"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

On the Forms of the Occurrence of Uranium in Granites SOV/7-59-3-5/13

oxide, a secondary mineral, or as an adsorbed compound. The authors thank I. Ye. Starik for his advice and assistance. There are 3 tables and 10 Soviet references.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina AN SSSR, Leningrad (Radium Institute imeni V. G. Khlopin AS USSR Leningrad)

SUBMITTED: October 28, 1957

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHENOK, L. Ya.; AVDZEYKO, G.V.; KRYLOV, A. Ya.; SILIN, Yu. I.

Absolute age of the Monastyri type granites of Kalba. Geokhimiia no.3:278-279 '60. (MIRA 14:5)

1. Radiyevyy institut imeni V. G. Khlopina AN SSSR, Leningrad.
(Kalba Range--Granite)
(Geological time)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

STARIK, I.Ye.; RAVICH, M.G.; KRYLOV, A.Ya.; SILIN, Yu.I.; ATRASHENOK, L.Ya.; LOVTSYUS, A.V.

Recent data on the absolute age of rocks in eastern Antarctica. Dokl. AN SSSR 134 no.6:1421-1423 O '60. (MIRA 13:10)

1. Radiyevyy institut im. V.G.Khlopina Akademii nauk SSSR. 2. Chlen-korrespondent AN SSSR (for Starik).
(Antarctic regions--Rocks) (Geological time)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHENOK, L.Ya.; KRYLOV, A.Ya.

Radioactive equilibrium in rocks of eastern Antarctica.
Radiokhimiia 5 no.2:170-172 '63. (MIRA 16:10)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHENOK, N.B.

Results of field tests of a new method for crossing tomato varieties. Biul.Inst.biol.AN BSSR no.3:222-224 '58.
(MIRA 13:7)

(TOMATOES)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHENOK, N. V.

ATRASHENOK, N. V. -- "Obtaining Highly-Productive Tomato Seedsy by Hybridization between Varieties without Removing the Flowers from the Female Plants." Belorussian State U imeni V. I. Lenin. Minsk, 1955. (Dissertation for the Degree of Candidate of Biological Sciences.)

SO: Knizhnaya letopis', No. 4, Moscow, 1956

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHENOK, N.V.

Effect of different pollination conditions on the setting of fruit, their seed content and yielding ability in hybrid tomatoes. Biul. Inst. biol. AN BSSR no.5:310-315 '60. (MIRA 14:7)

(TOMATO BREEDING)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHENOK, L.Ya.; ATRASHENOK, P.V.; AVDZEYKO, G.V.; KRYLOV, A.Ya.; LOVTSYUS, A.V.

Isotopic composition of lead of the northern Tien Shan. Radiokhimiia 5 no.2:160-164 '63. (MIRA 16:10)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

MITROPOL'SKIY, Aristarkh Konstantinovich; ATRASHENOK, P.V., dots., kand. fiz.-matem. nauk, retsenzent; GORSKIY, P.V., dots., kand. sel'khoz. nauk, retsenzent; OSIPOV, P.Ye., dots., kand. tekhn. nauk, otv. red.; VASIL'YEVA, N.V., red.

[Elements of mathematical statistics; a textbook for students of the Forestry Department] Elementy matematicheskoi statistiki; uchebnoe posobie dlia studentov lesokhozyaistvennogo fakul'teta. Leningrad, Leningr. lesotekhn. akad., 1965. 174 p. (MIRA 18:11)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

HANSEN, G. B.; ABROSIMOV, A. M.; KHRENOV, B. A.; ATRASHKEVICH, V. B.;
V, C. V.; SOLOVIYEVA, V.I.; FOMIN, Yu. A.

The cosmic ray primary radiation of ultra high energy.

Report submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP), Jaipur, India, 2-14 Dec 1963

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 23402-65 EWT(1)/EWG(v)/FCC/EEC-4/EEC(t)/EWA(h) Po-4/Pe-5/Pq-4/Pae-2/Peb/Pi-4
ACCESSION NR: AP5002095 GW/WS S/0048/64/028/012/1934/1941

AUTHOR: Khristiansen, G. B.; Abrosimov, A. T.; Atrashkevich, V. B.; Kulikov, G. V.; Solov'yeva, N. I.; Fomin, Yu. A.; Khrenov, B. A.

TITLE: Primary cosmic radiation of superhigh energy

SOURCE: AN SSSR, Izvestiya, Seriya fizicheskaya, v. 28, no. 12, 1964, 1934-1941

TOPIC TAGS: atmospheric shower, shower spectrum, primary energy spectrum, cosmic ray, atomic number, μ meson, cosmic ray diffusion, magnetic field, magnetic rigidity, proton, nucleus, diffusion coefficient

ABSTRACT: The spectrum investigation of large atmospheric showers may be made by means of the number of particles which is possible to study using a complex large-scale facility. The spectrum of large atmospheric showers near sea level changes its form sharply with the change in the total number N of particles. The transition of cosmic radiation from the shower spectrum to the primary energy spectrum is performed using a model of the development of atmospheric showers. The develop-

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L 23402-65
ACCESSION NR: AP5002095

ment depends upon the number of particles and their atomic number A. These parameters were obtained by analyzing the fluctuations of μ-meson flux measured in the complex facility. The distribution of the meson number depends upon the form of the primary energy spectrum, which is characterized by the exponent γ. Acceleration and diffusion of cosmic rays occur when both a change in the energy spectrum and a change in the composition of rays take place simultaneously. The diffusion of cosmic rays takes place in a magnetic field where the diffusion coefficient is specified by magnetic rigidity, which is equal to 2t/300H for nuclei and t/300H for protons (t is the energy of a nucleon). A table in the original article contains the percentage of galactic cosmic radiation of various energies. This table shows that the increase of energy causes an increase of heavy nuclei in cosmic radiation of the Galaxy. A decrease in the percentage of light nuclei α and L with the increase in energy is caused by the higher diffusion coefficient. The number of μ-mesons computed theoretically agreed with experimental data up to 10^{15} ev of the primary particles. At energies greater than 10^{17} ev, the experimental data showed more protons and light nuclei than the theory purports. Orig. art. has: 4 figures, 2 tables, and 12 formulas. [EG]

Card 2/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 21189-65 EWT(1)/EWT(m)/FCC/T IJP(c) S/0048/64/028/012/2087/2092

ACCESSION NR: AP5002109

AUTHOR: Vernov, S.N.; Khristiansen, G.B.; Abrosimov, A.T.; Atrashkevich, V.B.; Belyayeva, I.F.; Yedeneyev, G.V.; Dmitriyev, V.A.

TITLE: Description of the modernized complex installation for study of extensive air showers (Report, All-Union Conference on the Physics of Cosmic Rays held in Moscow 4-10 Oct 1963)

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.12, 1964, 2087-2092

TOPIC TAGS: cosmic ray measurement

ABSTRACT: During the past two years the installation for comprehensiv investigation of extensive air showers and high-energy muons has been greatly improved. The installation is located at Moscow State University and covers an area of about 4 hectares (about 10 acres); it consists of a large number of stationary and mobile "laboratories". The general layout is shown in the Figure (see Enclosure). In the mobile "laboratories" (Nos.7 through 16 in the figure) and in the stationary "laboratories" (1,2 & 3) in the main building the old system of hodoscopic counters has been supplemented by an array of 30 scintillation counters with an area of

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 21189-65
ACCESSION NR: AP5002109

0.5 m^2 each, which make it possible to determine the strength of a shower and the orientation of its axis in space. In the underground laboratory the area of the muon detector has been increased from 6 to 45 m^2 and there has been installed a new system of 240 ionization chambers shielded by an absorber, intended for statistical measurements of the energy of muon fluxes. The paper gives diagrams of some of the counter and chamber arrays and describes some of the specific design features of the detectors and associated electronic equipment. A few typical curves are reproduced. The underground installation is characterized by an exceptionally large area, good continuity and a high resolution. Orig.art.has: 1 table and 9 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01

SUB CODE: AA NR REF SOV: 002 OTHER: 002

2/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 4528-66 EWT(m)/FCC/T IJP(c)

ACC NR: AP5024632 SOURCE CODE: UR/0048/65/029/009/1676/1681

AUTHOR: Vernov, S.N.; Khristiansen, G.B.; Abrosimov, A.T.; Atrashkevich, V.B.; Belyayeva, I.F.; Vedeneyev, O.V.; Kulikov, G.V.; Fomin, Yu. A.; Nechin, Yu. A.; Solov'yeva, V.I.; Khrenov, B.A.

ORG: none

TITLE: Investigations of fluctuations in the development of extensive air showers with a fixed total number of charged particles and a fixed total number of muons /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1676-1681

TOPIC TAGS: cosmic ray shower, muon, charged particle, extensive air shower, particle distributic particle distribution

ABSTRACT: The authors have employed the modernized installation at Moscow State University, described elsewhere (S.N.Vernov et al., Izv. AN SSSR Ser. fiz., 28, 2037, 1964), to investigate the simultaneous distribution of total number N of charged particles, total number M of muons, and age parameter S in extensive air showers. Showers were selected for which the zenith angle of the axis was less than 30°. N was determined from the number of muons recorded by the muon detector and the perpendicular distance of the muon detector from the shower axis with the aid of the known lateral distribution of muons. The relative error in determining M did not exceed 35 %. The

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 4528-66

ACC NR: AP5024632

error in determining S was estimated to be 0.02 by processing "artificial" showers of known age, calculated by Monte Carlo methods. The data presented were derived from some 300 showers with total numbers of charged particles ranging from 10^5 to 4×10^6. Histograms are given showing the distribution of showers with respect to N with fixed M, with respect to M with fixed N, with respect to S with fixed N, and with respect to S with fixed M, and scatter plots are given for N versus S with fixed M and for M versus S with fixed N. The correlation coefficient of S with M for fixed N ranged between 0.62 and 0.72; the correlation coefficient of S with N for fixed M was - 0.67. Orig. art. has: 10 formulas, 4 figures, and 1 table.

SUB CODE: NP/ SUBM DATE: 00/ ORIG REF: 005/ OTH REF: 001

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 4480-66 EWT(1)/EWT(m)/FCC/T/EWA(h) IJP(c) GW

ACC NR: AP5024637 SOURCE CODE: UR/0048/65/029/009/1696/1701

AUTHOR: Atrashkevich, V.B.; Fomin, Yu. A.; Khristiansen, G.B.

ORG: none

23
B
19

TITLE: Monte Carlo calculations on the fluctuations in the development of extensive air showers /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1696-1701

TOPIC TAGS: primary cosmic ray, secondary cosmic ray, extensive air shower, nucleon interaction, inelastic interaction, pion

ABSTRACT: The authors have employed Monte Carlo methods to calculate the fluctuations in extensive air showers, initiated by protons with fixed energy, of the total number of electrons, the total number of high energy muons, the age parameter, and the total energy flux in the electron-photon and nuclear-active components. Four different models were employed to describe the elementary high energy nucleon interaction; these models were selected to give an average inelasticity of 0.5 and differed in regard to the frequency and nature of very high energy secondaries. Very high energy pions were assumed to have an interaction free path in air of 80 g/cm^2, to interact with an inelasticity of unity and a multiplicity proportional to the fourth root of the energy, and to produce secondaries of which all have the same energy. Monte Carlo methods were

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 4480-66

ACC NR: AP5024637

employed to determine the inelasticities and locations of all the interactions of the primary proton and the locations of the interactions of the high energy secondary pions; the further development of the shower was calculated with conventional cascade equations in which the effect of pion decay was included but which are not further specified. Calculations were performed for showers initiated by 10^{15}, 10^{16}, and 10^{17} eV protons. The average values and dispersions of the number of electrons, the number of high energy muons, the age parameter, and the energy flux, and the correlation coefficient of the age parameter with the number of electrons are tabulated and some of the distributions are presented graphically. These averages, dispersions, and correlation coefficients did not vary greatly with the model selected to represent the elementary nucleon interaction event. Formulas are given for calculating the corresponding quantities for showers initiated by nuclei on the assumption that the shower initiated by a nucleus of mass number A and energy E is the sum of A showers, each initiated by a nucleon of energy A/E. The transformations required for comparing the present calculations with the experimental results of S.N.Vernov et al. (Izv. AN SSSR Ser fiz., 29, 1676, 1965 /see Abstract AP5024632/) are discussed but the comparison is not made. Orig. art. has: 5 formulas, 2 figures, and 3 tables.

SUB CODE: NP, SUBM DATE: 00/ ORIG REF: 006/ OTH REF: 000

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

VERNOV, S.N.; KHRISTIANSEN, G.B.; ABROSIMOV, A.T.; AMRASHKEVICH, V.B.; BELYAYEVA, I.F.; KULIKOV, G.V.; SOLOV'YEVA, V.I.; FOMIN, Yu.A.; KHRENOV, B.A.

Ultrahigh-energy primary cosmic radiation according to data on extensive air showers. Izv. AN SSSR.Ser.fiz. 29 no.10:1876-1880 O '65. (MIRA 18:10)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 25772-66 - EWT(m)/FCC/T IJP(c)

ACC NR: AP6016380 SOURCE CODE: UR/0048/65/029/010/1876/1880

AUTHOR: Vernov, S. N.; Khristiansen, G. B.; Abrosimov, A. T.; Atrashkevich, V. B.; Belyayeva, I. F.; Kulikov, G. V.; Solov'yeva, V. I.; Fomin, Yu. A.; Khrenov, B. A.

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University im. M. V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

40
B

TITLE: Primary superhigh-energy cosmic radiation according to data on extensive atmospheric showers

19

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 10, 1965, 1876-1880

TOPIC TAGS: cosmic radiation, muon

ABSTRACT: Of interest in the investigation of the primary energy spectrum of cosmic rays and their composition is the knowledge of the spectrum of extensive atmospheric showers (e.a.s.) with respect to the total number N_μ of high energy muons ($E_\mu \geq 10^{10}$ eV) and the distribution of e.a.s. over the total number of the particles N_e for a given N_μ. In this connection the authors analyze the primary energy spectrum of cosmic rays on the basis of experimental data obtained with a special device for investigating e.a.s. recorded with a probability of $W \geq 0.95$. This device makes it possible to determine the total number of charged particles in an e.a.s.

2

Card 1/2

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 25772-66

ACC NR: AP6016180

at the observation level. An averaged function $\rho_\mu(R)$ is plotted to determine the spatial distribution N_μ of the muons, and, thus, the total number of these muons is determined. The distribution of N_e for a given N_μ is evaluated on the basis of data on an e.a.s. with $N_\mu = (1-2)\cdot 10^4$. The experimental findings are found to be in satisfactory agreement with theory. Thus, on the basis of the complex whole of the experimental findings, it may be concluded that the composition of primary cosmic rays in the superhigh-energy region apparently does not significantly differ from the composition in the low-energy region, and the γ-index of the primary energy spectrum is variable rather than constant. Orig. art. has: 5 figures. [JPRS]

SUB CODE: 20, 04 / SUBM DATE: none / ORIG REF: 009 / OTH REF: 002

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ACC NR: AP7007081 SOURCE CODE: UR/0048/66/030/010/1685/1689

AUTHOR: Vernov, S. N.; Khristiansen, G. B.; Abrosimov, A. T.; Atrashkevich, V. B.; Belyayeva, I. F.; Vedenoyev, O. V.; Kulikov, G. B.; Nechin, Yu. A.; Solov'yeva, V. I.; Fomin, Yu. A.; Khrenov, B. A.
ORG: none

TITLE: Phenomenological characteristics of broad atmospheric showers with a fixed number of μ-mesons and electrons /Paper presented at the All-Union Conference on Cosmic Radiation Physics, Moscow, 15-20 Nov 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 10, 1966, 1685-1689
TOPIC TAGS: mu meson, cosmic radiation
SUB CODE: 20

ABSTRACT: In an earlier work by Vernov et al (Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 29, 1676, 1965), results obtained in a study at an installation of Moscow State University on broad atmospheric showers with zenith angles of 0-30° were reported. These results included the distribution of showers with a fixed number of electrons N_e with respect to the number of high-energy mesons N_μ and the age parameter S, distribution of showers with a fixed N_μ with respect to N_e and S, and the coefficients of the correlation between S and the fluxes of electrons and μ-mesons. In the work reported in this instance, the same relations were determined for broad atmospheric showers with zenith angles of 30-45°. The fluctuations of N_μ, S, and N_e, observed for an effective atmospheric depth of 1240 g/cm^2, were the same as those for vertical showers established in the earlier work. To determine the differences due to an increase in

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ACC NR: AP7007081

the effective atmospheric depth of 200 g/cm^2, calculations must be carried out with greater statistical precision. When results of the theoretical calculations on characteristics of broad atmospheric showers at 1240 g/cm become available, the experimental data reported will be useful for the determination of the composition of primary cosmic radiation in the superhigh-energy range. Orig. art. has: 5 figures, 2 formulas and 1 table. [JPRS: 39,658]

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APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHKEVICH, V. I., DMITRIYEV, V. A., NECHIN, YU. A., KHRENOV, B. A., KULIKOV, G. U., SOLOVYEVA, V. I., KHRISTIANSEN, G. B., BELYAYEVA, J. F., ABROSIMOV, A. T.,

"The Structure of Extensive Air Showers at Sea Level."

report submitted for the Intl. Conf. on Cosmic Rays and Earth Storm (IUPAP) Kyoto, Japan 4-15 Sept. 1961.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATRASHKOV, V. A., Cand Agr Sci -- (diss) "Influence of various conditions of bark content on productivity and clinico-physiological indicators." Moscow, 1960. 19 pp; (Moscow Agricultural Academy im K. A. Timiryazev); 150 copies; price not given; (KL, 17-60, 162)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

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31556
S/081/61/000/022/030/076
B110/B138

AUTHORS: Tomashov, N. D., Al'tovskiy, R. M., Chernova, G. P., Atreyev, A. D.

TITLE: Corrosion resistance of alloys of titanium with molybdenum, chromium, and palladium

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1961, 255, abstract 22I152 (Sb. "Korroziya i zashchita konstrukts. metallich. materialov". M., Mashgiz, 1961, 173-186)

TEXT: It is noted that Pd increases the corrosion resistance (CR) of Ti more efficiently than Pt. Alloying with molybdenum increases the resistance of Ti as it has less tendency to anodic dissolution than without this addition. Far from raising its CR, the addition of Cr even reduces it in some cases. Ternary alloys Ti-Pd-Mo and Ti-Pd-Cr have greater resistance than the Ti-Pd alloy. This is because the current required for anodic dissolution of Ti around the potential for complete passivation is less than when it is alloyed with Mo or Cr. [Abstracter's note: Complete translation.]

X

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APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

SHAMBEREV, Yu.N., starshiy nauchnyy sotrudnik, kand. sel'skokhoz. nauk;
ATRASHKOV, V.A., starshiy nauchnyy sotrudnik, kand. sel'skokhoz. nauk

Use of anabolic preparations in fattening young cattle and sheep. Izv. TSKHA no.4:197-204 '65. (MIRA 18:11)

1. Kafedra molochnogo i myasnogo skotovodstva Moskovskoy sel'skokhozyaystvennoy ordena Lenina akademii imeni Timiryazeva. Submitted March 8, 1965.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

COUNTRY : USSR
CATEGORY : Forestry. Forest Management. K

ABS. JOUR. : RZhBiol., No. 3 1959, No. 10780

AUTHOR : Atrokhin, V. G.
INST. : Moscow Forestry Technical Institute
TITLE : Chestnut Groves and the Measures for Their Improvement at Sochi Experimental Leskhoz.

ORIG. PUB. : Nauchn. tr. Mosk. lesotekhn. in-t, 1957, vyp. 5, 48-54

ABSTRACT : A characteristic is given of the plantations of Castanea sativa in the Lesskiy forestry district of Sochi leskhoz. During the cutting carried out in a pure chestnut grove on two trial plots, 26% of the total number of trunks were removed by the method of physiological rejuvenation, or 16% of the entire reserve, and with the method "from below" - 31% of the stems were removed, or 16% of the total reserve. Conclusion is reached that the method of physiological rejuvenation permits obtaining a greater amount of

CARD: 1/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATROKHIN, V. G.: Master Agric Sci (diss) -- "Investigation of the growth of young oaks in connection with cutting". Moscow, 1959. 16 pp (Min Higher Educ USSR, Moscow Forestry Engineering Inst) (KL, No 17, 1959, 110)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATROKHIN, Yu.A.

Determining the physical parameters of microobjects by the distribution of optical densities on electron photographs. Zhur.nauch.i prikl.fot. i kin. 10 no.3:182-185 My-Je '65. (MIRA 18:11)

1. Agrofizicheskiy nauchno-issledovatel'skiy institut Akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina, Leningrad.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATROKHOV, S.P.; KALITEYEVSKIY, P.F.

Case of calculus and salivary gland tissue in the palatine tonsil. Vest. oto-rin. 25 no.2:97-98 Mr-Ap '63. (MIRA 17:1)

1. Iz kliniki bolezney ukha, nosa i gorla (zav. - prof. I.I. Potapov) TSentral'nogo instituta usovershenstvovaniya vrachey i patologoanatomicheskogo otdeleniya (zav. P.F. Kaliteyevskiy) Klinicheskoy bol'nitsy No.67, Moskva.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

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L 53588-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) Pf-4

ACCESSION NR: AP5011755 MJW/JD/HW UR/0126/65/019/004/0619/0623

37
36
B

AUTHOR: Atroshchenko, F. S.; Pashkov, P. O.; Ryadinskaya, I. M.

TITLE: Explosive strengthening of metals

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 4, 1965, 619-623

TOPIC TAGS: metal strengthening, explosive strengthening, iron strengthening, austenitic steel strengthening, stainless steel strengthening/1Kh18N9T steel, Armco iron

ABSTRACT: Strengthening Armco iron and 1Kh18N9T austenitic stainless steel by explosion under conditions approaching those of hydrostatic compression has been investigated. Specimens in the form of plates 3.5, 6.5, 10, or 12 mm thick were placed on a metal base and received an impact from a metal plate produced by an ammonite explosion. Experiments showed that the higher the deformation rate, i.e., impact velocity, the lower the degree of strengthening (see Fig. 1 of the Enclosure). Maximum strengthening was achieved at fairly low deformation rates (5—6% elongation). At high deformation rates (30—40% elongation), the lower the recrystallization temperature of the metal tested the greater the drop in strength. A maximum hardness of 228—240 HV in Armco iron and 280 HV in austenitic steel was obtained at 10

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ACCESSION NR: AP5011755

and 9% reduction 5 and 4.5% elongation), respectively. Corresponding values for static strain hardening at the same reduction are 170 and 220 HV. Explosive strengthening did not affect the phase composition of the metals tested. The increase of strength produced by explosion-induced impact is believed to be associated not only with dynamic deformation, but also with the instantaneous elastic deformation produced by hydrostatic compression. Orig. art. has: 3 figures and 2 tables. [ND]

ASSOCIATION: Volgogradskiy politekhnicheskiy institut (Volgograd Polytechnical Institute)

SUBMITTED: 05Sep63 ENCL: 01 SUB CODE: MM

NO REF SOV: 006 OTHER: 003 ATD PRESS: 4015

Card 2/3

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 53588-65

ACCESSION NR: AP5011755

ENCLOSURE: 01

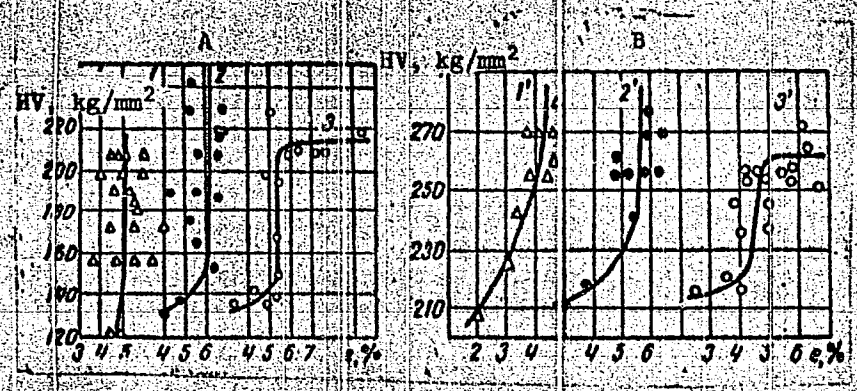

Fig. 1. Dependence of HV on elongation

A) Armco iron (specimen thickness; 1 - 3.5 mm, 2 - 6.5 mm, 3 - 12.0 mm); B) 1Kh18N9T steel (specimen thickness: 1 - 3.5, 2 - 6.5, 3 - 10.0 mm).

BAB

Card 3/3

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 4182-66 EWT(m)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) JD/HW

ACCESSION NR: AP5016533 UR/0126/65/019/006/0923/0925

620.183 + 539.378

37
34
B

AUTHOR: Atroshchenko, E. S.; Pashkov, P. O.; Ryadinskaya, I. M.

TITLE: An investigation of the fine structure of explosion-hardened armco iron

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 6, 1965, 923-925

TOPIC TAGS: iron, metal hardening, hardness, fine structure, metal stress

ABSTRACT: The relationship between the hardening produced by explosion and the fine-structure characteristics of armco iron containing 0.05% carbon was studied. As the hardness varied, changes were observed in broadening of the x-ray diffraction lines, second-order stresses, dislocation density, and size of mosaic blocks. The data shows that the passage of the elastic-plastic wave during explosive loading is associated with the development of defects in the fine structure. A definite relationship could not be established between the hardening and any of the fine-structure characteristics studied. However, a comparison of the hardening with the broadening of the (220) line shows that the hardening is related to the appearance of at least two types of defects which differ in character or in distri-

Card 1/2

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L 4182-66

ACCESSION NR: AP5016533

3

bution in the volume of the metal: (1) defects which harden the material slightly at relatively low explosion pressures and (2) defects which harden it considerably at high pressures. Orig. art. has: 4 figures.

ASSOCIATION: Volgogradskiy politekhnicheskiy institut (Volgograd Polytechnic Institute)

44,55

SUBMITTED: 27Apr64 ENCL: 00 SUB CODE: MM

NO REF SOV: 008 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 15771-66 EWT(m)/EWP(w)/T/EWP(t)/EWP(k)/EWP(b) JD/HW

ACC NR: AP6005141 SOURCE CODE: UR/0126/66/021/001/0092/0096

AUTHOR: Atroshchenko, E. S.; Pashkov, P. O.; Ryadinskaya, I. M.

ORG: none

TITLE: Explosive strengthening of Armco-iron

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 1, 1966, 92-96

TOPIC TAGS: ~~Armco~~ iron, ~~Armco iron strengthening~~ metal hardening, explosive ~~strengthening~~ forming

ABSTRACT: Some specific features of explosion-induced strain hardening in Armco-iron have been studied. Twinning was found to have a significant strengthening effect. For instance, at a surface hardening of 140 HB (low explosion pressure), the microhardness of twins was 180 Hμ and that of single grains, 150 Hμ. At a higher surface hardness of 220 HB (high explosion pressure), the microhardness of twins was 260—270 Hμ. The effect of explosive strengthening depends also on grain size and the condition of the metal. While in the case of coarse grains the surface hardness did not exceed 180—190 HB, the hardness of fine-grained metal reached 220—230 HB. In specimens annealed at 1000C and brine quenched, explosive loading increased the hardness to 280—290 HB, compared to 227—232 HB obtained in cold-rolled specimens. Softening (with

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L 15771-66

ACC NR: AP6005141

2

annealing at 400—600C) of explosively strengthened metal differs significantly from that of conventionally strain-hardened metal. While in the latter a relatively short period of relaxation is followed by recrystallization, in the former the recrystallization is delayed and a second relaxation period takes place. Unlike conventional strain hardening, the residual plastic deformation does not increase the hardness in explosive strengthening and even can lower it owing probably to annealing by the heat generated by deformation. Orig. art. has: 6 figures.

[WW]

SUB CODE: 11/ SUBM DATE: 17Feb65/ ORIG REF: 006/ ATD PRESS: 4200

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 09388-67 EWP(k)/EWT(m)/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AR6033110 SOURCE CODE: UR/0137/66/000/007/I040/I040

AUTHOR: Atroshenko, E. S.; Ryadinskaya, I. M.

24

TITLE: Effect of twinning and grain size of metal hardening under conditions of explosive stressing

SOURCE: Ref. zh. Metallyrgiya, Abs. 7I257

REF SOURCE: Sb. Materialy Nauchn. konferentsii. Sovnarkhoz Nizhne-Volzhsk. ekon. r-na. Volgogradsk. politekhn. in-t. T. 1. Volgograd, 1965, 269-271

TOPIC TAGS: steel microstructure, metal hardening, grain size, twinning, explosive stress, microhardness/Armco iron

ABSTRACT: An analysis was made of the characteristics of the microstructure of Armco iron subjected to various impact pressures (120 and 200 kbar). At 120 kbar impact pressure, the Brinell hardness is 140 at the surface of impact, and the microstructure shows two types of grains—with twinnings and without. The microhardness of the grains with twinning is higher. The growth of twinnings under explosive stresses promotes the hardening of Fe, and the hardening is intensified in proportion to the size reduction of the initial grain. Preliminary

Card 1/2 UDC: 539.4.019.1:669.1

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 09388-67

ACC NR: AR6033110

cold straining lowers the growth of twinning in subsequent explosive which apparently explains the relatively small increase in hardening as a result of explosive stressing of such Me. Additional high hardening of Me under high-speed stressing is explained by the effect of plane defects of the structure, specifically, in the grain boundaries and twinnings. L. Gordienko. [Translation of abstract]

SUB CODE: 11/

Card 2/2 mla

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

PESIN, N.Ya., inzh.; PAVLOV, A.N., inzh.; ATROSHCHENKO, F.A., inzh.

Ways of lowering the cost of coal in mines of the Karaganda Basin. Izv. vys. ucheb. zav.; gor. zhur. no.12:48-54 '61. (MIRA 16:7)

1. Karagandinskiy politekhnicheskiy institut (for Pesin).
2. Karagandinskiy nauchno-issledovatel'skiy ugol'nyy institut (for Pavlov, Atroshchenko). Rekomendovana kafedroy ekonomiki organizatsii i planirovaniya Karagandinskogo politekhnicheskogo instituta.

(Karaganda Basin—Coal mines and mining—Costs)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

VAS'KIN, N.I.; ATROSHCHENKO, F.A.; PAVLOV, A.N.; PESIN, N.Ya.; MIROSHNICHENKO, V.D., red. izd-va; MINSKER, L.I., tekhn. red.; BOLDYREVA, Z.A., tekhn. red.

[Potentialities for reducing coal production costs in mines] Rezervy snizheniia sebestoimosti uglia na shakhtakh. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1962. 141 p. (MIRA 15:4)

(Coal mines and mining--Costs)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

VYAZOVSKAYA, N.M.; ATROSHCHENKO, F.A.; ZASLAVSKIY, Ye.I.; ZAYTOV, M.A.

Establishing standards for the number of cutting bits used.
Nauch. trudy KNIUI no.13:351-356 '64 (MIRA 18:1)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATROSHCHENKO, F.A.; VYAZOVSKAYA, N.M.; TIMCHENKO, A.M.; KHODZHAYEVA, Ye.N.

Establishing norms for the use and the length of service of metal supports in development workings in mines of the Karagandaugol' Combine. Nauch. trudy KNIUI no.13:356-368 '64 (MIRA 18:1)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 14855-66 EWT(m)/ETC(f)/EWP(b)/EWP(t)/EWG(m) IJP(c) RDW/JD

ACC NR: AP6001727 SOURCE CODE: UR/0020/65/165/004/0809/0812

AUTHORS: Palatnik, L. S.; Atroshchenko, L. B.; Gal'chinetskiy, L. P.; Koshkin, V. M.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Kar'kovskiy politekhnicheskiy institut)

TITLE: On the effect of deviation from stoichiometry in the semiconductor In_2Te_3

SOURCE: AN SSSR. Doklady, v. 165, no. 4, 1965, 809-812

TOPIC TAGS: stoichiometry, indium compound, telluride, resistivity, thermoelectric power, hardness, impurity conductivity

ABSTRACT: The authors have studied the deviations from stoichiometry in compounds of the type $A_2^{III}V_3^{VI}$ using "In_2Te_3" as an example. The alloys were synthesized by a standard technique in sealed quartz ampoules. From a study of the phase diagram and from the analysis of the resistivity, hardness, and thermoelectric power of the compound it

Card 1/2 UDC: 621.315.592.9:532.739.2:539.219.1:541.412

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L 14855-66

ACC NR: AP6001727

is deduced that a solid solution based on the In_2Te_3 compound is a variable-composition phase, the region of existence of which is shifted somewhat from stoichiometric towards an excess of In. The resistivity changes within the single-phase region by less than one order of magnitude. Deviations from stoichiometry do not give rise to impurity conductivity. Various possible crystal-chemical mechanisms of the solution of impurity and super-stoichiometric atoms in compounds of the $A_2^{III}B_3^{VI}$ are discussed. It is concluded that the observed deviation from stoichiometry in In_2Te_3 is connected not with formation of vacancies, as in other semiconductor compounds, but with intrusion of superstoichiometric atoms in the non-ionized state. This report was presented by Academician S. A. Vekshinskiy. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 17Apr65/ ORIG REF: 011/ OTH REF: 005

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

30175

S/070/61/006/006/007/008
E132/E135

24.7500

AUTHORS: Palatnik, L.S., Kimnik, Yu.F., Belova, Ye.K., and Atroshchenko, L.V.

TITLE: Investigation of the triple semiconducting compounds containing copper and the elements of the 4th and 6th groups

PERIODICAL: Kristallografiya, v.6, no.6, 1961, 960-964 + 1 plate

TEXT: A method is put forward for estimating the intensities of the superstructure lines in X-ray powder photographs of three component compounds and ordered phases with fractional numbers of "molecules" in their unit cells by choosing imaginary compounds with the same structure but with whole numbers of "molecules". In this way the compound studied lies between two imaginary compounds in composition. These means have been applied for estimating the intensities of two possible types of superstructure lines in X-ray powder photographs of groups of compounds of the type A_2BC_3 with the zinc blende lattice: Cu_2GeS_3, Cu_2SnS_3, Cu_2SnSe_3, Cu_2GeSe_3, Cu_2GeTe_3, Cu_2SnTe_3.

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APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

X-Ray investigation of the structure of alloys in the system $CuGaSe_2$-Ga_2Se_3. L. S. Palatnik, Yu. F. Komnik, Ye. K. Belova.

Electrical and optical properties of alloys in the system $CuGaSe_2$-Ga_2Se_3. V. M. Koshkin, L. G. Manyukova, Yu. F. Komnik, L. S. Palatnik.

X-Ray investigation of the system $CuInSe_2$-In_2Se_3. L. S. Palatnik, Yu. F. Komnik, E. I. Rogacheva, L. V. Atroshchenko.

Electrical properties of alloys in the system $CuInSe_2$-In_2Se_3. L. S. Palatnik, V. M. Koshkin, Yu. F. Komnik, L. N. Gal'chinetskiy, L. G. Manyukova.

Report presented at the 3rd National Conference on Semiconductor Compounds, Kishinev, 16-21 Sept 1963

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

3/185/63/008/002/012/012
D234/D308

AUTHORS: Palatnik, L. S., Komnik, Yu. F., Belova, Ye. K. and Atroshchenko, L. V.

TITLE: X ray investigation of ordering processes in 3-component semiconductor alloys

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 2, 1963, 263-268

TEXT: The authors investigated A_2BC_3 type alloys, A being Cu, B being Ge or Sn, C - Se or Te. The c/a ratio is tabulated. Conclusions: alloys containing Ge and having tetragonal lattice distortions have concentrational ordering of cations. This is indicated by the disappearance of the tetragonal lattice if the ratio of cations to anions decreases, and by its absence in Sn-containing alloys. There are 1 figure and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut osnovnoy khimii (Scientific Research Institute of Basic Chemistry, Khar'kov

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATROSHCHENKO, L.V.; GAL'CHINETSKIY, L.P.; KOSHKIN, V.M.; PALATNIK, L.S.

Deviations from stoichiometry and dissolution of impurities in semiconductor compounds of the $B^{III}_2 C^{III}_3$ type. Izv. AN SSSR. Neorg. mat. 1 no.12:2140-2150 D '65. (MIRA 18:12)

1. Nauchno-issledovatel'skiy institut osnovnoy khimii, Khar'kov, i Khar'kovskiy politekhnicheskiy institut im. V.I. Lenina. Submitted May 31, 1965.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

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L 64786-65 EWA(h)/EWT(1)/EWT(m)/EWG(m)/EWP(b)/T/EWP(t) IJP(c) RDW/AT/JD

ACCESSION NR: AP5018714 UR/0070/65/010/004/0474/0479 47

AUTHORS: Palatnik, L.S.; Belova, Ye.K.; Petroshchenko, L.V.; Komnik, Yu.F. 44 B

TITLE: Investigation of semiconducting alloys of $CuGaSe_2$ and Ga_2Se_3

SOURCE: Kristallografiya, v. 10, no. 4, 1965, 474-479, and insert facing p. 474

TOPIC TAGS: gallium compound, semiconducting material, crystal lattice parameter, crystal lattice structure

ABSTRACT: The structure of alloys in the quasibinary system formed by the tertiary compound $CuGaSe_2$ and by the binary defect compound Ga_2Se_3 is investigated. The alloy synthesis was carried out by melting the initial components in evacuated quartz ampoules. After five hours at 1150C, the alloys were cooled for 15 hours down to room temperature. The x-ray studies were carried out with Debye-

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 64786-65

ACCESSION NR: AP5018714

Scherrer photographs taken in a 57.3-mm camera and copper radiation. The lattice constants were determined more precisely, silver being used as a standard. The microstructure of the alloys was investigated on an MIM-8M microscope after etching. The microhardness was measured by the standard method (PMT-3 instrument with automatic loading). The following lattice constants were found: $CuGaSe_2$ -- a = 5.603 ± ± 0.003 kX, c = 11.006 ± 0.006 kX, c/a = 1.96; Ga_2Se_3 -- a = 5.411 ± ± 0.001 kX. The $(CuGaSe_2)_{3(1-x)} \cdot (Ga_2Se_3)_{2x}$ alloys with large $CuGaSe_2$ contents were single phase for $x < 0.20$ (crystallizing with the chalcopyrite lattice). With increasing x the tetragonal distortion decreases and the microhardness increases. Microphotographs of samples with $0.235 \leq x \leq 0.428$ show subgrains inside grains. For $0.428 < x < 0.521$ microphotographs of etched sections exhibit a very perfect Wiedmanstatt-type structure resulting from the disintegration of the solid solution; each grain contains platelike oriented regions of the second phase. The mixture of two phases for $0.2 < x \leq 0.52$ was con-

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 64786-65

ACCESSION NR: AP5018714

firmed by the x-ray analysis: one with a tetragonal and one with a sphalerite cubic lattice. After high-temperature annealing with subsequent fast quenching, alloys with $x < 0.4$ were of a single tetragonal phase, the lattice constants decreasing with increasing x. The alloy with $x = 0.428$ consisted after cooling of a mixture of two phases (tetragonal and cubic). Alloys with $x > 0.521$ are single phase with a sphalerite lattice. In the range $0.52 < x < 0.85$ the dependence of the lattice constant on x is almost linear. X-ray photos of the $CuGa_5Se_8$ ($x = 0.75$) alloy exhibit superstructure lines indicating ordering of the cations and cation vacancies. Similar lines appear in the range $0.521 < x < 0.85$. Studies of the microstructure for $0.70 < x < 0.85$ indicate that homogenization of the alloys requires prolonged annealing. For $0.85 < x < 1$ there appear solid solutions in Ga_2Se_3. Peculiarities observed on the x-ray patterns (sharp and diffuse lines, differences in the lines obtained when the sample was stationary, differences in the lattice parameter calculated from various lines) are noted and explained by the lack of

Card 3/4

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L 64786-65

ACCESSION NR: AP5018714

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stoichiometry, ordering, and layer defects. The homogeneous regions formed by the defect and nondefect compounds with tetragonal coordination are: 0--20 mole % ($2Ga_2Se_3$), 52--70 mole % ($2Ga_2Se_3$), and 85--100 mole % ($2Ga_2Se_3$). The heterogeneity regions separating the regions of solid solution are $0.20 < x < 0.52$ and $0.70 < x < 0.85$. Orig. art. has: 2 formulas, 1 table, 2 photographs, and 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut osnovnoy khimii (Scientific Research Institute of Basic Chemistry) 44,55

SUBMITTED: 01Jul64 ENCL: 00 SUB CODE: SS

NR REF SOV: 009 OTHER: 005

Card 4/4

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

PALATNIK, L.S.; ATROSHCHENKO, I.V.; GAL'CHINETSKIY, L.P.; KOSHKIN, K.M.

Effect of deviation from stoichiometry in the semiconductor In_2Te_3. Dokl. AN SSSR 165 no.4:809-811 D '65.

(MIRA 18:12)

1. Khar'kovskiy politekhnicheskiy institut im. V.I.Lenina. Submitted April 19, 1965.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

L 22284-66 EWT(m)/ETC(f)/EWG(m)/EWP(t) IJP(c) RDW/JD

ACC NR: AP6007266 UR/0363/66/002/002/0405/0406

AUTHOR: Atroshchenko, L.V.; Koshkin, V.M.

30
B

ORG: Khar'kov Scientific Research Institute for Basic Chemistry (Nauchno-issledovatel'skiy institut osnovnoy khimii)

TITLE: Solubility of impurities in In_2Te_3

TOPIC TAGS: indium containing alloy, tellurium containing alloy, solubility, solid solution, bismuth, antimony

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v.2, no.2, 1966, 405-406

ABSTRACT: The article reports the results of a study of the solubility of bismuth and antimony impurities in In_2Te_3 compounds. The limit of the solubility of the impurities was evaluated by data from a metallographic analysis and from the isotherms for the microhardness of the corresponding alloys. The maximum solubility of bismuth and antimony in the alpha phase of In_2Te_3 was determined. The specific solubility of bismuth in In_2Te_3 is 0.1 atom% which, calculated on the number of bismuth atoms entering into one molecular unit of In_2Te_3, yields the formula $In_2(Bi_{0.0001})Te_3$. The specific solubility of antimony in In_2Te_3 is 1.63 atom %, or $In_2(Sb_{0.0163})Te_3$. In further experiments, the specific

Card 1/2 UDC: 546.682'241.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5"

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ACC NR: AP6007266

solubility of antimony was determined in an alloy with the formula $In_2(In_{0.005})Te_3$. If the atoms of antimony and the atoms of indium above the stoichiometric number occupy exactly the same position, the solubility of antimony in this alloy should be less than in In_2Te_3. This was observed experimentally: for the alloy $In_2(In_{0.005})Te_3$, the maximum solubility of antimony was 0.0127 instead of 0.0163 for In_2Te_3. Orig. art. has: none.

SUB CODE: 11/ SUBM DATE: 27Jul65/ ORIG REF: 003/

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18

Ca

Nonplatinum catalysts for the oxidation of ammonia. I. Chromium catalysts. I. B. Adadurov and V. I. Atrushchenko. *J. Applied Chem.* (U. S. S. R.) 6, 1029-35 (1933).—The oxidation was carried out by passing measured amts. of dry air and NH_3 through a catalytic app. charged with various catalysts and heated to different temps. SiO_2 has no catalytic effect. The best results (98.4 and 98.8% conversion of NH_3 to oxide) were obtained with catalysts prepd., resp., from 20% water glass 100 cc., 100 cc.; 6% $Al_2(SO_4)_3$ soln. 125 cc., 83.5 cc.; 6% $Co(NO_3)_3$ soln. 10 cc., 10 cc.; 6% $KCr(SO_4)_2$ soln. 125 cc., 166.5 cc.; at the resp. temps. of 785° and 710°; at gas velocities of 950 and 1210 cc. per min.; and ammonia contents of the gas of 11.05 and 6.23%. The presence of the Al complex improves the catalytic effect, permitting a reaction at a higher velocity of the gas flow, and raising the yield. This catalyst is, however, unstable; its stability may be greatly improved by the introduction of Cr compds. Expts. with a great variety of catalysts are reported.

A. A. Boehtlingk

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COMMON ELEMENTS

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Velocity of oxidation of ammonia at a platinum gauze. V. I. Atroschtschenko (J. Appl. Chem. Russ., 1935, 8, 25—34).—Formulæ connecting the time of contact with the Pt surface, temp., pressure, concn. of NH_3, etc. are derived. R. T.

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Velocity of absorption of oxides of nitrogen. V. I. Atroschtschenko (Ukrain. Chem. J., 1935, 10, 295—304).—The relative velocity, V, of absorption of NO_2 at 20° by various liquids is: H_2O 1, 6 and 20%, HNO_3 0·84 and 0·79, 4·5 and 20%, NaOH 0·57 and 0·526, 17% KOH 0·515, 60·2% H_2SO_4 0·42, 10·6% Na_2CO_3 0·276, and liquid paraffin 0·072. The corresponding figures for NO–NO_2 mixture are 1, 0·85 and 0·65, 0·83 and 1·02, 1·05, 14·0, 0·124, and 0·0, and the corresponding ratios V_{NO_2}/V_{NO} are 4·1, 4·2, 5·0, 2·0, 2·2, 2·1, and 0·13 (Na_2CO_3 and paraffin not given).

R. T.

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B-I-8

Highly active alloys for ammonia oxidation. I. E. ADADUROV and V. I. ATROSCHTSCHENKO (J. Appl. Chem. Russ., 1936, 9, 1221—1224).—97 : 3 Pt-W is twice as active at 750° as are the Pt-Rh alloys ordinarily used, and is more resistant to corrosion. R. T.

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*Loss of Platinum in the Oxidation of Ammonia by a Steam-Oxygen Mixture. I. E. Adadurov, V. I. Atroschenko, and V. I. Konvissor (*Zhur. Prikkl. Khimii (J. Applied Chem.)*, 1936, 9, (10), 1745–1760; *Brit. Chem. Abs.*, 1937, [B], 33).—[In Russian.] A mixture of ammonia 15, oxygen 30, and water 55% was heated to 100° C. and conducted through a platinum gauze which, owing to the reaction heat, reached a temperature of about 900° C. 90–98% of the ammonia was oxidized, but the catalyst was strongly corroded (photomicrographs are given). About 2·4 grm. of platinum were lost per ton of nitric acid formed.—S. G.

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Stable platinum alloy catalysts for the oxidation of ammonia. I. E. Adadurov and V. I. Atroshchenko. *Ukrain. Khem. Zhur.* 11, Wiss.-tech. Tl., 309-20(1936); cf. *C. A.* 29, 5097[8].—The alloy contg. Pt, Rh and W is stable and highly active at 900°, but that of Pt, W and Ag, although highly active, is less stable than ordinary Pt-Rh catalysts. Photomicrographs are shown.

B. Z. Kamich

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BC-

Reaction of hydrogen with nitric oxide in presence of atmospheric oxygen. I. E. ADADUROV and V. I. [illegible] (J. Appl. Chem. Russ., 1937, 10, 1541—1547).—In presence of O_2 reduction of NO to NH_3 or N_2 does not occur at a Pt-gauze surface at 720°, the entire H_2 content of the mixture being recovered as H_2O, and the loss of NO being <6% (probably due to dissociation of NO).

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BC

E-1

Absorption of oxides of nitrogen by alkaline solutions, and the influence of the state of the liquid and gaseous phases. V. I. ATROSCHT-SCHENKO (Ukrain. Chem. J., 1937, 12, 442—460).—The relative rates of absorption of NO and of NO–NO_2 mixtures by H_2O, aq. NaOH, and aq. $NaNO_2$ vary according to the rate of flow of the gas, the design of the absorber, and the composition of the gas mixture and the absorbent. For these reasons, absorption coeffs. are applicable only to strictly defined conditions. R. T.

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The solubility of sodium nitrate and soda in water and methods for increasing the productivity of conversion apparatus. V. I. Atroshchenko. *J. Chem. Ind.* (U. S. S. R.) 15, 20[illegible] (1938).—As the mixt. of NO and NO_2 in the gases from the tower H_2SO_4 system are absorbed in Na_2CO_3 soln., the soly. of the latter is increased and much more concd. solns. than usual can be obtained. Conversion of $NaNO_2$ to $NaNO_3$ goes better in concd. solns. and the productivity can be increased. H. M. Leicester

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H-1

Kinetics of absorption of oxides of nitrogen by alkaline solutions. V. I. [illegible] (J. Appl. Chem. Russ., 1939, 12, 167—181).—The velocity of absorption of N oxides by aq. alkalis ($NaOH$ or Na_2CO_3) is max. for mixtures in which $[NO] = [NO_2]$, and rises with increasing concn. of oxides and of alkali, with increasing velocity of flow of the gas, and with increase in the effective surface of absorption. R. T.

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ATROSHCHENKO, V. I.

V

Kinetics of oxidation of ammonia by air enriched with oxygen. V. I. Atroshchenko and P. G. Sedashova. *J. Applied Chem.* (U. S. S. R.) 14, 500-6(1941).—The effect was investigated of addn. of O to air used in oxidation of NH_3 upon the yields and the velocity of the reaction, as well as explosive properties of such gas mixts. The catalyst screens were 93% Pt and 7% Rh with active surface of 0.59 sq. cm. per screen, of which 3 were used. The gas mixts. prepd. in rubber containers were passed through flowmeters into the reaction tube and the product was vented into the atm. The basic measurements were made at 900°. The effect on the yield of N oxide of the proportion of O to NH_3 was studied first with the contact time being close to optimal, 0.68×10^{-4} sec. With const. NH_3 content (15%) the O ratio was varied (from approx. 1 to 2), then with ordinary air the amt. of NH_3 was varied from 0 to 20%; thus the O-NH_3 ratio was also varied from 3.92 to 0.95. The results show that for the basic oxidation of NH_3 to NO, the O-NH_3 ratio should be somewhat higher than theory, with minimal value of about 1.7. If the product is intended for production of HNO_3 this ratio must be held near 2 for somewhat higher yields. With the O-NH_3 ratio of 2 the NH_3 was varied from 11.6 to 17.2% at various times of contact (from 1.43×10^{-4} to 0.39×10^{-4} sec.); the higher flow rates give higher productivity per given surface of the catalyst; at optimal contact time the NH_3 variation caused no appreciable change of contact—97.5-96.5%, and for the same yield there is only a small variation of contact time for the NH_3 range studied. Hence, the productivity of the catalyst varies almost proportionately with NH_3 concn. in air-O-NH_3 mixt. Variation of catalyst temp. from 850 to 1000° showed that increase of temp. to 1000° causes a drop of contact to 92%. The catalyst tube was filled with porcelain tubes so that the gas mixt. passed through this preheated packing before reaching the catalyst. Apparently, in this case there was a partial premature oxidation of NH_3 before catalyst contact; the yields were lowered about 1% at optimum contact time and up to 3% for slower rates and high NH_3 concn. At rapid flow rates there was no appreciable drop of yield over the unpacked tube. It was found that the explosion danger of air-NH_3 mixt. enriched with O, with NH_3 range of 13-14%, is not greater than that of air-NH_3 with usual NH_3 content of 11-11.5%; in case of preheating of the gases in the latter case, the 2 mixts. are 3-4% away from the explosion limit. The above data show that 50% increase in productivity of the catalyst in terms of output can be achieved, giving 1050 g. NH_3 oxidized per day per sq. m. of catalyst with 95-6% contact at 850-900° with 13.5-14% NH_3 and 27-8% O in the gas mixt.

G. M. Kosolapoff

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CA

18

Use of electrolytic oxygen in the contact oxidation of ammonia. V. I. Atroshchenko. *Trudy Khar'kov. Khim. Tekhnol. Inst. im. S. M. Kirova* 4, 17-31(1941).—The main obstacle to the use of electrolytic O_2 is the alk. mist it carries. Sedimentation in pipes lowered the alk. content from 90-100 mg./cu. m. to 12 at a velocity of 1000 cu. m./hr., to 30 mg. at 2500 cu.m./hr. Sprinkling with a fine water spray, with steam to increase the size of the mist droplets, lowered the alk. content from 16-18 mg. to 0.3-0.7 in 3.5 min.; this was achieved with a new sprinkling system, involving a larger vol. of the chambers (1st chamber 20 cu. m., 2nd chamber 40 cu. m., total 60 cu. m. for 60-1000 cu. m. O_2) and intensified spraying; sprinkling alone lowered the alk. content 10-15 times, addn. of steam cut it further by one half. The expenditure of water is approx. 30-35 cu. m., steam 0.2 ton per 1000 cu. m. O_2. The alk. content y of the purified O_2 (in mg./cu. m.), as a function of the period of time τ (in sec.) of the gas in the chambers, is approx. given by $y = 2200\ \tau^{-0/3}$, valid between 30 and 0.2 mg./cu. m. With 25-29% purified O_2 admixed with air, mixed with about 12% NH_3, preheated to 70-85°, reacted at 870-890°, at a load of 6.5-8.5 kg. NH_3 per g. Pt catalyst, the yield was 94-97%, i.e., the conversion was increased by at least 2%, as compared with plain air. On some fresh catalysts dark spots appeared after 1 month of operation; this indicates some contamination with alkali; the spots recede on further operation and do not appear on catalysts which had been sufficiently broken in. The residual traces of alkali do not affect the lifetime of the catalyst or its regenerability; nor does the presence of H_2 (up to 2%) in electrolytic O_2 have any harmful effect.

N. Thon

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Effectiveness of air enriched with oxygen in the contact production of nitric acid. V. I. Atroshchenko. *Trudy Khar'kov. Khim. Tekhnol. Inst. im. S. M. Kirova* 4, 32-8 (1944). Enrichment of air with purified O_2 (cf. preceding abstr.) not only offsets the loss in yield that would have resulted from an increase of the concn. of NH_3 up to 12-12.5% but actually overcompensates it, giving a net gain in yield of 2% when the ratio $O_2:NH_3$ is increased from 1.95 to 2.15; this also permits raising the load up to 8.1 kg. NH_3 per g. Pt without loss of yield. Maintenance of a const. $O_2:NH_3$ ratio by increasing the O_2 content along with an increase of NH_3 results in a reduced vol. of air, e.g., 3200-3100 cu. m. per 1 ton with 12% NH_3 as against 4800-3900 cu. m. with 10-22% NH_3; this represents a saving of the power necessary to compress the air (to 7 atm.) and, further, results in more highly concd. NO and hence considerably faster oxidation to NO_2. The concn. C of the HNO_3 produced (in %) depending on the concn. of the N oxides (expressed as NO_2) entering the absorbers according to $C = 6120 - (19900/t)$, C is raised from 54.5 to 59.5% as t is raised from 6.3 to 7.9%. If the load is kept const., enrichment with O_2 results in decreased loss of N oxides. With an aggregate operating with an enriched air-O_2 mixt. compressed to 6.5 atm., entering the receiver at a temp. of only about 80-100° (heat exchangers eliminated), ratio $O_2:NH_3 = 2$, absorption at 25-30°, concn. of the condensate 52-6%, the production Q in tons of acid monohydrate per 24 hrs. is related to the concns. (in %) of NH_3 and of exhaust NO by $\log Q = 0.832\sqrt{NH_3} - (0.0165/NO)$. Oxygen enrichment to the extent of 28% did not result in any increase of losses of the catalyst (13-17 nets of Pt-Rh 7 wire 0.09 mm. diam.). No explosions ever occurred in prolonged operation. Further increase of the concn. of NH_3 to 13% is possible; the gas after compression will have to be cooled to 25-30°.

N. Thon

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Causes of disintegration of the filter net in the contact apparatus for oxidation of ammonia. V. I. Atroshchenko and V. I. Konvisar. *Trudy Khar'kov. Khim.-Tekhnol. Inst. im. S. M. Kirova* 4, 138(1944).—The Ni wire nets contain a relatively high amt. of Fe and catalyze the oxidation of NH_3 beginning at 450°; at 720°, the oxidation reaches 46.7%. Owing to this precontact action, the wires become incandescent and burn out. Fe in the Ni is harmful.

N. Thon

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CA 18

Losses of platinum-rhodium catalyst in the contact oxidation of ammonia. V. I. Atroshchenko. *Trudy Khar'kov. Khim.-Tekhnol. Inst. im. S. M. Kirova* 4, 138-40(1944).—In a set of 15 Pt 93-Rh 7 wire nets, diam. 0.09 mm., initial wt. of one net 193-210 g., under 7 atm., concn. of NH_3 10.5-11.0%, temp. of the gas 175-85°, temp. of contact 880-900°, the loss of wt. of the 1st net (nearest to incoming gas) after 5, 15, and 21.5 days was 5.50, 11.8, and 21.15 g., resp., that of the 13th net, 2.43, 8.73, and 10.43 g. Instead of the present practice of replacing the nets one by one, it is recommended to reverse the whole set after 2-3 regenerations. N. Thon

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ATROSHCHENKO. V. I.

CA

Combined production of nitric acid and nitrates. V. I. Atroshchenko. *Trudy Khar'kov. Khim.-Tekhnol. Inst. im. S. M. Kirova* No. 5, 77-86(1945)(Pub. 1946)(in Russian); cf. *C.A.* 42, 1394*h*.—For a process involving part acid and part alk. absorption of the NO + NO_2 gas, and leading to production of part HNO_3 and part $NaNO_3$, the optimum vol. of the absorption space is detd. from kinetic data on the rate of oxidation of NO and the coeffs. of absorption. The calcn. gives the time τ (in sec.) necessary for each stage of the process, namely: (I) oxidation $2NO + O_2 = 2NO_2$, (II) inversion $NO_2 + NaNO_2 = NaNO_3 + NO$, (III) acid absorption $3NO_2 + H_2O = 2HNO_3 + NO$ and $2NO + O_2 = 2NO_2$, (IV) 2nd oxidation $2NO + {}^1/_2O_2 = NO_2 + NO$, and (V) alk. absorption $NO + NO_2 + Na_2CO_3 = 2NaNO_2 + CO_2$ and (partly) $2NO_2 + Na_2CO_3 = NaNO_2 + NaNO_3 + CO_2$ and $2NO + O_2 = 2NO_2$; the τ for each stage and the total τ vary with the proportions of HNO_3 and $NaNO_3$ sought as the final product and is min. for a definite proportion; the same applies to the necessary vol. *v* (in cu. m. per 1 ton NH_3 oxidized per 24 hrs.), proportional to τ. In a particular example, production of (1) HNO_3 80, $NaNO_3$ 15, (2) 60, 15, (3) 20, 75, requires τ = (1) 334, (2) 205 (min.), (3) 332 sec., and *v* = (1) 63, (2) 39 (min.), (3) 63 cu. m. On the av., production of HNO_3 40-70%, $NaNO_3$ 55-25%, requires about 40 cu. m. per ton NH_3 oxidized per 24 hrs., as against 170 cu. m. with all acid absorption and production of only HNO_3.

N. Thon

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Effectiveness of the use of air enriched with oxygen in the contact production of nitric acid. V. I. Atroshchenko, *J. Applied Chem.* (U.S.S.R.) 18, 81-3(1945).—Plant runs were made on enrichment of air with O in catalytic HNO_3 production. Increase of ratio of O to NH_3 from 1.8 to 2.15 increases the permissible contact by 2%, with 12-12.5% NH_3 content giving 96-7% yields. Increased NH_3 and O contents lead to higher unit efficiency and decrease losses of N oxides. Catalyst loss is independent of NH_3 concn. in the mixt. G. M. Kosolapoff

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1. ATROSHCHENKO, V.I.; SEDASHOVA, Ye. G.

2. USSR (600)

4. Absorption

7. Rate of absorption of nitrogen oxides by solutions of alkali and of nitric acid, Zhur. prikl. khim., 25, No. 11, 1145

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Uncl.

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Production of nitric acid by oxidation of ammonia under high pressure. V. I. Atroshchenko. *J. Applied Chem.* (U.S.S.R.) 19, 1214-24(1946)(in Russian).—In the oxidation of NH_3 to NO over catalysts consisting of a series of gauzes of Pt 93 Rh 7 % wire 0.09 mm. diam., 1024 mesh/sq. cm., useful diam. 10 cm., the temp. corresponding to max. yield Y is the higher the greater the no. n of gauzes and the higher the pressure p. With n = 10, p = 10 atm., the max. lies at 850-900°; with n 20, p 20, it is above 900°. At const. temp 850-900°, const. p = 10 atm., the max. Y = 87, 91, 92%, corresponds to rates of flow v = 30, 70, 150 l./min., resp., with n = 10, 20, 50, resp.; under p = 20, Y max. = 87, 92% at v = 90, 150, with n = 10, 20, and Y = 92% (with no max. reached yet) at v = 200 with n = 50. The productivity A of the catalyst (in kg. NH_3 oxidized per g. Pt per 24 hrs.) is nearly independent of n, and approx. proportional to p. With n = 10, p = 10, 20, 50 atm., A = 4.40, 12.90, 16.9, corresponding to Y (max.) = 85.7, 85.6, 48.3%; with n = 20, p = 10, 20, 50, A = 49.8, 12.1, 17.3, corresponding to Y (max.) = 91.0, 91.3, 90.0%. At each given n, at p const., Y passes through a max. as a function of A. For example, n = 10, p = 10, A = 2.11, 4.40, 6.00, Y = 82.1, 85.7 (max.), 83.3; n = 10, p = 20, A = 2.88, 12.90, 17.2, Y = 76.6, 85.6 (max.), 85.0; n = 20, p = 10, A = 3.4, 4.98, 6.8, Y = 80.8, 91.0 (max.), 88.9; n = 20, p = 20, A = 6.08, 12.1, 15.4, Y = 85.6, 91.3 (max.), 90.3%. The time of contact, τ, corresponding to Y max., does not depend on n and increases very slightly with increasing p, remaining between 1.4×10^{-4} and 1.8×10^{-4} sec. at all p. Hence, the productivity of the app. (distinct from A) increases nearly proportionally to p and to n. The findings contradict previous literature about a neg. effect of high p on Y. Actually, Y is practically independent of p between 10 and 50 atm., and increases somewhat with n. Yields higher than 92% were not attained, owing solely to preliminary oxidation of NH_3 to N_2 prior to contact with the catalyst, on the hot wall of the app. With the catalyst removed, 6% NH_3 was decompd. at 620° and 3.3% at 720° within 0.04 sec. Hence, higher yields are only likely to be attained by way of increasing substantially the surface area of the catalyst as against that of the wall, particularly for operation under higher p. The concn. c of the HNO_3 in the condensate (temp. 20-35°) after oxidation of NO and reaction with H_2O increases with p; at a given p it decreases with increasing τ (increasing time τ' in the condenser). Under p = 10 atm., partial p_{NO} = 0.75 atm., τ' = 6.8 sec. (sufficient to cool to 20°), c reaches 60.1-61.7%; under p = 20, partial p_{NO} = 1.4-1.5 atm., τ' = 6.5 sec., c = 61.5%; under p = 50, partial p_{NO} = 3.5 atm., τ' = 7.2, c = 68.2%, and τ' = 12.1, c = 70.3%. The content of N oxides is 1.6-3.1% (as NO_2), depending on p and τ'. Theoretical calcn. of the max. possible c, assuming 100% condensa-

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ATROSHCHENKO, V.I.

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PURPOSE AND EVALUATION: The book is intended to serve as a textbook for students of technology. It may also serve as a manual for technical personnel employed in the chemical industry. Since Allin Cottrell's book Manufacture of Nitric Acid and Nitrates was published in London in 1932 (2nd edition), no monograph on the manufacture of nitric acid has been published in English. Thus this book should be of great value to chemists actively engaged in the production of nitric acid. The book as a whole is clearly written. The text is well illustrated with diagrams, tables, and formulas.

TEXT DATA

Coverage: The calculations concerned with the manufacture of concen-

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No. of References: Nine references (all Russian: 1922-1948) and occasional scattered references in footnotes.
Facilities: Names of many Soviet scientists are mentioned.

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P. A. 236T1

USSR/Chemistry - Nitrates Nov 52

"The Rate of Absorption of Oxides of Nitrogen by Alkaline Solutions and Nitric Acid," V. I. Atroshchenko, Ye. G. Sedashova, Khar'kov Polytech Inst imeni V. I. Lenin

"Zhur Prik Khim" Vol 25, No 11, pp 1143-1150

The dependence of the deg of absorption of oxides of nitrogen on the increase of the proportion of alk absorption at the expense of absorption in nitric acid was demonstrated. It was established that in combining the

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production of nitric acid and sodium nitrate by increasing the deg of absorption with alkalies, the reaction vol is considerably decreased. The increasing importance of the alk absorption method in the nitric acid industry is pointed out.

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ATROSHCHENKO, V. I.

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

1. ATROSHCHENKO, V. I., YASTREBENETSKIY, A. P.

2. USSR (600)

4. Condensation

7. Condensation of water vapors from nitrous gases obtained by oxidation of ammonia with air, Zhur. prikl. khim. 26 No. 3, 1953.

While investigating the condensation of water vapor from nitrogenous gases obtained by air oxidation of ammonia at atm pressure, the possibility of lowering the concn of nitric acid in the condensate was established. As a result of this, the partial pressure of the oxides of nitrogen going into the absorption tower was increased. The amount of acid obtained on the basis of 100% concn per 1 m^2 surface is a constant. Established the relationship between the total drop in pressure and the time the gas remained in the condenser. Detd the conditions necessary to assure the removal of the excess reaction water using the nitrogenous gases for the manufacture of concd nitric acid with a min loss of oxides of nitrogen.

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9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

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Atroshchenko V. I.

Contact apparatus for ammonia oxidation. V. I. Atroshchenko and A. P. Zagorin. *Trudy Khar'kov. Politekh. Inst.* 4, No. 2, 101-9(1954); *Referat. Zhur. Khim.* 1955, Abstr. No. 50610.—Different designs of contact app. for NH_3 oxidation are investigated; the temp. distributions and contact degree along the app. which depend on the shape and angle of the inlets and outlets of the app. are studied. It is found that the temp. of the contact grids next to the walls is lower than that in the center, and for this reason it is recommended that they be fastened to rings 100-150 mm. from the walls. Diam. increase of the contact app. is considered necessary for general increase of the N_2 oxide yield. Passing the gas from top to bottom increases the oxidation of NH_3. Thermal insulation of the walls also improves the NH_3 oxidation and gives a more effective use of the heat of reaction.

N. Vasileff

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

Atroshchenko, V. I.

The magnesia method of desilicating water. B. D. Bryanskii and V. I. Atroshchenko. *Khim. Prom.* 1955, 478–81.—The MgO method of SiO_2 elimination is at present the most effective. Dolomites are the best raw materials for use in the process and the valuable properties for that treatment are developed by ignition of the dolomite. The SiO_2 removal from water by MgO from dolomite is the more effective the higher the MgO content in the dolomite. The treatment temp. is very important in the effectiveness of treatment. A river water was successfully treated in 25 min. at 95°, while 24 hrs. were required at 40°; an artesian well water required 80 min. contact for 97.4% SiO_2 removal, and lowered the SiO_2 content by 93.2% in 24 hrs. at 40°. The dolomite calcining temp. is also important, and drops with higher calcination temp. W. H. Sternberg

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

Atroshchenko, V.I.

522. THE MAGNESIUM METHOD OF REMOVING SILICON FROM WATER.
B'yonskii, B.D. and Atroshchenko, V.I. (Khim. Prom. (Chem. Ind., Moscow), 1955, (8), 30-33). Figures are given which show the advantages of using magnesium compounds for boiler feed water treatment and of dunite as a raw material for them. (L).

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATROSHCHENKO, V. I.

Distr: 4E4j

Kinetics of the reaction of liquid dinitrogen tetroxide with nitric acid. V. I. Atroshchenko and V. I. Khanov (V. I. Lenin Polytech. Inst., Kharkov). *Ukrain. Khim. Zhur.* 23, 676-83(1957)(in Russian). — Mixts. of H_2O, N_2O_4, and HNO_3 were passed repeatedly down through a bubble-cap column in an autoclave while O was bubbled through them. The rate of disappearance of NO_2 = $k[NO_2]^2[H_2O]$. The following values of $10^3 \times k$ are reported (P = pressure in atm., t = temp.): at 50°, $0.18P - 1.2$; at 70°, $0.18P - 0.3$; at 90°, $0.18P + 0.12$. At 50 atm., $32.35 - 0.872t + 0.00726t^2$. At 25 atm., $27.11 - 0.842t + 0.00734t^2$. At 10 atm., $23.87 - 0.811t + 0.00703t^2$. It is proposed that the rate-controlling reaction is the hydrolysis of NO_2 to HNO_2 and HNO_3 and that the steps in the synthesis are liquid $N_2O_4 \rightarrow 2NO_2$ in soln., $2NO_2 + H_2O \rightarrow HNO_2 + HNO_3$, $3HNO_2 \rightarrow HNO_3 + 2NO$, $2HNO_3 + O_2 \rightarrow 2HNO_3$, $2NO + O_2 \rightarrow$ gaseous $2NO_2 \rightarrow$ liquid N_2O_4. I. H. Scott

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ATROSHCHENKO, V. I.

Distr: 4E4J

27 27

Effect of inert gases on the synthesis of [illegible] V. I. Atroshchenko and N. A. Gayrya. V. I. Lenin Polytech. Inst., Kharkov. (Zhur. Prikl. Khim. 30, 1741-6 1957). —The effect of CH_4 and A in the circulating gases on the synthesis of NH_3 at 300 atm. and 475-525° was studied. The NH_3 content in the converted gas decreased as the inert gas content increased. With CH_4 the exptl. results were expressed by the linear relation $x = x_0 - ai$, where x_0 is the NH_3 content in a pure N — H synthesis and a is a const. The reaction rate const., calcd. by the equation of Temkin, et al. (C.A. 34, 3512[1]), was const. over a wide range of gas velocities in the indicated temp. range up to 28% CH_4. The effectiveness of the catalyst (FeO 27.25, Al_2O_3 4.61, K_2O 2.25, CaO 0.24, and SiO_2 0.1%) decreased linearly with i. I. Beuchwitz

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

5(2,4)

AUTHORS: Atroshchenko, V. I., Litvinenko, I. I. SOV/153-58-4-12/22

TITLE: On the Dissolution Kinetics of Nitrogen Oxides in Aqueous Solutions of Nitric Acid (Kinetika rastvoreniya okislov azota v vodnykh rastvorakh azotnoy kisloty)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 4, pp 71 - 76 (USSR)

ABSTRACT: The interaction of gaseous nitrogen oxides with the solutions mentioned in the title is a complex physicochemical process. Its single stages are recalled. The total reaction of the formation of nitric acid can be represented as follows:

$$3NO_2 \text{ or } 1.5N_2O_4 + H_2O \rightleftharpoons 2HNO_3 + NO \quad (1)$$

The data in publications (Refs 1 - 11) on the velocity of the dissolution mentioned in the title are contradicting. There are great differences between the values of the velocity constants. In this paper the problem mentioned in the title is investigated as the first of the series of subsequent reactions in the formation of nitric acid. The investigations are to be continued. In the experimental part the apparatus used

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is described and shown (Figure). Tables 1 and 2 give the dissolution velocities of NO_2 in aqueous HNO_3 solutions at a linear velocity of the gas of 0.2 m/sec. or 0.4 m/sec. As may be seen from the data given the dissolved gas amount is directly proportional to the NO_2 concentration in the gas. The total gas dissolution in the case of one and the same time of stay within the range of the mentioned NO_2 content in the gas is independent of the NO_2 concentration. The values K-velocity constant of the NO_2 dissolution in cm/sec. (Tables 1 and 2) are about the same for all three heights of the apparatus. From the consideration of the data of the tables 1 and 2 it may be seen that the constants K increase with the decreasing temperature and with the increasing acid concentration. On the average the dissolution velocity increases to the double with the decrease in temperature from +30 to -10°. Therefore the HNO_3 formation at increased temperatures

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On the Dissolution Kinetics of Nitrogen Oxides in Aqueous Solutions of Nitric Acid SOV/153-58-4-12/22

is controlled by the dissolution velocity of NO_2 in water. The HNO_3 accumulation in the solution hinders the absorption of the nitrogen oxides. At lower temperatures the transformation velocity of the nitrogen oxides in nitric acid should be investigated if under those conditions the process is not controlled by the NO_2 dissolution but by other reactions. This problem will be dealt with in an other paper. There are 1 figure, 2 tables, and 14 references, 8 of which are Soviet.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im.V.I.Lenina (Khar'kov Polytechnical Institute imeni V.I.Lenin) Kafedra tekhnologii neorganicheskikh veshchestv (Chair of the Technology of Inorganic Substances)

SUBMITTED: October 31, 1957

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

ATROSHCHENKO, V.I.; KAUT, V.N.

Kinetics of nitrogen oxides being absorbed by concentrated nitric acid. Zhur.prikl.khim. 31 no.3:352-360 Mr '58. (MIRA 11:4)

1.Khar'kovskiy politekhnicheskiy institut im. V.I. Lenina.
(Nitrogen oxides) (Nitric acid) (Absorption)

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

AUTHORS: Atroshchenko, V.I. and Gavrya, N.A. SOV/80-59-1-16/44

TITLE: On the Rate of Dissolving Methane and Nitrogen-Hydrogen Mixture in Condensing Ammonia (O skorosti rastvoreniya metana i azoto-vodorodnoy smesi v kondensiruyushchemsya ammiake)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Nr 1, pp 99-104 (USSR)

ABSTRACT: The authors studied the rate of methane and nitrogen-hydrogen dissolving in the condensing ammonia under conditions similar to those in industry: i.e., at a pressure of 300 atm, at a temperature of ammonia condensation from 10 to 30°C, and at volume velocities from 30,000 to 60,000 m^3/m^3 of the catalyzer per hour. This study was a part of an investigation conducted by N.A. Gavrya during the preparation of his thesis. The study was carried out on a large-scale laboratory installation for ammonia synthesis operating on the circulation process. It was established by the study of methane dissolution during the process of ammonia condensation and separation, that the amount of methane being dissolved in the liquid ammonia increases in proportion to its partial pressure in the circulation mixture. The coefficients of proportionality were calculated. Furthermore, it was established that the volume velocity does not affect the amount of methane and nitrogen-hydrogen mixture being dissolved in the condensing ammonia. The time of contact of the gas with the liquid ammonia during the process

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SOV/80-59-1-16/44

On the Rate of Dissolving Methane and Nitrogen-Hydrogen Mixture in Condensing Ammonia

of condensation and separation of the ammonia is sufficient for establishing an equilibrium state between the gaseous and liquid phases.
There are 3 graphs, 1 diagram, 4 tables and 9 references, 5 of which are Soviet, 3 American and 1 English.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut imeni V.I, Lenina (Khar'kov Polytechnical Institute imeni V.I. Lenin)

SUBMITTED: June 10, 1957

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

5(1) 25(5) C6218

AUTHORS: Atroshchenko, V. I., Doctor of Technical Sciences, Asnin, Ya. I., Candidate of Technical Sciences, Vilesov, G. I., Nikitskaya, Z. A., Rabin, P. S.

SOV/64-59-6-10/28

TITLE: Removal of Salt From Industrial Condensates of Nitrogen Fertilizer Enterprises by Means of Ion Exchange Resins

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 6, pp 499 - 501 (USSR)

ABSTRACT: The vapor condensate of the evaporators used in the nitrogen fertilizer industry is contaminated with NH_4^+ and NO_3^- ions and has to be purified prior to its further use (as a steam boiler feed). Experiments carried out under the supervision of B. D. Bryanskiy (deceased) showed that by means of ion exchange resins it is not only possible to remove salt from the condensate but to re-use the ammonium nitrate obtained if the cation exchanger is regenerated with nitric acid and the anion exchanger with an ammonia solution. Among the investigated cation exchangers the type KU-2 proved to be best; in this case the regeneration takes place by means of a

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5(1)

AUTHORS: Brushteyn, A., Atroshchenko, V. I., Zasorin, A. P.

06236
SOV/64-59-6-28/28

TITLE: Critics and Bibliography

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 6, pp 552 - 553 (USSR)

ABSTRACT: Brushteyn reviews the book by V. A. Klevke, N. N. Polyakov, and L. Z. Arsen'yeva "Tekhnologiya azotnykh udobreniy" (Technology of Nitrogen Fertilizers), published by Goskhimizdat, 1956, 287 pages. Atroshchenko and Zasorin give a review of the same book; the book "Tekhnologiya azotnik udobreniy" by S. I. Vol'fkovich and A. M. Dubovitskiy et al. published in 1935, is mentioned as being the first of this kind in the USSR.

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"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000102510016-5

5(2) SOV/80-32-5-12/52

AUTHORS: Atroshchenko, V.I., Bibr, B.

TITLE: The Investigation of the Conversion of Carbon Oxide by Water Steam at Increased Pressure

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 997-1004 (USSR)

ABSTRACT: The production of hydrogen by means of converting carbon oxide by water steam is especially important for the utilization of natural gas as hydrogen source. The natural pressure of the gas can be employed in this method to reduce the production cost. Industrial water gas with a content of 30-36% CO, 50-36% H_2, 4-10% N_2 + CH_4, 5-8% CO_2 and 3 g/m^3 sulfur compounds was used in the experiments. The catalyzation column was loaded by an industrial high-temperature catalyst containing 30% Fe_2O_3, 2.5% Cr_2O_3, 61% MgO, 1% K_2O and 1.5% Al_2O_3. For comparing the data in the present work with those published in the literature /Refs 3,4/ the method used by Atwood and coworkers was used /Ref 3/. For the description of the kinetics of the process, however, a new equation had to be derived. It has been shown that a sharp rise of the productivity is observed at an increase of the pressure to 5-10 atm. At higher pressure the pro-

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