVA, N.M., TARLOVA, N.M., SHAMOV, A.I., [illegible]

Inhibition of transfer RNA acetylated by 2'-oxy groups. Biokhimiia 30 no.6:1218-1224 N-D '65. (MIRA 19:1)

1. Institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk. Submitted March 15, 1965.

PROCESSES AND PROPERTIES INDEX

crystal gelatin

Photographic elementary processes in ionic crystals
L. M. Shamovskii. [illegible] N. S., 4, 57 ol. Pro. [illegible] colored on exposure to light [illegible] wave lengths. The photochem. [illegible] mutual diffusion of ions [illegible] G. W. King

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

Equilibrium of dissociation of sulfur trioxide. A. F. Kapustinskii and L. M. Shamovskii. *Acta Physicochim. U. R. S. S.* 4, 791-812(1936)(in English). By means of a method that is a development of the methods of Sainte-Claire Deville and Langmuir, the equil. of dissocn. of SO_3, $SO_3 \rightleftharpoons SO_2 + {}^1/_2O_2$ was studied. Between 850° and 1000° H values for the equil. consts. of this reaction were detd., giving the following results: $\log (P_{SO_3}^2 \times (P_{O_2})^{1/2} / P_{SO_3}) = 5005/T + 4.743$; $\Delta F_T^\circ = 22{,}870 - 21.68\,T$; $\Delta F_{298}^\circ = 16{,}418$ cal.; $\Delta S_{298}^\circ = 21.68$ cal./degree; $\Delta H_{298}^\circ = 22.88$ kg.-cal./mole. The values for 298° were obtained by assuming that the change of heat capacity of the system with temp. was negligible. The heat of the reaction thus obtained differs from the data of Thomsen and Berthelot by 1.2% and from the recent data of Grau, Roth and Meichsner (C. A. 25, 4530) by 0.2%. H. G.

METALLURGICAL LITERATURE CLASSIFICATION

Content of heavy water in the entrails of the earth at a depth of 1300 meters I. M. Shanovskii and N. I. Kapustinskaya. *Doklady Akademii Nauk SSSR* 70, 505-8(1950)(in English). Samples of water taken at depths over 1200 m. from drill holes in the Moscow region were investigated; the flotation method was used for the detn. of the D_2 content. Results indicate that in deep layers of the earth's crust there is an increase in the D_2O in H_2O: D_2O/H_2O = 1.4[illegible]. M. McMahon

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Thermochemistry of isotopes. Absorption spectra and heats of formation of lithium hydride and deuteride. A. F. Kapustinskii, L. M. Shamovskii and K. S. Bayushkina. *Acta Physicochim. U. R. S. S.* 7, 799-810(1937)(in English).—See *C. A.* 32, 5669[1]. F. H. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Thermochemistry of isotopes. Absorption spectra and the heats of formation of the hydrides and deuterides of lithium. A. F. Kapustinskii, L. M. Shamovskii and K. S. Bayushkina. *J. Phys. Chem.* (U. S. S. R.) 10, 620-6(1937). The absorption max. of LiH and LiD lie, resp., at 251.7 and 248.2 mμ, giving for the heats of formation 22.9 and 23.6 kg.-cal. per mol. at 298.1°K. If the elementary photochemical process is an electron jump from the anion to the cation within the lattice, the equation $h\nu = E - J + U = Q + S_M + (D/2)$, where E = electron attraction, U = lattice energy, Q = heat of formation from elements, S_M = heat of sublimation of metal and D = heat of dissocn. of mol. to atoms, is derived. The calcd. and exptl. values are, resp., 4.80 and 4.90 e. v. for LiH while the equations of other authors give much higher values (cf. Hippel, *C. A.* 30, 8022). F. H. Rathmann

PROCESSES AND PROPERTIES INDEX

3

Absorption spectra of heteropolar crystals and the crystal lattice energy. L. M. Shamovskii. *Trans. All-Union Sci. Research Inst. Econ. Mineral.* (U. S. S. R.) No. 130, 5-50(in English 51)(1938).—A critical review of the modern conception of the relation between optical and thermal properties of heteropolar crystals. Sixty-seven references. A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION