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L 28828-66 EWT(d) IJP(c)

ACC NR: AP6018666 SOURCE CODE: UR/0166/65/000/002/0089/0089

AUTHOR: Arzhanykh, I. S.

ORG: Institute of Mathematics im. V. I. Romanovskiy, AN UzSSR (Institut matematiki AN UzSSR)

TITLE: Group complexes with a matrix basis

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 2, 1965, 89

TOPIC TAGS: group therapy, mathematic matrix

ABSTRACT: Let a group complex be a vector $x = x^0 + x^s e_s$, where s implies summation from 1 to s, x^s belonging to a field K in which there is defined a commutative and associative algebra, and the units of the complex e_s satisfy certain composition laws. Here group complexes are constructed for which the commutative and associative laws hold. Orig. art. has: 3 formulas. /JPRS/

SUB CODE: 12 / SUBM DATE: 01Dec64 / ORIG REF: 002

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

L 28015-66 EWT(d) IJP(c)

ACC NR: AP6018182 SOURCE CODE: UR/0166/65/000/003/0063/0063

AUTHOR: Arzhanykh, I. S.

ORG: Institute of Mathematics im. V. I. Romanskiy, AN UzSSR (Institut matematiki AN UzSSR)

TITLE: Invariant properties of systems of ordinary differential equations assuring the existence of two integrals

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 3, 1965, 63

TOPIC TAGS: ordinary differential equation, integral equation

ABSTRACT:

For kinetic equations of a rank greater than zero,

$$\frac{d}{dt}\left(\frac{\partial L}{\partial \dot{q}_\nu}+\sum_{\rho=1}^{r}K_\rho\frac{\partial L_\rho}{\partial \dot{q}_\nu}\right)-\frac{\partial L}{\partial q_\nu}+$$

$$+\sum_{\rho=1}^{r}K_\rho\frac{\partial L_\rho}{\partial q_\nu},$$

the following statement is valid: If for an infinitesimal transformation $\delta q_\nu = \varepsilon u_\nu$ $(\delta \dot{q}_\nu = \varepsilon \dot{u}_\nu)$ the condition $\delta L + \sum_\rho K_\rho \delta L_\rho = 0$ holds, then the above system of equations allows the integral

$$\sum_{\nu=1}^{n} u_\nu\left(\frac{\partial L}{\partial \dot{q}_\nu}+\sum_{\rho=1}^{r}K_\rho\frac{\partial L_\rho}{\partial \dot{q}_\nu}\right)=c.$$

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L 28015-66

ACC NR: AP6018182

An arbitrary system of even order $\dot{q}_\nu = Q_\nu(t, q_1, \ldots, q_n, p_1, \ldots, p_n)$, $\dot{p}_\nu = P_\nu(t, q_1, \ldots, q_n, p_1, \ldots, p_n)$ allowing an infinitesimal transformation $\delta q_\nu = \varepsilon u_\nu;\ \delta p_\nu = \varepsilon v_\nu$ (2) has a similar property. Theorem: If system (1) allows the transformation (2), such that the two conditions $\sum_\nu (P_\nu \delta q_\nu + p_\nu \delta Q_\nu) = 0$; $\sum_\nu (Q_\nu \delta p_\nu + q_\nu \delta P_\nu) = 0$ hold, then there exist the two integrals $\sum_\nu p_\nu u_\nu = c_1$; $\sum_\nu q_\nu v_\nu = c_2$.

Orig. art. has: 7 formulas. [JPRS]

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

L 10798-67 EWT(d) IJP(c)
ACC NR: AP7003514

SOURCE CODE: UR/0166/66/000/004/0073/0074

17

AUTHOR: Arshanykh, I. S.

ORG: Institute of Mathematics, AN UzSSR (Institut matematiki AN UzSSR)

"Generalization of the Poisson Theorem"

Tashkent, Izvestiya Akademii Nauk UzSSR, Ser Fiziko-Matematicheskikh Nauk (News of the Acad. Sci. Uzbek SSR, Series Physical-Mathematical Sciences), No. 4, 1966, pp 73-74

Translation: With regard to the Poisson theorem, it is known that if $\varphi = a$ and $\psi = b$ are solutions of the Hamiltonians

$$\dot{q}_\nu = \frac{\partial H}{\partial p_\nu}, \quad \dot{p}_\nu = -\frac{\partial H}{\partial q_\nu} \; (\nu = 1, 2, \ldots, n), \tag{1}$$

then $(\varphi, \psi) = C$ will also be a solution of these equations. The following general statement is proved:

Theorem: Let functions φ and ψ satisfy the equations

$$\left.\begin{aligned} \frac{\partial \varphi}{\partial t} + (H, \varphi) &= \frac{1}{2}\omega(t)\varphi + \frac{\partial F}{\partial \psi} \\ \frac{\partial \psi}{\partial t} + (H, \psi) &= \frac{1}{2}\omega(t)\psi - \frac{\partial F}{\partial \varphi} \end{aligned}\right\}, \tag{2}$$

where $F(t, \varphi, \psi)$ is a double, continuously integrable function of φ and ψ.

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ACC NR: AP7003514

Then system (1) has the solution

$$(\varphi, \psi) = Ce^{\int \omega(t)\,dt}. \qquad (3)$$

Actually, $\frac{d}{dt}(\varphi, \psi) = \frac{\partial}{\partial t}(\varphi, \psi) + (H, (\varphi, \psi))$,

or, by virtue of Jacobi's identity,

$$\frac{d}{dt}(\varphi, \psi) = \frac{\partial}{\partial t}(\varphi, \psi) - (\varphi, (\psi, H)) -$$

$$(\psi, (H, \varphi)) = \left(\frac{\partial \varphi}{\partial t} + (H, \varphi), \psi\right) + \left(\varphi, \frac{\partial \psi}{\partial t} + (H, \psi)\right),$$

or, on the basis of equation (2)

$$\frac{d}{dt}(\varphi, \psi) = \left(\frac{1}{2}\omega\varphi + \frac{\partial F}{\partial \varphi}, \psi\right) + \left(\varphi, \frac{1}{2}\omega\psi - \frac{\partial F}{\partial \psi}\right) = \omega(\varphi, \psi) + F_{\varphi\psi}(\varphi, \psi) + F_{\psi\psi}(\psi, \psi) - F_{\varphi\varphi}(\varphi, \varphi) - F_{\psi\varphi}(\varphi, \psi) = \omega(\varphi$$

Equation (3) follows from this.
Orig. art. has: 3 formulas. [JPRS: 38,695]
TOPIC TAGS: function, mathematics
SUB CODE: 12 / SUBM DATE: 06Jan66

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ACC NR: AM6009587 Monograph UR/

Arzhanykh, Ivan Semenovich (Corresponding Member, Academy of Sciences, USSR)

Pulse field (Pole impul'sov) Tashkent, Izd-vo "Nauka" Uzbek SSR, 1965. 230 p. illus., biblio. Added t.p. in Uzbek. (At head of title: Akademiya nauk Uzbekskoy SSR. Institut mekhaniki) 2500 copies printed.

TOPIC TAGS: theoretic physics, quantum mechanics, motion mechanics, momentum

PURPOSE AND COVERAGE: This monograph presents an analysis of the momentum field of mechanics and field theory. The concept of the potential method of integration is established, systems of differential equations which permit the use of the potential method are discussed, the force fields of elementary particles (photons, electrons, gravitons, mesons, and dipole particles) are investigated, and a variational algorithm for conversion from classical mechanics and field theory to quantum mechanics is formulated. This book is intended for specialists who are doing research on differential equations in mechanics and theoretical physics, graduate students, and upper class students in university mathematics and mechanics departments or physics departments.

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ACC NR: AM6009587

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Ch. III. The momenta of elementary particles -- 122
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SUB CODE: 20 / SUBM DATE: 11Aug65/ ORIG.REF: 019/ OTH REF: 002

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APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

BTR ARZHANYY, P.M.

8

11762 Diffusion of Carbon and Nitrogen Into Steel at High Temperatures. D. A. Prokoshkin and P. M. Arzhanyy. Henry Brutcher, Translation 2871, 12 pages. (From *Trudy Moskovskogo Inst. Stali im. I. V. Stalina*, "*Symposium XXX. Structure and Properties of Steel*," Metallurgizdat, Moscow), 1951, p. 241-255, 12 pages.

Experimental study of effects of cyaniding temperature, bath composition, and cyaniding time upon distribution of C and N in diffusion layer, and of structure and properties of cyanide case. One carbon and one low-alloy steel were studied. Part played by so-called "neutral salts" in the cyaniding bath. Results of microexamination, electron-diffraction, and x-ray studies of diffusion layer. Data on hardness, tensile, and impact properties of cyanided and carburized steels. Results of bending fatigue tests on specimens with different cyanide case thicknesses.

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHANYY, P.M.

AUTHOR: AGEYEV,N.V., ARZHANYY,P.M., BARDIN,I.P., BELIKOVA,E.I., BOLEUKH,A.S. BYCHKOV,V.S. VOSKOBOYNIKOV,V.G., GOLIKOV,I.N., et al. PA - 2426

TITLE: N.T.Gudtsov (Russian)

PERIODICAL: Stal', 1957, Vol 17, Nr 3, pp 281 - 282 (U.S.S.R.)
Received: 5 / 1957 Reviewed: 5 / 1957

ABSTRACT: An obituary note for N.T.Gudtsov, one of the most important Soviet scientists and metallurgists (1885 - 1957). Gudtsov obtained his high-school final certificate in Kursk 1902, finished the Petersburg Polytechnic Institute in 1910 and worked in the laboratory of the same institute with A.A.Baykov. From 1913 - 28 he was head of the metallographic laboratory in the Putilov-Works at St.Petersburg. From 1928 - 33 he was at the Leningrad Institute for Metals and founded a laboratory for the scientific research of heat treatment at the Leningrad Polytechnic Institute. He took his degree of Doctor of Technical Science in 1934. He was elected regular member of the Academy of Science of the U.S.S.R. 1939. He became one of the leading collaborators fo the then founded Institute for Metallurgy of the Academy of Science of the U.S.S.R. It was he who develped the scientific thesis that under certain conditions carbon in steel can diffuse in the direction ot its smaller as well as of its greater concentration.

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PA - 2426

N.T.Gudtsov.

He solved the problem of the formation of flakes in steel and devoted close attention to the interaction of atoms of various components in crystalline media and on the dependence of these interactions on the elasticity of the medium. The hypothesis on the atom groups which can form and decompose was worked out as a result of this research work. Investigations of the structure of hardened steel were carried out by him together with Kurdyumov and Selyakov, in the course of which work the crystalline structure of the martensite-lattice was found. His pedagogic activity began in 1915 when he held engineers' courses in the Military School for motorvehicles. Since 1943 he has occupied the professorial chair for heat treatment at the Moscow Institute for Steel. Besides, he participated in designing the Stalingrad tractor works. (1 illustrations)

ASSOCIATION: Not given
PRESENTED BY:
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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

AKZHANIY, P. M.,

"Oxidation of Titanium and Its Alloys at High Temperatures," Titan i yego splavy; metallurgiya i metallovedeniye (Titanium and Its Alloys; Metallurgy and Physical Metallurgy), Moscow, Izd-vo AN SSSR, 1958. p 82.

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ARZHANIY P. M.

18(2) PHASE II - ABSTRACTS AB-1

Akademiya nauk SSSR. Institut metallurgii

Titan i yego splavy; metallurgiya i metallovedeniye (Titanium and Its Alloys; Metallurgy and Physical Metallurgy) Moscow, Izd-vo AN SSSR, 1958. 209 p. 4,000 copies printed.

Resp. Ed.: N.V. Ageyev, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: V.S. Rzhesnikov; Tech. Ed.: A.A. Kiseleva.

INTRODUCTION: This book, of which a Phase I Exploitation (SOV/1200) has been prepared, is a collection of scientific papers devoted to the study of titanium and its alloys from three main points of view: physical metallurgy, forming, and welding. Special problems investigated include structural changes occurring during welding, determination of the content of harmful gases, development of industrial methods of rolling, and oxidation at various temperatures.

PART I. PHYSICAL METALLURGY

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Arzhanyy, P.M. Oxidation of Titanium and Its Alloys at High Temperatures 82

This paper is devoted to examining results of an investigation of the high-temperature corrosion resistance of titanium with a diffusion layer impregnated with such elements as silicon, boron, beryllium, and aluminum. Impregnation was carried out with solid and gaseous media. Metallic chlorides were used as the basic gaseous media. The one exception was boron with which Ti was impregnated in a fusion of borax and boron carbide. Table I gives data on the increase in specific volume and weight of specimens of Ti and its alloys after impregnation with various elements depending on the temperature of the impregnated surface layer. The greatest change occurred in specimens impregnated with a combination of beryllium and aluminum. In surface impregnation of Ti with the indicated elements, a diffusion layer is formed corresponding to definite phases. Metallographic analysis and microhardness measurements of a siliconized layer showed the layer to have a two-phase structure, one phase being situated on the boundary between the surface layer and the metal. On the basis of these data, it was assumed that the siliconized layer consisted of a solid solution of Si in Ti and of a chemical compound of the

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two elements. X-ray diffraction study confirmed the presence of such a layer and of the compound $TiSi_2$. Similar studies showed that Be and B form diffusion layers consisting [entirely] of compounds of these elements with Ti. Aluminum, on the other hand, forms a solid solution [only]. These structural changes in the surface layer lead to an increase in the chemical stability of Ti at high temperatures. Table 2 shows results of tests made on Ti and two of its alloys (LV and LM). A simultaneous diffusion coating of Be and Al gave the best protection, followed by Si, Be, and Al, in that order. Boron proved to be almost completely ineffective. It was observed that in all cases oxidation proceeded most rapidly during the first few hours, then tapered off and finally stopped. The author concludes that diffusion coating in an effective means of increasing chemical stability of Ti at high temperatures. The rate of oxidation is determined by the composition and structure of the diffusion layer. There are 2 tables and 1 figure.

Borbunov. N.S. (Institute of Physical Chemistry, USSR Academy of Sciences). Titanium Diffusion Coatings on Iron 87

The author studied the physical process which takes place in

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ARZHANYY, P.M.

Oxidation of titanium and its alloys at high temperatures. Titan i ege splavy no. 1:82-86 '58. (MIRA 14:5)
(Titanium—Metallography) (Diffusion coatings)

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ARZHANYY, P.M.

24-2-23/28

AUTHORS: Arzhanyy, P. M. and Belyakov, L. N. (Moscow).

TITLE: Investigation of the structure and of the phase composition of diffusion coatings of an alloy of chromium with silicon and beryllium. (Issledovaniye struktury i fazovogo sostava diffuzionnykh pokrytiy splava khroma kremniyem i berilliyem).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, No.2, pp. 149-152 (USSR).

ABSTRACT: The authors investigated the structure and the phase composition of an alloy containing 60% Cr and 40% Fe, the surface of which was saturated by means of diffusion with silicon and beryllium in the solid phase at temperatures of 950 to 1200°C for durations between thirty minutes and fifteen hours. It was found that at the surface the following phases are separated out: the silicide (Cr,Fe)Si, the silicide $(Cr,Fe)_3Si$, the σ-phase and the eutectic of the solid solution of silicon in the α-phase plus the σ-phase. After saturating the same alloy with silicon at 950°C, the beryllides $(Cr,Fe)Be_5$ and $(Cr,Fe)Be_2$ and the solid solution of Be and the α-phase were observed; at 1000°C and above the beryllides $(Cr,Fe)Be_5$ and $(Cr,Fe)Be_2$, the σ-phase and the solid solution of Be in the α-phase could be detected. The micro-hardness

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24-2-23/28

Investigation of the structure and of the phase composition of diffusion coatings of an alloy of chromium with silicon and beryllium.

was studied of diffusion coatings of the alloy as a function of the saturation temperature.
There are 4 figures, 2 tables and 5 references - 4 English, 1 German.

SUBMITTED: June 11, 1957.

AVAILABLE: Library of Congress.

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

AŃZHANYY, P.M.; VELICHENKO, N.I.

Equipment for the study of the kinetics of metal oxidation. Issl. po zharopr. splav. 3:381-393 '58. (MIRA 11:11)
(Thermal analysis) (Oxidation-reduction reaction)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHANYY, P.M.

Akademiya nauk SSSR. Institut nauchno-tekhnicheskoy informatsii

Metallurgiya i metallovedeniye; khimiya, metallovedeniye i obrabotka titana (Metallurgy and Metallography; Chemistry, Metallography, and Treatment of Titanium) Moscow, Izd-vo AN SSSR, 1959. 383 p. (Series: Itogi nauki; tekhnicheskiye nauki, 2) Errata slip inserted. 2,700 copies printed.

Ed.: N. V. Ageyev, Corresponding Member, Academy of Sciences, USSR; Ed. of Publishing House: V. S. Rzheznikov; Tech. Ed.: Yu. V. Rylina.

PURPOSE: This collection of articles is intended for metallurgists working with titanium and titanium alloys.

COVERAGE: The articles in this collection deal with the chemistry, metallurgy, and machining of titanium and titanium alloys. The articles are based on abstracts appearing in the Referativnyy zhurnal for chemistry and metallurgy, from 1953 to 1955. For the most part the articles are based on non-Soviet material. No personalities are mentioned. References follow each article.

Savitskiy, Ye. M., and M. A. Tylkina. Properties of Titanium and Titanium Alloys 103

This is a survey of the physical and mechanical properties of titanium and titanium alloys. Data are given on the effect of oxygen, nitrogen, hydrogen, and carbon on the mechanical properties of titanium.

Gudtsov, N. T., and L. D. Mashtakova. Heat Treatment of Titanium and Titanium Alloys 163

The authors discuss work hardening, annealing, grain refining, and other heat-treating methods for titanium and titanium alloys. Also discussed are the effect of alloying elements on heat-treating characteristics, mechanical properties after heat treating, and structural changes at heat treating.

Arzhanyy, P. M. Thermochemical Treatment [Diffusion Coating] of Titanium 187

This article deals with the nitriding, boronizing, and siliconizing of titanium.

Shelest, A. Ye., A. N. Danil'chenko, and I. M. Pavlov. Forming of Titanium and Titanium Alloys 195

The authors discuss the special features of plastic deformation, general characteristics of cold and hot working, individual forming operations, preparatory and finishing operations, organization of production, and storage and utilization of waste.

Savitskiy, Ye. M., and M. A. Tylkina. Recrystallization of Titanium Alloys 226

Recrystallization of magnesium-reduced and iodide titanium is discussed in reference to its occurrence after cold working, hot forging, annealing, tempering, and hardening. Data are also given on the effect of the annealing temperature on the properties of titanium and the effect of alloying additions on the recrystallization temperature.

Babareko, A. A. Deformation and Recrystallization Textures of Titanium and Titanium Alloys 247

The article deals with textures assumed by titanium and titanium alloys after different forming operations.

Shomonorov, M. Kh., and G. V. Nazarov. Welding and Soldering of Titanium and Titanium Alloys 252

Welding characteristics of titanium are discussed. Data are given on welding and soldering methods.

Malentiyev, B. N., and A. I. Ponomarev. Methods for [Chemical] Analysis of Titanium and Titanium Products 285

Data are furnished on qualitative, volumetric, polarographic, and colorimetric methods of analysis. Phase analysis is also discussed.

Romanov, K. P. Theory and Practice of Machining Titanium Alloys 311

The following topics are discussed: determination of machinability; causes of poor machinability; effect of coolants, lubricants, and other factors on machinability; materials for machining titanium alloys, [illegible]

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ARZHANYY, P.M.

18(7) PHASE I BOOK EXPLOITATION SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po problemam zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Ageyev; Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. N. Pavlov, and I. P. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties [illegible] materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

SOV/3355

Studies (Cont.)

Arzhanyy, P. M. On the Character of Changes in the Microhardness of Structures of the Systems Mo-Be and Mo-Al 343

Ignatov, D. V., and E. D. [illegible]. Structural and Kinetic Investigation of the Oxidation of Nickel and Chromium and Alloys Based on Them 346

Fedorchenko, I. M., and N. A. Filatova. Alloying of Powdered Metals by Diffusion Saturation 352

Borovskiy, I. B. Some Results of the Application of X-ray Spectral Analysis for the Study of Micro volumes of a Substance 360

Sotnichenko, A. I. Multispecimen Vacuum Machine for Creep and Creep-rupture Testing of Metals 367

Merlizov, Ye. M. Device for Creep and Creep-rupture Testing of Micro-specimens in Vacuum at Constant Stress 372

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

PHASE I BOOK EXPLOITATION SOV/5559

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po problems zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. 5 (Investigations of Heat-Resistant Alloys, Vol 5) Moscow, Izd-vo AN SSSR, 1959. 423 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klimov; Tech. Ed.: I.F. Kas'min; Editorial Board: I.P. Bardin, Academician, G.V. Kurdyumov, Academician, N.V. Agayev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Oding, I.N. Pavlov, and I.F. Zedis, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

COVERAGE: This book, consisting of a number of papers, deals with the properties of heat-resisting metals and alloys. Each of the papers is devoted to the study of the factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and W on the heat-resisting properties of various alloys are studied. Deformability and workability of certain metals as related to the thermal conditions are the object of another study described. The problems of hydrogen embrittlement, diffusion and the deposition of ceramic coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Boron-base metals are critically examined and evaluated. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of turbine and compressor blades are described. No personalities are mentioned. References accompany most of the articles.

Savitskiy, V.G., and K.V. Popov. Study of Certain Problems of the Temperature Dependence of the Plasticity of Steel From the Viewpoint of the Dislocation Theory 150

Gruzin, P.L., L.V. Pavlinov, A.D. Tyutyunnik (Deceased), and G.B. Fedorov Self-Diffusion in Chromium and Molybdenum 155

Fedortsov-Lezhkov, G.P., M.F. Shestyerov, R.S. Laplan, N.I. Butko, and I.S. Kartsevko. Investigation of the Properties of Kh 756 Steel 160

Fedortsov-Lezhkov, G.P., F.I. Pashkuntsa, and N.I. Solovovts. Cast Austenitic Steels for Service at Temperatures of 650°-700°C 166

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APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

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ARZHANYY, P.M.

Thermochemical treatment of titanium. Itogi nauki: Tekh. nauki no.2:187-194 '59. (MIRA 12:9)
(Titanium) (Case hardening)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

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ARZHANYY, P.M.

Character of changes in the structural microhardness of molybdenum - beryllium and molybdenum - aluminum systems. Issl.po zharopr.splav. 4:343-345 '59. (MIRA 13:5)
(Molybdenum-beryllium alloys--Metallography)
(Molybdenum-aluminum alloys--Metallography)

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Akademiya nauk SSSR. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, tom 6 (Investigations of Heat-Resistant Alloys, Vol. 6) Moscow, 1960. 319 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova. Nauchnyy sovet po probleme zharoprochnykh splavov.

Editorial Board: I. P. Bardin (Deceased) Academician, G. V. Kurdyumov, N. V. Agayev, Corresponding Member, Academy of Sciences USSR (Resp. Ed.), I. A. Oding, I. N. Pavlov, and I. F. Rudin, Candidate of Technical Sciences; Ed. of Publishing House: V. A. Klimov; Tech. Ed.: S. G. Tikhodirova.

PURPOSE: This book is intended for research workers in the field of physics of metals and for metallurgists, particularly those working on heat-resistant alloys.

COVERAGE: This collection of 45 articles deals with various problems in the production of heat-resistant alloys. Special attention is paid to the mechanisms of deformation of such metals as aluminum, copper, iron, and nickel. Various defects and failures of metals are analyzed, and means for increasing the heat resistance and plasticity are described. Among the special problems discussed are: electrolytic conductivity of iron-aluminum alloys in the solid state; the mobility of atoms in nickel-iron alloys, depending upon defects of their crystalline structure; the kinetics of change in isolated pores; the irreversible thermal transformation of solid bodies, etc. No personalities are mentioned. References follow each article.

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S/180/60/000/005/018/033
E021/E106

AUTHORS: Arzhanyy, P.M., Volkova, R.M., and Prokoshkin, D.A. (Moscow)

TITLE: The Diffusion of Silver and Titanium in Niobium and the Kinetics of Oxidation of the Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No.5, pp.156-160 (+ 1 plate)

TEXT: The starting point was niobium of the following composition: Nb 98.9, Ta 0.40, Pb 0.15, Fe 0.13, N 0.08, O 0.09, Si 0.01, C 0.14, B 5.10^{-5}%. Its hardness was 200 kg/mm^2. Samples were subjected to saturation by silicon and titanium in the solid state. Analysis of the diffusion layers was carried out by metallographic, X-ray crystallographic and X-ray spectrographic methods and by microhardness measurements. In the process of saturating niobium with silicon and titanium one layer with a microhardness of 1200 kg/mm^2 was formed at 900-1100 °C and two layers at 1200-1300 °C. On the surface of saturated samples there

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E021/E106

The Diffusion of Silver and Titanium in Niobium and the Kinetics of Oxidation of the Alloys

was only one phase, which was shown to be niobium disilicide with titanium dissolved in it of a hexagonal structure with the parameters a = 4.779kX and c = 6.493kX (Fig.1). The second layer was too small to take X-ray pictures, but X-ray spectrographic analysis showed that it contained 82% niobium. It was proposed that the second phase was a solid solution of Ti_5Si_3 and Nb_5Si_3.

It was shown that the rate of diffusion of silicon and titanium together was greater than the rates of diffusion of the elements taken singly. Oxidation of the samples saturated by silicon and titanium was carried out and followed by the continuous weighing method with an accuracy of ±0.0005 g. Fig.2 shows oxidation-time curves for 1000 °C (curve 1), 1100 °C (2), 1150 °C (3) and 1200 °C (4). At 1100 °C intensive oxidation occurs after 75-80 hours and at 1200 °C after 18-20 hours. It was shown that the rate of oxidation obeyed a logarithmic law. The energy of activation of oxidation of the sample saturated with silicon and titanium was

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The Diffusion of Silver and Titanium in Niobium and the Kinetics of Oxidation of the Alloys

found to be 3660 cal./mol. The oxidation layer consisted of rutile and tridymite. The rate of oxidation was 1.5 times slower than the rate when silicon alone was present. The obtained film was thin, strong, and adhered well to the niobium surface. N.A. Il'yasheva and R.V. Petrov participated in the work. There are 5 figures, 4 tables and 8 Soviet references.

SUBMITTED: May 27, 1960

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S/180/61/000/002/009/012
E071/E435

AUTHORS: Arzhanyy, P.M., Volkova, R.M. and Prokoshkin, D.A. (Moscow)

TITLE: On the Diffusion of Beryllium and Aluminium in Niobium

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeneliye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.2, pp.119-121

TEXT: In earlier work the authors investigated the diffusion of silicon, titanium and other elements into niobium. In the present paper the results of an investigation of the diffusion of beryllium and aluminium from a solid phase into niobium at 900 to 130°C during a period of 6 hours are described. Niobium of the following composition (in %) was taken for the investigation: Nb 98.8, Ta 0.4, Pb 0.15, Fe 0.13, N 0.8, O 0.09, Si 0.01, C 0.14, B 5×10^{-5}. The distribution of the concentration in the diffusion layer was carried out by the X-ray spectroscopic method in the Institute of Metallurgy AS USSR. The microhardness was measured with an apparatus ПМТ-3 (PMT-3) at a load of 50 g. The X-ray photographs were taken layer by layer in an РКД (RKD) camera 57.4 mm in diameter using unfiltered chromium radiation.

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E071/E435

On the Diffusion ...

Typical microstructures of diffusion layers, formed during the diffusion of beryllium and aluminium into niobium at 1200 and 1300°C in a period of 6 hours are shown in Fig.1. Changes in the concentration of niobium along the depth of the diffusion layer in the system Nb-Be are shown in Fig.2. The main diffusion parameters were determined graphically and algebraically as well as by the method of least squares on the basis of metallographic analysis of the diffusion layer. The values of the diffusion coefficients are given in the table. The following temperature dependence of the diffusion coefficients was obtained:

$$D = 7.66 \times 10^{-4} \exp(-3200/RT) \text{ for } NbBe_{12}$$

$$D = 7.18 \times 10^{-8} \exp(-6700/RT) \text{ for } NbAl_3.$$

The large difference in the activation energies of diffusion of beryllium and aluminium is attributed to the difference in the diffusion mechanisms of beryllium and aluminium. The following niobium beryllides were established: $NbBe_{12}$, $NbBe_8$, $NbBe_5$ and $NbBe_2$. Furthermore, crystal structures of $NbBe_{12}$, $NbBe_8$ and $NbBe_2$ were established. $NbBe_{12}$ has space centred tetragonal

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lattice (a = 7.376, c = 4.280 kX), microhardness 1200 kg/mm^2; $NbBe_8$ - hexagonal lattice (a = 7.56, c = 10.73 kX); $NbBe_2$ - hexagonal lattice (a = 4.516, c = 7.387 kX). The crystal structure of $NbBe_5$ was not, as yet, determined. Aluminium also diffuses into niobium forming intermetallic phases. In the diffusion layer obtained at 1300°C during 6 hours, the following two phases were determined (the thickness of the second phase was very small): $NbAl_3$ with tetragonal lattice (a = 3.846, c = 8.714 kX) and $NbAl_3$ with cubic lattice (a = 3.745 kX). It can be assumed that the formation of phases in the systems Nb-Be and Nb-Al takes place by chemical combination. A similar character of the formation of phases was observed during the diffusion of silicon into niobium. The reaction of formation of phases takes place on the boundary: phase-diffusing element. A slower growth of subsequent phases is due to recrystallization of the structure and a lower velocity of diffusion. In many cases in the process of diffusion a solid solution is formed at first followed by a new subsequent phase. R.P.Petrova participated in the work. There are 2 figures and 1 table.

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On the Diffusion ...

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Fig.1. Microstructure of niobium saturated with beryllium (Fig.1a) and aluminium (Fig.1b) in 6 hours at temperatures of 1200 and 1300°C respectively.

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On the Diffusion ...

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Fig.2. Changes in the concentration of Nb along the depth of the diffusion layer in the system Nb-Be.
Nb, wt % vs δ - distance from the surface, microns

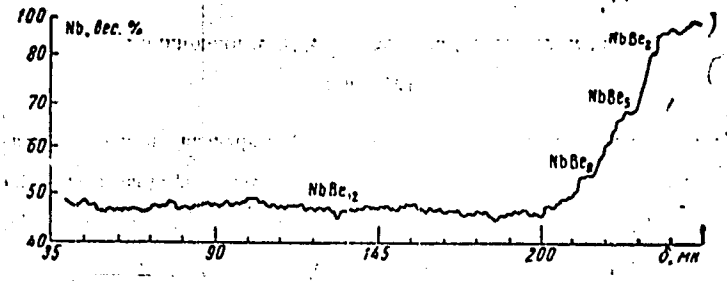

Table.

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D217/D303

18.1700

AUTHORS: Arzhanyy, P.M., Volkova, R.M., and Prokoshkin, D.A.

TITLE: Kinetics of oxidation of niobium and its alloys

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam, v. 7, 1961, 214 - 220

TEXT: This work is concerned with the oxidation of niobium after alloying its surface with various elements. Niobium of the following chemical composition was used as the material for study: 98.9 % Nb, 0.4 % Ta, 0.15 % Pb, 0.13 % Fe, 0.08 % N, 0.09 % O, 0.01 % Si, 0.14 % C and 5 x 10^{-5} % B. The hardness of the material was 200 kg/mm^2. The material was made into specimens which were subjected to cementation with Si and Ti. The diffusion layer was analyzed metallographically and by X-ray spectral methods, as well as by microhardness measurements. The distribution of the diffusion components through the depth of the protective layer was measured by means of the instrument РСАШ -2 (RSASh-2) by A.N. Deyev. The specimens were tested for oxidation by continuous weighing with an accuracy of

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± 0.0005 g. The oxidized layer was studied metallographically and by means of X-ray and electronographic methods. During saturation of Nb with Ti and Si, diffusion layers of complex structure and composition form. At 900 - 1100°C, a single layer having a microhardness of approximately 1200 kg/mm^2 forms, and at 1200 and 1300°C two layers form, the thickness of the second layer being 5 - 6 μ. The microstructure and microhardness measurements show that the same phase forms on the surface of saturated specimens at all temperatures and times of soaking. By means of X-ray spectral and X-ray structural analysis, it was found that this phase consists of niobium disilicide in which Ti is dissolved; this has a hexagonal lattice with parameters a = 4.779 KX and c = 6.493 KX. The Nb content of the second layer is approximately 82 %. The phases Nb_5Si_3 and Ti_5Si_3 have identical crystal lattices. Ti and Nb form a continuous series of solid solutions, and it can, therefore, be assumed that the second phase consists of a solid solution of Ti_5Si_3 and Nb_5Si_3. The thickness of the diffusion layers forming on the surfa-

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ARZHANYY, P. M. (Moskva); VOLKOVA, R. M. (Moskva); PROKOSHKIN, D. A. (Moskva); Prinimala uchastiye: PETROVA, R. V.

Thermal diffusion in the system tungsten-beryllium. Izv. AN SSSR. Otd. tekh. nauk. Met. i topl. no.6:162-166 N-D '62. (MIRA 16:1)

(Tungsten) (Diffusion coatings)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHANYY, P.M.; VOLKOVA, R.M.; PROKOSHKIN, D.A.

Investigating the kinetics of oxidation and the structure of certain high-melting metal oxides. Issl. po zharopr. splav. 9 172-183 '62. (MIRA 16:6)

(Oxidation) (Alloys--Thermal properties)

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AID Nr. 982-11 4 June

DIFFUSION OF SILICON AND TITANIUM IN NIOBIUM (USSR)

Arzhanyy, P. M., R. M. Volkova, and D. A. Proskoshkin. IN: Akademiya nauk SSSR, Institut metallurgii imeni A. A. Baykova, Trudy, no. 11, 1962, 78-82. S/509/62/000/011/003/019

Solid-state diffusion of Si and Ti in Nb, primarily structure and composition of the phases formed in the process of diffusion, have been studied. Specimens of niobium, containing 98.9% Nb, 0.4% Ta, 0.15% Pb, 0.13% Fe, 0.08% N, 0.09% O, 0.01% Si, 0.14% C, and 10^{-5}% B, were impregnated with silicon and titanium at temperatures of 900° to 1300°C. It was found that the diffusion layer formed at 900° to 1100°C consists of a single phase, a solid solution of titanium in $NbSi_2$. This phase has the same hexagonal lattice as $NbSi_2$ but with parameters a = 4.779 and c = 6.493 kX; its microhardness is 1200 kg/mm^2. Below this layer, at 1200°C and 1300°C, a second diffusion layer 5 to 6 μ thick is formed which contains 82% Nb. Its structure could

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DIFFUSION OF SILICON [illegible] S/509/62/000/011/003/019

not be determined. The total thickness of the diffusion layers depends on the temperature and duration of impregnation; e.g., in an impregnation lasting 6 hrs it varies between 21 μ at 900° and 210 μ at 1300°C. Titanium accelerates the diffusion of silicon in Nb. Oxidation tests at 1000, 1100, 1150, and 1200°C showed that for the first 20 to 100 hrs (depending on temperature) the oxidation follows a logarithmic rate. The oxidized surface is smooth. After 75 to 80 hrs at 1100°C or 18 to 20 hrs at 1200°C the oxidation rate increases sharply and the oxide layer turns spongy. However, no oxide peeling or Nb_2O_5 emergence on the surface was observed. Generally, Si-Ti diffusion coating on Nb was found to have almost 50% higher oxidation resistance than Si coating. The oxide film was found to consist of a β-phase -- Nb_2O_5 -- with lattice parameters a = 21.38, b = 3.79, and c = 20.12 kX and an α-phase -- SiO_2 -- with parameters a = 5.02 and c = 8.22 kX. The surface of the film consists of rutile and α SiO_2. The activation energy of oxidation was found to be 3600 kcal/mol. [ND]

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHANYY, P.M.; VOLKOVA, R.M.

Investigation of the system chromium - molybdenum by the thermal diffusion method. Zhur.neorg.khim. 8 no.3:697-699 Mr '63. (MIRA 16:4)

1. Institut metallurgii imeni AN.ABaykova AN SSSR.
(Chromium-molybdenum alloys)

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L 11081-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG

ACCESSION NR: AP3000300 S/0020/63/150/001/0096/0098

AUTHOR: Arzhany*y, P. M.; Volkova, R. M; Prokoshkin, D. A.

57

TITLE: Investigation of the niobium-beryllium system

SOURCE: AN SSSR. Doklady*, v. 150, no. 1, 1963, 96-98

TOPIC TAGS: niobium-beryllium system, phase diagram, phase composition, intermetallic compound, lattice parameter, melting point, microhardness, formation heat, diffusion coating

ABSTRACT: For the preliminary experiments the alloys were prepared by diffusion coating of 98.9%-pure Nb (microhardness, 200 kg/mm^2) with 99.8%-pure Be in the 900 to 1300C temperature range with exposures of varying length. Microscopic examination revealed that the diffusion coating consists of several layers of various thicknesses. The innermost layer, the thinnest, was found to have a hexagonal lattice with the parameters a = 4.516 and c = 7.387 kX and a chemical composition corresponding to the $NbBe_2$ phase. The next layer, thicker, has a chemical composition corresponding to $NbBe_5$ with a microhardness of 1580 kg/mm^2. This is a new compound not previously mentioned in literature. The next layer, still thicker, consists of $NbBe_8$, which has a rhombohedral structure with the

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parameters a = 7.56 and c = 10.73 kX; its microhardness is about 1430 kg/mm². The outermost layer, the thickest, has a composition corresponding to $NbBe_{12}$ and a body-centered tetragonal lattice with the parameters a = 7.376 and c = 4.280 kX; its microhardness is 1200 kg/mm². The phase growth in the diffusion zone at a constant temperature follows a parabolic rate. The approximate calculated temperature dependence of diffusion coefficients for $NbBe_{12}$ and $NbBe_8$, respectively, is expressed by the equations $D = 7.66$ multiplied by 10^{-4} exp(-32,000/RT) and $D = 5.7$ multiplied by 10^{-9} exp(-14,740/RT). For further experiments a series of alloys including alloys corresponding to the compounds found in the diffusion zone were vacuum-arc melted from the components shown above. The heats of formation of the compounds were found to be 28.8 ± 9.6 Cal/mol for $NbBe_{12}$, 20.5 ± 3.2 Cal/mol for $NbBe_8$, 46.4 ± 3.8 Cal/mol for $NbBe_5$, and 14.6 ± 1.9 Cal/mol for $NbBe_2$. On the basis of the results of thermal, microscopic, and x-ray diffraction analysis the phase diagram of the Nb-Be system (See Fig. 1 of Enclosure) was plotted. Orig. art. has: 2 figures, 1 table, and 1 formula.

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy)

SUBMITTED: 09Jan63 DATE ACQ: 10Jun63 ENCL: 01

SUB CODE: MA,ML NO REF SOV: 002 OTHER: 004

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21(1),5(2)

SOV/89-7-2-2/24

AUTHORS: Laskorin, B. N., Ul'yanov, V. S., Sviridova, R. A., Arzhatkin, A. M., Yuzhin, A. I.

TITLE: Sorption Methods of Separating Barium From Radium, Aluminum From Gallium, and Zirconium From Hafnium (Sorbtsionnyye metody razdeleniya bariya i radiya, alyuminiya i galliya, tsirkoniya i gafniya)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 2, pp 110-116 (USSR)

ABSTRACT: For the separation of elements chemically close to each other the chromatographical method was applied which due to its small capacity cannot be applied on an industrial scale. The efficiency of the method can be considerably increased by the use of an appropriate complexformer, which decreases the active concentration of the ions to be separated; this would mean in first approximation a decrease of the mass of the elements to be separated. The difference in the formation constants of the complex compounds increases the separation factor. It was established that for the separation of barium and radium citric acid, nitryltri- and ethylene diamine tetra acetic acid (EDTA) as eluating agents can be used with best results. The separation

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factor was determined for 9 different kationites solved in different acids. Maximum separation factors were achieved under the following conditions: 1) use of hydrochloric acid. Kationite KU-2 with 8% latticelike polymerization, granulation 100-200 mesh, operational temperature 90°. The acid concentration is increased in the course of the experiment from 0.5 to 5.0 m . Eluation speed 2 cm/min. Barium and radium are collected in the upper section of the column. The height of the kationite saturated with barium is 10% of the kationite's total height. 2) Use of citric acid. Kationite Ku-2 granulation 100-200 mesh, 5% citric acid ammonia with a pH value of 8.0 . Separation up to 20% of the kationite's total height. Eluation speed 2 cm/sec. The exact results are given in a diagram. 3) Use of EDTA. By this method, described somewhat more in detail, it is possible to separate the whole radium from 100 kg of barium with a total volume of the kationite of 0.5 m^3. Volume of the liquids 8 m^3. The efficiency of the developed method is 50 kg/h per m^2 of the cross section of the column. For the separation of 1 kg of barium 0.01 kg of EDTA, 1.50 kg sodium lye and 1.2 kg hydrochloric acid is needed.

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Sorption Methods of Separating Barium From Radium, Aluminum From Gallium, and Zirconium From Hafnium SOV/69-7-2-2/24

The separation of zirconium and hafnium is achieved by means of ion-exchanging resins and a mixture of sulfur- and fluor hydracid. The best conditions are: zirconium concentration 20-30 g/l, sulfuric acid 0.65-0.75 M, mol relation between fluor and zirconium 0.7-1.0, working out a column of 10% of the resin weight. Kationite KU-2, granulation 60-100 mesh, height of the sorbent layer 2-2.5 m, filtering velocity of the solutions 1.5-2 cm/min, achievable efficiency of 15-20 kg/h per m^2 of the cross section of the column. By using the described method 100 kg of hafnium-free zirconium was prepared. Separation of gallium from anodic alloys. The initial alloy is ground to 0.3 mm sized pieces and solved in hydrochloric acid. The copper in the solution is enriched with aluminum or iron shavings. The iron is simultaneously transferred into the bivalency state. The solution's acidity is being increased to 3.7 M and subsequently filtered through a layer of sorbent. The anionite is washed with 5 M of hydrochloric acid. The gallium is desorbed with 0.5 M hydrochloric acid, the solutions are neutralized with an alkali and the gallate electrolyzed

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Sorption Methods of Separating Barium From Radium, Aluminum From Gallium, and Zirconium From Hafnium SOV/89-7-2-2/24

to obtain metal gallium. Efficiency of the developed installation: 50 kg/h gallium per m^2 of the cross section of the column. There are 7 figures, 6 tables, and 10 references.

SUBMITTED: November 25, 1958

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

S/828/62/000/000/003/017
E039/E420

AUTHORS: Laskorin, B.N., Kaplan, G.Ye., Arzhatkin, A.M.

TITLE: A continuous countercurrent method of separating zirconium and hafnium

SOURCE: Razdeleniye blizkikh po svoystvam redkikh metallov. Mezhvuz. konfer. po metodam razdel. blizkikh po svoyst. red. metallov. Moscow, Metallurgizdat, 1962, 48-50

TEXT: This method utilizes chromatographic separation operated continuously by arranging for the resin packing in the column to move countercurrent to the zirconium-hafnium solution. The column is 400 mm inner diameter and the height of the resin ion exchange layer can be varied from 50 to 200 cm. The initial solution is zirconium and hafnium fluorosulphate with a normal concentration of zirconium and hafnium oxides ~65 g/litre. Ratios of Zr:Hf used are 100:1 and 1:1. Satisfactory separation of Zr and Hf was obtained using ion resin КУ-2 (KU-2) standard coarseness (20 to 50 mesh). The solution is fed into the middle of the column and flows upwards while the resin particles move downwards. Hf is absorbed more strongly in the lower part of the column and Zr in the upper part. As the resin

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A continuous countercurrent ... S/828/62/000/000/003/017
E039/E420

passes down the column it goes through a regenerating solution of ~ 8% H_2SO_4 and is then transferred to the top of the column through an external tube by means of an airlift. The solution discharged from the top of the column contains zirconium with less than 0.03% Hf while the solution from the lower part of the column contains hafnium with up to 1% of Zr. This apparatus produces a significantly higher output than the discontinuous chromatographic process. There is 1 figure.

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHAVITINA, M.Yu.

Mineralogical characteristics of Takata sediments in western Bashkiria. Vop. geol. vost. okr. Rus. platf. i IUzh. Urala no.2:108-117 '59. (MIRA 12:12)
(Bashkiria--Mineralogy)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHAVITINA, M. Yu.

Conditions governing the formation of Takata sediments in western Bashkiria. Vop. geol. vost. okr. Rus. platf.i IUzh. Urala no.4:59-67 '59. (MIRA 14:6)

(Bashkiria--Sediments(Geology))

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHAVITINA, M.Yu.

Distribution of oil-reservoir rocks in the basal horizon of the Eifel stage in western Bashkiria. Vop.geol.vost.okr.Rus.plat.i IUzh.Urala no.6:35-40 '60. (MIRA 14:7)
(Bashkiria--Oil sands)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHAVKIN, A., kontr-admiral

Extend the scope of socialist competition. Tyl i snab. Sov. Voor. Sil 21 no.12:27-30 D '61. (MIRA 15:1)
(Russia--Armed forces)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHAVYKH, I.S.

Relation between the theory of elasticity and electrodynamics. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk no.6:81-82 '61. (MIRA 16:12)

1. Institut matematiki imeni V.I. Romanovskogo AN UzSSR. Chlen-korrespondent AN UzSSR.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

KOLDOBSKIY, S.V.; SLOVINSKIY, N.A.; ANTONOV, Ye.P.; ARZHAYEV, I.S.; ZHOKHOV, B.I.

Main highway of friendship. Avt.dor. 28 no.8:14-18 Ag '65. (MIRA 18:11)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

FIKH, B.M., kand.istor.nauk; ARZHAYEVA, L.V.; BARSEGYAN, M.V., kand. istor.nauk; GOLUB, I.P.; GRIGOR'YEVA, Z.G., kand.istor.nauk; MARASH, Ya.N., kand.istor.nauk; MARKOVSKIY, D.S., kand. istor.nauk; PESTRAK, F.S.; GOLUBTSOVA, P., red.; SLAVYANIN, I., tekhn.red.

[Grodno; historical study] Grodno; istoricheskii ocherk. Minsk, Gos.izd-vo BSSR, Red.sotsial'no-ekon.lit-ry, 1960. 150 p. (MIRA 14:3)

(Grodno--History) (Grodno--Economic conditions)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, D.

For them all doors are open. Radio no.12:14 D '64.

(MIRA 18:3)

1. Uchenyy sekretar' Moskovskogo gorodskogo otdeleniya pedagogicheskogo obshchestva RSFSR.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, D. (Staraya Russa, Moskovskoy oblasti)

At a pioneer camp... Kryl. rod. 16 no.6:26 Je '65.
(MIRA 18:10)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.; ZHYTLENOK, M.A.

Data on the variability of Eberthella typhosa in the organism. Zhur.mikrobiol.epid. i immun. no.8:36-41 Ag '55 (MLRA 8:11)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny (dir. N.G.Kashtanova) i kliniki infektsionnykh bolezney (zav.--prof. A.F.Bilibin) 2-go Moskovskogo meditsinskogo instituta imeni I.V.Stalina.

(TYPHOID FEVER, immunology, Vi-antigens)
(ANTIGENS AND ANTIBODIES, typhoid fever Vi-antigens)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.; ZNYTLENOK, M.A.

Vi-antigen in typhoid strains isolated from roseolae, from various organs, and from feces and urine of infected subjects. Zhur. mikrobiol., epid. i immun. 27 no.1:8-13 Ja '56 (MLRA 9:5)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny (dir. M.G. Kashtanova) i kliniki infektsionnykh bolezney (zav.-prof. A.F. Bilibin) Moskovskogo meditsinskogo instituta Ministerstva zdravookhraneniya RSFSR.

(SALMONELLA TYPHOSA, immunology,
Vi-antigen in strains isolated from various sources (Rus))
(ANTIGENS AND ANTIBODIES,
Salmonella typhosa Vi-antigen in strains isolated from various sources (Rus))

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.; ZNYTLENOK, M.A.

Data on variability of Salmonella typhosa in the organism. Report no.3: Investigation on the virulence of Salmonella typhosa isolated from patients with typhoid fever. Zhur. mikrobiol., epid. i immun. 27 no.1:13-19 Ja '56 (MLRA 9:5)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny (dir.-M.G. Kashtanova, nauchnyy rukovoditel'-prof. V.A. Chernokhvostov) i kliniki infektsionnykh bolezney (zav.-prof. A.F. Bilibin)
(SALMONELLA TYPHOSA,
virulence of strains isolated from patients with typhoid fever (Rus))

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.; ZEYTLENOK M.A.

Data on the variability of typhoid bacteria in the sick organism. Report no.4: Complete antigen in typhoid bacteria recovered from a patient. Zhur. mikrobiol., epidem. i immun. 27 no.3:30-34 Mr' 56. (MIRA 9:7)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny i Kliniki infektsionnykh bolezney.

(SALMONELLA TYPHOSA, immunology, antigens (Rus))
(ANTIGENS AND ANTIBODIES, Salmonella typhosa antigens (Rus))

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.; LUTCHEVA, Ye.S.; REZNIKOVA, M.N.; POTAPOV, M.I.; SOLOV'YEVA, N.A.

Detection and investigation in human sera of antibodies to the agglutinogens P, S, Le, Lu, K, Fy. Sud-med.ekspert. 3 no.1:27-32 Ja-Mr '60. (MIRA 13:5)

1. Nauchno-issledovatel'skiy institut sudebnoy meditsiny (dir. - prof. V.I. Prozorovskiy) Ministerstva zdravookhraneniya SSSR.
(AGGLUTINOGENS) (ANTIGENS AND ANTIBODIES)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.

Preparation of anti-Le^a and anti-Le^b heteroimmune hemagglutinating sera. Sud.-med.ekspert. 5 no.4:37-42 O-D '62. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut sudebnoy meditsiny (dir. - V.I.Prozorovskiy) Ministerstva zdravookhraneniya SSSR.
(FORENSIC HEMATOLOGY) (BLOOD--AGGLUTINATION)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.

Contemporary state of some serological problems of forensic medicine; according to our own data and those in literature. Sud.-med.ekspert. 6 no.2:33-39 Ap-Je'63. (MIRA 16:7)

1. Nauchno-issledovatel'skiy institut sudebnoy meditsiny (dir. prof.V.I.Prozorovskiy) Ministerstva zdravookhraneniya SSSR.
(SEROLOGY) (MEDICAL JURISPRUDENCE)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHELAS, L.K.; LUTCHEVA, Ye.S.

Determination of Rh-agglutinogen C^W in the blood of Moscow donors. Sud.-med.ekspert. 7 no. 2:30-31 Ap Je '64. (MIRA 17:7)

1. Nauchno-issledovatel'skiy institut sudebnoy meditsiny (dir.- prof. V.I.Prozorovskiy) Ministerstva zdravookhraneniya SSSR, Moskva.

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

AMZHELAS, I.K.

Detection of agglutinogens of the Lewis system in liquid blood. Sud.-med. ekspert. 7 no.3:28-30 Jl-S '64.

(MIRA 17:10)

1. Nauchno-issledovatel'skiy institut sudebnoy meditsiny (dir. - prof. V.I. Prozorovskiy) Ministerstva zdravookhraneniya SSSR.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZHENENKO, L.A.; GOL'BERG, V.A.; LITMAN, N.Ye.

Transistor amplifier with an output power up to 120 va for follow-up systems. Priborostroenie no.4:16-19 Ap '60. (MIRA 13:6)

(Transistor amplifiers)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

Arzhenukhin, F.

ARZHENUKHIN, F.

Deistviia tiazheloi bombardirovochnoi aviatsii po aviabazam protivnika (Vestnik vozdushnogo flota, 1936, v. 18, no. 9, p. 5-7)
Title tr.: The attack of heavy bombers on aerodromes.

TL504.V45 1936

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ALIYEV, I.M.; ARZHEVSKIY, G.A.; BORISOV, A.A.; GABRIELYANTS, G.A.; DENISEVICH, V.V.; DIKENSHTEYN, G.Kh., doktor geol.-miner. nauk; ZHUKOVSKIY, L.G.; IL'IN, V.D.; KAYESH, Yu.V.; KRAVCHENKO, N.Ye.; REZVOY, D.P.; SEMENOVICH, V.V.; TAL'-VIRSKIY, B.B.; SHEBUYEVA, I.N.; IONEL', A.G., ved.red.; VORONOVA, V.V., tekhn. red.

[Tectonics, and oil and gas potentials of the western regions of Central Asia] Tektonika i neftegazonost' zapadnykh raionov Srednei Azii. Pod red. G.Kh.Dikenshteina. Moskva, Gostoptekhizdat, 1963. 309 p. (MIRA 16:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut.
(Soviet Central Asia--Petroleum geology)
(Soviet Central Asia--Gas, Natural--Geology)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZIANI, Ye.K.

Histological changes in the epithelia of the junction region of the cloaca in some birds (Anseriformes). Trudy Tbil. GU 88:107-115 '63. (MIRA 18:8)

1. Kafedra gistologii Tbilisskogo universiteta.

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZIMANOV, N.Ye.

Response to IU.V. Kuznetsov's article "Blasting water-filled boreholes as a means to increase the efficiency and safety of the operation." Ugol' 34 no.9:62 S '59. (MIRA 12:12)
(Blasting)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARCYAN, A.A.; TITANYAN, S.G.; ARZOYAN, G.A.

Chloromethylation of certain P-cresol esters [in Armenian with summary in Russian] Nauch.trudy Erev.un.no.53:45-51 '56. (MLRA 9:10)

1.Kafedra organicheskoy khimii.
(Cresol) (Chloromethylation)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZUBOVA, N.N.

Physical methods of treatment used with children. Med.sestra 17 no.4:28-34 Ap '58. (MIRA 12:10)

1. Iz detskoy bol'nitsy imeni N.K.Krupskoy, Leningrad.
(THERAPEUTICS, PHYSIOLOGICAL)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZUBOVA-KULIKOVA, A.A.

Dimensional variability in the Siberian roach. Uch. zap. TGPI 20:83-106 '61. (MIRA 15:7)

(Ob' Valley--Roach (Fish))

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

L 06139-67 EWT(m) IJP(c)

ACC NR: AP6031170 SOURCE CODE: UR/0361/66/000/002/0003/0015

AUTHOR: Nemenov, L. M.; Anisimov, O. K.; Arzumanov, A. A.; Golovanov, G. N.; Yezerskiy, V. F.; Kravchenko, Ye. T.; Kruglov, V. G.; Laktionov, I. A.; Meshcherov, R. A.; Meshcherova, I. V.; Popov, Yu. S.; Prokof'yev, S. I.; Rybin, S. N.; Fedorov, N. D.

ORG: Institute of Nuclear Physics, AN KazSSR (Institut yadernoy fiziki AN KazSSR)

TITLE: Putting the Kazakhstan cyclotron into operation

SOURCE: AN KazSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 2, 1966, 3-15

TOPIC TAGS: cyclotron, proton accelerator, Mev accelerator, alpha particle / U1502 cyclotron

ABSTRACT: The U-150-2 cyclotron of the Institute of Nuclear Physics of the Academy of Sciences of the Kazak SSR is described. This cyclotron is designed to accelerate protons, deuterons, alpha particles, and multiply charged ions. Energies of 24 Mev are obtained with deuterons. Alpha particles and protons can be accelerated to 48 Mev and 20 Mev, respectively. Sixfold ionized carbon can be accelerated to 140 Mev. The magnetic field in the cyclotron necessary for 20 Mev deuteron production is 14000 oersteds; this is produced by a current of 800 amp. The necessary variation of the magnetic field with radius is obtained by the use of annular shims. The high frequency generator and its alignment is described. The dependence of beam current at various

Card 1/2

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ACC NR: AP6031170

7

final radii is plotted as a function of the potential between the "dees". The authors thank engineers V. A. Borisov, B. L. Vaysman, N. G. Gladenko, senior electronic engineer D. D. Gromov, chiefs of work shifts G. A. Obraztsov and V. E. Oshkin, and chief of service A. I. Tkachev for participation in the work of setting aright the various difficulties involved in setting up the cyclotron. Orig. art. has: 11 figures.

SUB CODE: 18/20 SUBM DATE: none

Card 2/2 mfc

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZUMANOV, A.A.

ALIGULYANTS, S.D., inzhener; ARZUMANOV, [redacted] inzhener.

Safety belts used by oil derrick mounters. Bezop.truda v prom. 1 no.5:34 '57. (MLRA 10:7)

(Safety appliances)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ALIGULYANTS, S.D.; ARZUMANOV, A.A.

Safety belt for assemblers of derricks. Trudy VNIITB no.10: 29-32 '58. (MIRA 15:5)

(Cranes, derricks, etc.) (Safety belts)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ZAYCHENKO, V.N.; ARZUMANOV, A.A.

Protective measures in using radioactive substances in field geophysics. Trudy VNIITB no.11:13-24 '59. (MIRA 15:5)
(Oil well logging, Radiation--Safety measures)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZUMANOV, A.A.; ALIGULYANTS, S.D.

Cover for the driller's post. Trudy VNIITB no.11:66-67 '59. (MIRA 15:5)

(Oil well drilling--Equipment and supplies)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ESTRIN, R Ya.; MORDKIN, V.M.; MANVELYAN, E.G.; ARZUMANOV, A.A.

Safety problems in completing oil and gas wells. Trudy VNIITB no.13:5-20 '60. (MIRA 14:12)

(Oil fields--Safety measures)

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ESTRIN, R.Ya., inzh.; MANVELYAN, E.G. inzh.; ARZUMANOV, A.A., inzh.

Safety measures in completing oil wells. Bezop.truda v prom 4 no.6:14-17 Je '60. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po tekhnike bezopasnosti v neftyanoy promyshlennosti.
(Oil well drilling—Safety measures)

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ESTRIN, R.Ya.; ARZUMANOV, A.A.; MANVELYAN, E.G.

Safety measures in the testing of gas wells. Gaz. prom. 5 no. 12:12-14 D '60. (MIRA 14:1)
(Gas wells--Safety measures)

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NAGIYEV, A.M., inzh.; ESTRIN, R.Ya., inzh.; ARZUMANOV, A.A. (Baku)

Safety engineering in coating pipelines with bituminous mastics.
Stroi. truboprov. 5 no.12:24 D '60. (MIRA 13:12)
(Pipelines) (Protective coatings)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ESTRIN, R.Ya., inzh.; ARZUMANOV, A A.

Safety measures in oil well completion by air injection. Bezop. truda v prom. 5 no.6:12-13 Je '61. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po tekhnike bezopasnosti v neftyanoy promyshlennosti.
(Oil fields--Production methods)

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ESTRIN, R.; ARZUMANOV, A.

Security measures in well drilling. Okhr. truda i sots. strakh. 5 no.7:36 Jl '62. (MIRA 15:7)

(Oil fields—Safety measures)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

KUTSYN, P.V., kand. tekhn. nauk; MAMEDOV, A.A., inzh.; ARZUMANOV, A.A., inzh.

Device for setting up and removing the AKB-3 wrench. Bezop truda v prom. 7 no.4:28 Ap '63. (MIRA 16:4)

1. Vsesoyuznyy neftyanoy nauchno-issledovatel'skiy institut po tekhnike bezopasnosti.
(Oil fields—Equipment and supplies)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

21(9)

AUTHORS: Arzumanov, A. A., Mironov, Ye. S. SOV/89-6-2-13/28

TITLE: Application of a Non-Uniform Electric Field for the Outlet of Accelerated Particles From the Cyclotron (Primeneniye neodnorodnogo elektricheskogo polya dlya vypuska uskorennykh chastits iz tsiklotrona)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 2, pp 202 - 203 (USSR)

ABSTRACT: For many nuclear-physical investigations it is necessary that the particle ray escaped from the cyclotron possesses maximum intensity and a minimum radial convergence angle at the point where it hits the target. On the basis of data obtained by N. D. Fedorov a deflection system with a non-uniform electric field was developed. The mathematical equations describing the mode of action of the system developed are mentioned briefly. The deflection system determined for the 20 Mev.-deuteron ray consists of 2 main parts. The voltage at the electrode of the first part introduced into the duant amounts to 68 kv, while there is a voltage of 80 kv at the electrodes of the second part (outside the duant). The total angle convergence is 157°, the inlet aperture 8 mm, the out-

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Application of a Non-Uniform Electric Field for the Outlet of Accelerated Particles From the Cyclotron SOV/89-6-2-13/28

let aperture 50 mm. The system consists of 8 part electrodes, and their shape as well as the course of the electric field strength are given in a graph. Unlike the plain condenser earlier used, the new deflection system reduces the convergence of the escaping ray by 5 times approximately. There occurs no additional current loss in the ray and no increase in the vertical convergence. The system was calculated and constructed in 1954 for the first time. A similar system without correcting electrodes was calculated by I. M. Mator, co-worker of the NIIEFA. It is applicable to the 1.2 m cyclotron. The parameters of the electrodes may be determined also in such a way that the ray escaping from the cyclotron is oriented either parallel or convergent. The subject of the present paper was placed by L. M. Nemenov. There are 2 figures.

SUBMITTED: October 13, 1958

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZUMANOV, A.A.; VENIKOV, N.I.; MIRONOV, Ye.S.; NEMENOV, L.M.

Magnetic iron channel for extracting and injecting charged particles. Atom.energ. 10 no.5 461-468 My '61. (MIRA 14:5)
(Magnetic fields)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

ARZUMANOV, A.A.; MESHCHEROV, R.A.; MIRONOV, Ye.S.; NEMENOV, L.M.; RYBIN, S.N.
KHOLMOVSKIY, Yu.A.

Beam exit and energy regulation in a cyclotron with azimuthal magnetic field variation. Atom.energ. 10 no.5:501-502 My '61.

(MIRA 14:5)

(Cyclotron)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102320006-7

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B102/B138

24.6730

AUTHORS: Arzumanov, A. A., Meshcherov, R. A., Mironov, Ye. S., Nemenov, L. M., Rybin, S. N., Kholmovskiy, Yu. A.

TITLE: Experiments on acceleration in, and emission of ions from, a cyclotron with azimuthally varying magnetic field and energy regulation

PERIODICAL: Atomnaya energiya, v. 12, no. 1, 1962, 12 - 21

TEXT: Problems of formation and correction of magnetic fields used for ion acceleration are considered. The studies and experiments described were carried out at the 1.5-m cyclotron of the Ordena Lenina Instituta atomnoy energii im. I. V. Kurchatova AN SSSR (Lenin Order Institute of Atomic Energy imeni I. V. Kurchatov AS USSR). Azimuthal variation of the magnetic field is achieved by three iron sectors. Various types of probes were used to determine the trajectories, current and intensity distributions of accelerated ions. Their arrangement in the accelerator chamber is shown in Fig. 3. Magnetic field distribution in the central plane is described by $H_z(R,\varphi) = H_o\left[1 + f(R) + \sum_k F_k(R)\cos 3k\varphi\right]$, H_o - magnetic field

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strength in the center, $f(R) = (H_z - H_o)/H_o$ characterizes the radial field distribution averaged over φ and $F_k(R)$ is the radial distribution function of the amplitude of the k-th harmonic in a Fourier expansion of $H_z(R,\varphi)$; $H_z = H_o[1 + f(R) + F(R)\cos 3\varphi]$, $F(R)$ - amplitude of first harmonic. The ion acceleration experiments were carried out at H_o = 5, 10, 13.6, and 17 koe, deuterons and H_2-ions were accelerated at H_o = 10, 13.6, and 17 koe, the results are shown graphically. The deflection system is described in detail. It is designed in such a way that the effects of scattering fields are completely compensated. The main parameters of the accelerated and emitted ion beams given in Table 4, were also determined by the probe method. Results: Deuteron acceleration up to 31.5 Mev can be achieved with the current of the emitted beam ~70 μa. Energy was regulated in the range of 5 - 17 kev. The deflection system allows beam divergence to be reduced without additional losses of the current of accelerated ions. Small aperture magnetic quadrupole lenses can therefore be used. As the beam is small at the output and the input slit of the magnetic analyzer can be put at this point. The energy of the accelerated ions was ± 1% spread over the whole range. The authors thank L. F. Kondrashev,

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N. Z. Kubyshkin and S. I. Prokof'yev for assistance. There are 14 figures, 4 tables, and 15 references: 6 Soviet and 9 non-Soviet. The four most recent references to English-language publications read as follows: F. Heyn, Khoe Kong Tat. Rev. Scient. Instrum., 29, 662 (1958); J. Zavenyagin, R. Metshcherov, E. Mironov, L. Nemenov, J. Kholmovsky. Proceedings of the Intern. Conf. on High Energy Accelerators and Instrumentation - CERN, 1959, p. 225; R. Livingston, F. Howard. Nucl. Instr. and Meth., 6, 1 (1959); 6, 105 (1960); 6, 221 (1960); 6, 134 (1960) J. Allen, S. Chatterjee, L. Ernest, A. Jarvin. Rev. Scient. Instrum., 31. 813 (1960).

SUBMITTED: May 27, 1961

Fig. 3. Position of probes in the accelerator chamber.

Legend: (1) accelerator chamber, (2) dees, (3) ion source, (4) multi-segment probe, (5) shielded probes, (6) probes for measuring the current in the emitted beam, (7) probes arranged in the dee.

Table 4. Parameters of the emitted beam.

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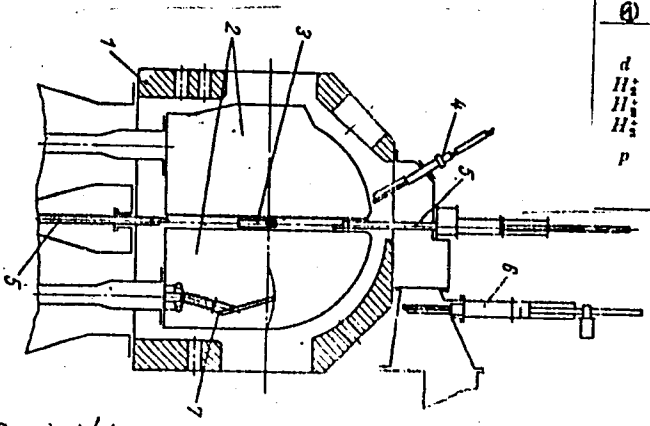
Experiments on acceleration...

Legend: (1) - Ion; H_0, koe; E, Mev; I, μa; $k_{вып}$ = output coefficient, %, determined by current measurement with probe 7 (Fig. 3); $2U_д$ = potential difference between the dees, kv; $U_{откл}$ = deflecting voltage, kv.

Fig. 3



Ион (1)	H_0, кэ	E, Мэв	ΔE/E, %	I, мка	$k_{вып}$, %	$2U_д$, кв	$U_{откл}$, кв
d	17,1	31,5	±0,9	70	38	136	61
H_2^+				50	45	144	60
H_2^+	13,6	20,4	±1,0	115	37	128	34,5
H_2^+	10,3	—	—	50	40	48	22
p	5,15	—	—	470	21,5	57,5	13
				50	70	17	13

Table 4

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ZEGZHDA, D.P.; ARZUMANOV, M.A.; LEVITAS, Ye.G.; FROLOVA, A.I.; DUDAVSKIY, I.Ye.

Properties of grog obtained by burning certain clays in rotary kilns. Ogneupory 31 no.1:5-10 '66. (MIRA 19:1)

1. Dnepropetrovskiy metallurgicheskiy institut (for Zegzhda, Arzumanov, Levitas, Frolova). 2. Zaporozhskiy ogneupornyy zavod (for Dudavskiy).

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TRAKHTENBERG, Iosif Adol'fovich, akademik; ANIKIN, A.V., kand. ekon. nauk, otv. red.; ARZUMANYAN, A.A., akademik, red.; BREGEL', E.Ya., doktor ekon. nauk, red.; KRONROD, Ya.A., doktor ekon. nauk, red.; MENDEL'SON, L.A., doktor ekon. nauk, red.[deceased]; SHENAYEV, V.N., kand. ekon. nauk, red.; KOLOSOVA, T.A., mladshiy nauchnyy sotr., red.; TOVMOSYAN, M.Ye., red.izd-va; KASHINA, P.S., tekhn. red.

[Monetary crises, 1821-1938]Denezhnye krizisy, 1821-1938 gg. Moskva, Izd-vo Akad.nauk SSSR, 1963. 730 p. (MIRA 16:3)
(Money)

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ARZUMANOV, A. G.

Economize on raw material and improve the quality of Soviet champagne Vin. SSSR 12 No. 2, 1952

SO: MLRA. June 1952.

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ARZUMANOV, A.O.; KRUZHALOV, B.D.; L'VOV, S.V.

Synthesis and testing of a new polymerization initiator. Sbor. nauch. rab. Inst. fiz.-org. khim. AN BSSR no.8:19-21 '60. (MIRA 14:3)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova.

(Polymerization)

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ARZUMANOV, A.O.

Failure of the theory of covalence of chemical bonds. Izv.vys.uch.zav.; khim.i khim.tekh. 5 no.4:675-679 '62. (MIRA 15:12)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova, kafedra tekhnologii osnovnogo organicheskogo sinteza i sinteticheskogo kauchuka.
(Chemical bonds)

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ARZUMANOV, B., podpolkovnik

Shaped charge. Tekh. i vooruzh. no.1:89 Ja '64. (MIRA 17:6)

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