Smelting of basic pig iron with oxygen enriched blast. (Cont.)

of the smelting process during the individual periods operating factors and heat balances for the same periods are given in Tables 4, 5 and 6 respectively. The distribution of CO_2 content in the top gas along the throat diameter during the individual operating periods is shown in Fig.7. Variations in the composition and temperature of gas at various furnace levels during the individual operating periods are shown in Figs.8 and 9. Methods used for the determination of the above data are not given. The comparison of cost of production per ton of pig with normal (A) and oxygen enriched (B) blast is given in Table 7. It is concluded that: 1) operation of the furnace with oxygen enriched blast was stable without increasing moisture content of blast. The temperature of the blast was increased by 35-45 C in comparison with the operation on normal blast; 2) oxygen enrichment permitted intensifying furnace driving within the limits of retaining the amount of gas produced per unit of time on the same level as in normal operation; 3) the distribution of the gas stream across the furnace during operation with enriched blast remained normal which was the main factor contributing to

Card 3/5

Smelting of basic pig iron with oxygen enriched blast. (Cont.)

the retention of a comparatively low coke rate achieved on normal blast; 4) blast enrichment causes a decrease in the size of zone of moderate temperatures (800-1100 C) in the furnace stack and the corresponding increase in zones of low and high temperatures (above 1100 C). Despite this, the concentration of CO_2 in gas increases along the furnace height at a higher rate than with ordinary blast, due to an increase in the reducing ability of the gas; 5) with a 23.3% oxygen enrichment the output of the furnace increased by 6.7% with unchanged coke rate (14 days operating period); 6) the cost of production of pig with oxygen enriched blast was 2 roubles 40 kop.per ton higher than with ordinary blast. This increase was caused by the high cost of technical oxygen on the HTMK (15 kop/m^3); 7) the results obtained fully justify an enlargement of the tonnage oxygen plant on the HTMK in order to supply blast furnaces with oxygen for blast enrichment. Oxygen plants should be built on works operating with a prepared burden. The construction of oxygen plants of 10 000 m^3 capacity is recommended.

133-8-1/28

Smelting of basic pig iron with oxygen enriched blast. (Cont.)

There are 7 tables, 9 figures and 1 American reference.

ASSOCIATION: TsNIIChM and Nizhniy Tagil' Metallurgical Combine. (TsNIIChM i Nizhne-Tagil'skiy Metallurgicheskiy Kombinat).

AVAILABLE: Library of Congress

Card 5/5

ZAKHAROV, A.F.

133-7-2/28

AUTHOR: Zakharov, A.F., Khil'kevich, F.A., Bazilevich, S.V. and Lazarev, B.L., Engineers.

TITLE: Smelting of Ferro-manganese in a Large Blast Furnace (Vyplavka ferromargantsa v bol'shoy domennoy pechi)

PERIODICAL: Stal', 1957, No.7, pp. 580 - 584 (USSR)

ABSTRACT: In 1956, the smelting of ferro-manganese was carried out in a large furnace (No.2 furnace Nizhne Tagil'skiy Works) (1 100 m^3) with high top pressure (0.5 atm.) and oxygen-enriched blast (up to 24.5%). The preparation of the furnace for the transfer from foundry iron to ferro-manganese production, characteristic of raw materials, operational practice and the results obtained are described. The profile of the furnace and the distribution of CO_2 in the top gas along the throat diameter are shown in Figs. 1 and 2, respectively. Material and heat balances are given in Tables 1 and 2, respectively. The comparison of main indices of heat balances of smelting ferro-manganese in three different works is given in Table 3. In addition, the distribution of temperatures and changes in the gas composition along the height of the furnace stack (Fig.3) and the composition of gas in the combustion zone (Fig.4) were studied. It is concluded that on smelting

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Smelting of Ferro-manganese in a Large Blast Furnace. 133-7-2/28

ferro-manganese in a large furnace using acid slags (SiO_2 - 31.5%, Al_2O_3 - 13.7%, CaO - 31.4%, MgO - 4.1%, MnO - 18.2) and high temperature blast (998 °C) on even furnace operation at a comparatively high driving rate (blast volume 1 410 m^3/min; 460 ton/day of 73.4% ferro-manganese with 44.3% of manganese in ore) with a low coke rate (1 424 kg/ton) can be obtained without increasing manganese losses (total Mn losses 18.74%). Oxygen enrichment of blast did not require an increase in its moisture content or a decrease in its temperature. On smelting ferro-manganese under the above conditions, it is necessary to observe the horizontal distribution of materials across the cross-section and the periphery of the furnace. It was shown that blast temperatures above 1 000 °C can be used. Smelting of ferro-manganese on acid slags did not cause any difficulties in servicing slag notches, tuyere equipment and tapping hole. There are 3 tables, 4 figures and 5 Slavic references.

ASSOCIATION: Nizhne-Tagil'skiy Metallurgical Combine (Nizhne-Tagil'skiy Metallurgicheskiy Kombinat)

AVAILABLE: Library of Congress.

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ZAKHAROV, A. F.

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27 0000

AUTHORS: Zhukov-Verezhnikov, N. N., Mayskiy, I. N., Yazdovskiy, V. I., Pekhov, A. P., Gyurdzhian, A. A., Nefed'yeva, N. P., Kapichnikov, M.M. Podoplelov. I. I., Rybakov, N. I., Klemparskaya, N. N., Klimov, V. Yu., Novikov, S. N., Novikova, I. S., Petrov, R. V., Sushko, N. G., Ugryumov, Ye. P., Fedorova, G. I., Zakharov, A. F., Vinogradova, I. N., Chamova, K. G., Buyko, Ye. A.

TITLE: Results of the first microbiological and cytological experiments in outer space on artificial Earth's satellites

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 8, 1962, 104, abstract 8A748 (In collection: "Iskusstv. sputniki Zemli", no. 11, Moscow, AN SSSR, 1961, 42 - 67)

TEXT: Two particular problems of the general biological program have been investigated: life conditions during space flights and genetic consequences caused by factors of a space flight. The results obtained have shown that not only highly-organized animals possessing a high degree of compensation adaptability

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Results of the first...

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can survive the effect of space flight factors, but also primitive unicellular organisms, human being cells in a tissue culture, and some biochemical structures (DNK). There are 29 references.

M. F.

[Abstracter's note: Complete translation]

Card 2/2

CHISTYAKOV, A.N.; YEVDOKIMOV, Yu.P., ZAKHAROV, A.F. [deceased]

Properties of pitches and distillates in a three-stage oxidation process. Trudy LTI no.51:159-163 '59. (MIRA 13:8)
(Pitch) (Oxidation)

ZAKHAROV, A.F.

PHASE I BOOK EXPLOITATION SOV/4601

Koordinatnoye soveshchaniye po primeneniyu kisloroda na metallurgicheskikh zavodakh Urala. Sverdlovsk, 1956

Primeneniye kisloroda na metallurgicheskikh predpriyatiyakh Urala; materialy koordinatsionnogo soveshchaniya (Use of Oxygen in Metallurgical Plants of the Urals; Materials of the Coordination Conference) Sverdlovsk, 1960. 152 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Ural'skiy filial. Institut metallurgii; Ural'skiye pravleniya nauchno-tekhnicheskikh obshchestv chernoy i tsvetnoy metallurgii.

Resp. Ed.: P.S. Kusakin, Candidate of Technical Sciences; Tech. Ed.: N.F. Seredkina.

PURPOSE: This collection of papers is intended for scientific research and technical personnel in the field of metallurgy.

COVERAGE: The use of oxygen in ferrous and nonferrous metallurgy of the Urals is discussed. Results of experimental use of oxygen in some metallurgical plants are presented. During the Conference, held December 20 and 21, 1956, the following persons (in addition to the authors) took part in

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the discussion: V.Ya. Miller, V.V. Mikhaylov, P.Ya. Sorokin, A.A. Perestoronin (all affiliated with the Institute of Metallurgy of the Ural Branch AS USSR), S.M. Kazachenko (Nizhne-Saldinskiy metallurgicheskiy zavod - Nizhnyaya-Salda Metallurgical Plant), M.F. Kochin (Deceased) (Ural'skiy institut chernykh metallov - Ural Institute of Ferrous Metals), M.Ye. Kislitsin (Chelyabinskiy metallurgicheskiy zavod - Chelyabinsk Metallurgical Plant), G.V. Demin (Krasnoural'skiy medeplavil'nyy zavod - Krasnoural'sk Copper Smelting Plant), V.A. Aglitskiy (Institut Unipromed' - "Unipromed'" Institute). Some of the papers are followed by references, both Soviet and non-Soviet.

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Revebtsov, V.P. Institut metallurgii Ural'skogo filiala AN SSSR [Institute of Metallurgy of the Ural Branch of the Academy of Sciences USSR]. On the Problem of Determining Basic Trends in the Use of Oxygen in Ural Metallurgical Plants 5

Bragin, V.T. [Institute of Metallurgy of the Ural Branch of the Academy of Sciences USSR]. Theoretical Principles in the Use of Oxygen in the Blast-Furnace Process 11

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Novolodskiy, P.I. [Nizhniy Tagil Metallurgical Combine]. Experimental Use of Oxygen in Open Hearth Furnaces 43

Khudyakov, N.A. [Ural Scientific Research Institute of Ferrous Metals]. Use of Oxygen in Open Hearth Furnaces 57

Mikhaylikov, S.V., and V.N. Krysov [Institute of Metallurgy of the Ural Branch of the Academy of Sciences USSR, Uralvagonzavod (Ural Railroad Car Plant)]. Experimental Use of Oxygen in the "Uralvagonzavod" 65

ZAKHAROV, A.F.; PETROV, G.A.; NOVIKOV, M.D.; POPOV, L.P.; TORSHILOV, Yu.V.; GOLOKHVATOV, S.N.; GUSAROV, A.N.; KOVAL'CHUK, N.P.

Potentialities for increasing labor productivity in the open-hearth process. Stal' 21 no.6:560-562 Je '61. (MIRA 14:5)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat.
(Open-hearth furnaces--Equipment and supplies)

ZAKHAROV, A.E.; VECHER, N.A.; LEKONTSEV, A.N.; RUDNITSKIY, P.M.; TSIMBALENKO, L.N.; TSUKERNIK, Z.G.; ARYASOV, N.I., inzh., retsenzent; DOVGOPOL, V.I., red.; DUBROV, B.F., red.; GETLING, Yu., red.

[Vanadium of the Kachkanar deposit] Kachkanarskii vanadii. Sverdlovsk, Sredne-Ural'skoe knizhnoe izd-vo, 1964. 302 p. (MIRA 18:11)

ZAKHAROV, A. G.

Equipment for offset printing shops; textbook Moskva, Iskusstvo, 1953. 302 p. (55-16506)

Z249.Z3

ZAKHAROV, A. G.

1252. Issledovaniye usloviy ekonomicheskoy tselesoobraznosti ekspluatatsii zheleznodorozhnykh pod'yezdnykh putey (po sebestoimosti perevozok kapitalovlozheniyam) M., 1954. 13s. 21sm. (MPS SSSR. Vsesoyuz. nauch-issled. in.t zh.d. transporta). 100 ekz. Besepl. - [54-51608]

SO: Knizhnaya Letopis, Vol. 1, 1955

ZAKHAROV, A.G., inzhener

For planned improvement in the roads of local and republic-wide importance. Avt. dor. 18 no.3:30-31 My-Je '55.
(Roads) (MLRA 8:9)

VOYTENKO, V.G., inzhener; ZAKHAROV, A.G.

Design for a light protective covering for wooden bridges. Avt.dor. 18 no.6:27 O '55. (MLRA 9:2)
(Bridges, Wooden)

AKHAMOV, A.P., inzhener; ZAKHAROV, A.G., kandidat ekonomicheskikh nauk.

More accurate calculation of haulage costs. Vest.TSNII MPS 15, no.2:40-42 S '56. (MLRA 9:12)
(Railroads--Cost of operation)

ZAKHAROV, A.G., kandidat ekonomicheskikh nauk.

Determining the conditions for economic use of railroad sidings.
Trudy TSNII MPS no.120:83-114 '56. (MLRA 9:12)
(Railroads--Sidings)

Захаров, А.Г.

ABRAMOV, A.P.; ZAKHAROV, A.G.; KOTOV, G.V.; PESKOVA, L.N., redaktor; KHITROV, P.I., tekhnicheskiy redaktor.

[Cost of hauling railroad freight and freight rates.] Sebestoimost' zheleznodorozhnykh perevozok i gruzovye tarify. Moskva, Gos.transp. zhel-dor.izd-vo, 1957. 177 p. (Moscow, Vsesoiuznyi nauchno-issledovatel'skii institut zheleznodorzhnogo transporta. Trudy, no.134). (MLRA 10:7)

(Railroads--Rates)

ZAKHAROV, A.G., kandidat ekonomicheskikh nauk.; IZOSIMOV, A.V., kandidat ekonomicheskikh nauk.

Comparison of current systems for train traction. Vest.TSNII MPS 16 no.3:17-22 My '57. (MLRA 10:5)
(Electric railroads)

ZAKHAROV, A.G., kand. ekon. nauk

Determining the economy of operational expenditures resulting from an increase in freight car loads. Vest. TSNII MPS 17 no.8:47-50 D '58. (MIRA 12:1)

(Railroads--Cost of operation)
(Railroads--Freight cars)

ZAKHAROV, A.G., kand.ekon.nauk; YEVPLOV, N.I., inzh.

Economic efficiency of advanced methods of car utilization.
Zhel. dor. transp. 40 no.6:63-66 Je '58. (MIRA 11:6)
(Railroads--Management) (Railroads--Cars)

ZAKHAROV, A.G., kand.ekon.nauk

Economic basis for the efficient distribtuion of freight cars for loading based on the methof used by Dnepropetrovsk Station. Vest.TSNII MPS 18 no.6:49-53 '59. (MIRA 13:2)

(Dnepropetrovsk--Railroads--Freight)

ZAKHAROV, A.G., kand. ekon. nauk (Sverdlovsk); PETRUKHNOVSKIY, I.V. (Sverdlovsk); ROZENTSVAYG, A.I. (Kiyev)

Improvement of business accounting and distribution of profits among railroads. Zhel. dor. transp. 41 no.4:40-44 Ap '59. (MIRA 12:6)

1.Nachal'nik finansovoy sluzhby Sverdlovskoy dorogi (for Petrukhnovskiy). 2.Nachal'nik otdela dokhodov finansovoy sluzhby Yugo-Zapadnoy dorogi (for Rozentsvayg).
(Railroads--Accounts, bookkeeping, etc.)

ZAKHAROV, A.G., kand.ekonomicheskikh nauk

Effectiveness of the method of the Chusovskaya section (Sverdlovsk Railroad) for reducing empty car mileage. Vest.TSNII MPS 19 44-47 '60. (MIRA 13:9)

1. Ural'skoye otdeleniye Vsesoyuznogo nauchno-issledovatel'skogo instituta zheleznodorozhnogo transporta Ministerstva putey soobshcheniya, Sverdlovsk.
(Railroads--Freight cars)

ZAKHAROV, A.G., kand.ekon.nauk; DUDYREV, A.K., inzh.

Economic effectiveness of locomotive servicing by shifting crews. Zhel.dor.transp. 42 no.1:33-36 Ja '60. (MIRA 13:5)

(Locomotives--Maintenance and repair)

ZAKHAROV, A.G., kand.ekonom.nauk (g.Sverdlovsk)

Advanced practices for cutting transportation costs of a railroad district ("Cutting transportation costs" by A.D.Mamakin, G.I. Oleshko, T.M.Tuchkevich. Reviewed by A.G.Zakharov). Zhel.dor. transp. 42 no.6:94-95 Je '60. (MIRA 13:7)
(Railroads--Costs of operation)
(Mamakin, A.D.)
(Oleshko, G.I.)
(Tuchkevich, T.M.)

ZAKHAROV, A.G.; SHISHOV, G.A.; ZAKHAROVA, Z.I.; VAS'KINA, A.I.; FILIPPOVA, L.S., red.; GROMOV, Yu.V., tekhn. red.

[Methods of the economic evaluation of the operational indices of sections and maintenance units of railroads] Metodika ekonomicheskoi otsenki pokazatelei ekspluatatsionnoi raboty otdeleniia i khozedinits dorogi. Moskva, Vses. izdatel'sko-poligr. ob"edinenie M-va putei soobshcheniia, 1961. 70 p.
(MIRA 15:3)

(Railroads—Cost of operation)

ZAKHAROV, A.G., kand.ekon.nauk, nauchnyy sotrudnik; SHISHOV, G.A., inzh.-ekonomist, nauchnyy sotrudnik; ZAKHAROVA, Z.I., inzh.-ekonomist, nauchnyy sotrudnik; TVERSKOY, K.N., retsenzent; ABRAMOV, A.P., retsenzent; PETRUKHNOVSKIY, I.V., retsenzent; KUZNETSOV, A.N., retsenzent; KOLTUNOVA, M.P., red.; USENKO, L.A., tekhn.red.

[Economic evaluation of the operational indices of railroads] Ekonomicheskaia otsenka ekspluatatsionnykh pokazatelei raboty dorog. Moskva, Vses.izdatel'sko-poligr. ob"edinenie M-va putei soob., 1961. 174 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut zheleznodorozhnogo transporta. Trudy, no.218) (MIRA 15:1)

1. Sektor ekonomiki Ural'skogo otdeleniya Vsesoyuznogo nauchno-issledovatel'skogo instituta zheleznodorozhnogo transporta (for Zakharov, Shishov, Zakharova).
(Railroads--Cost of operation)

ZAKHAROV, A.G., kand.ekon.nauk; SHISHOV, G.A., inzh.

Economic evaluation of separate train performance indices. Vest. TSNII MPS 20 no.2:51-54 '61. (MIRA 14:3)
(Railroads—Cost of operation)

ZAKHAROV, A.G., kand.ekonomicheskikh nauk (Sverdlovsk)

Improving the economic evaluation of operational indices. Zhel. dor.transp. 43 no.5:38-41 My '61. (MIRA 14:4)
(Railroads--Cost of operation)

ZAKHAROV, Aleksey Grigor'yevich; YEFANOV, Anatoliy Nikitovich; KVITSINSKIY, Anatoliy Sigizmundovich; ORLOVA, I.A., red.

[Efficient distribution of freight shipments between railroads and automotive transportation] Ratsional'noe raspredelenie perevozok gruzov mezhdu zheleznoi dorogoi i avtotransportom. Moskva, Transport, 1964. 74 p. (MIRA 18:1)

ZAKHAROV, A.G., dotsent (Dnepr petrovsk); KAMENSHCHIKOV, M.I. (Dnepropetrovsk)

Reviews and bibliography. Zhel.dor.transp. 47 no.4:94-96 Ap '65. (MIRA 18:6)

1. Zamestitel' nachal'nika otdela planirovaniya perevozok Pridneprovskoy dorogi (for Kamenshchikov).

ZAKHAROV, A.G.; SEMENOV, V.N.

Automatic unit for billet heating. Mashinostroitel' no.7: 4 Jl '65. (MIRA 18:7)

ZAKHAROV, A. G.

A. G. Zakharov, and G. K. Bogrov[illegible], Chemigraphic litho-offset-work (Equipment of Litho-Offset Shops). "Iskusstvo" Press, 1953 - 302 p.

The booklet describes the process, all types of casting equipment of offset printing shops and enterprises, and describes the mentioned models in detail, including all mechanisms of the machines, and their interrelation with each of the types of printing equipment. The booklet also contains a section on the operation and maintenance of equipment, giving basic information on bonding and repairing machines.

The booklet is intended for students of polygraphic technical schools.

SO: Sovetskiye Knigi (Soviet Books), No. 106, 1953, Moscow, (U-6472)

SOKOLOV, A.A., kand.tekhn.nauk; ZAKHAROV, A.G., inzh.; VASIL'YEV, V.I., inzh.

Bibliography. Torf.prom. 40 no.5:37-40 '63. (MIRA 16:8)

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(Bibliography--Peat industry)

ZAKHAROV, I.G., inzh.

Using crushed-stone wastes. Avt.dor. 23 no.6:23 Je '60.
(MIRA 13:6)

(Road materials) (Stone, Crushed)

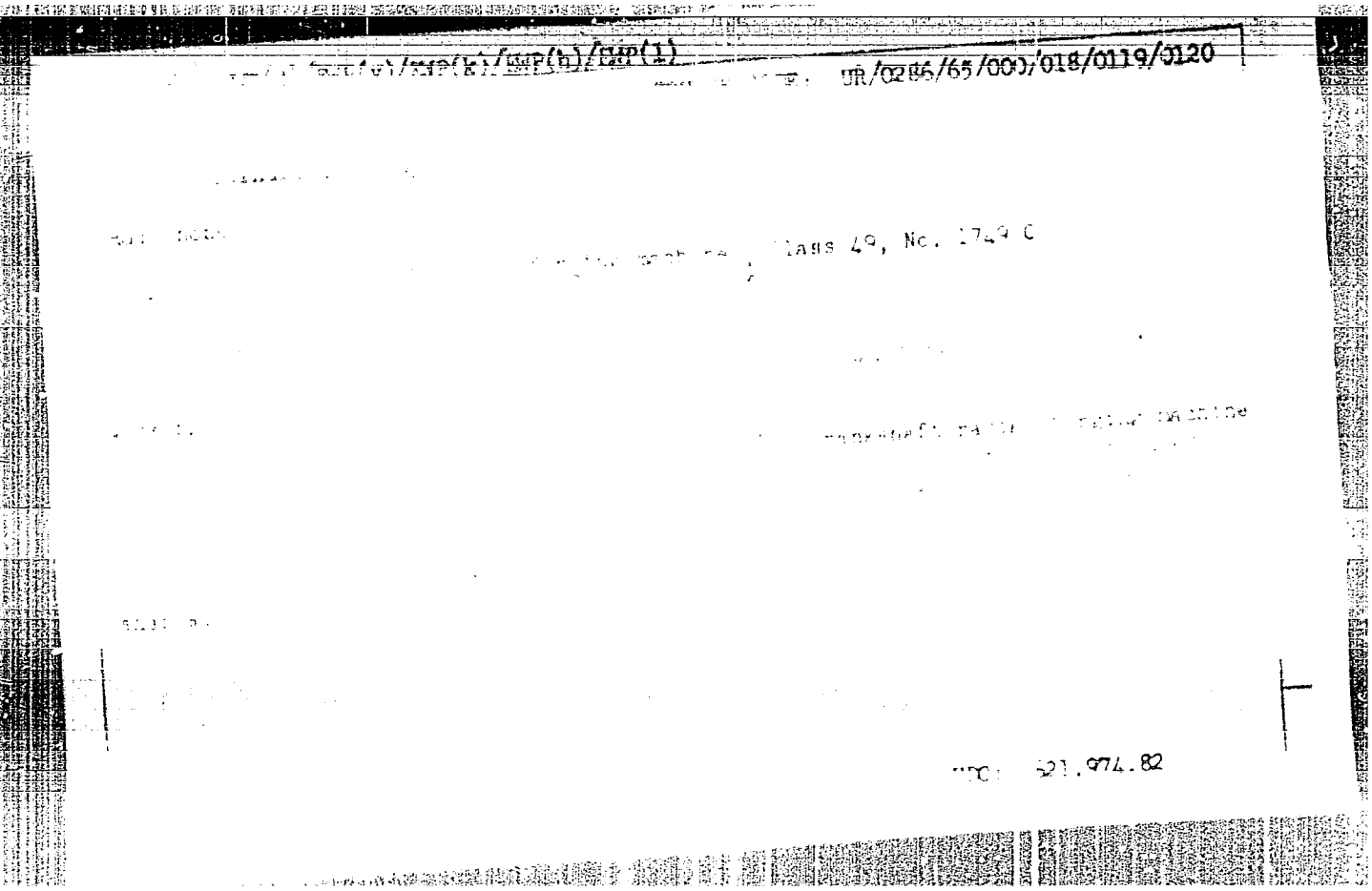

Fig. 1. 1- working roller; 2- crankshaft; 3- auxiliary rollers

ZAKHAROV, A.G., kand. ekonom. nauk (Dnepropetrovsk)

Calculating the cost of railroad transportation and the expenditures independent of the traffic volume. Zhel. dor. transp. 47 no.8:72-75 Ag '65. (MIRA 18:9)

ZAKHAROV, A. I.

ZAKHAROV, A. I.- "Stone in the Architecture of the Peoples' Residences in Moldavia." Moscow Architectural Inst, Moscow, 1955 (Dissertations for Degree of Candidate of Architectural Sciences)

SO: Knizhnaya Letopis' No. 26, June 1955, Moscow

ZAKHAROV, A.I.

Effect of therapeutic mud from Lake Karasor on gastric secretion. Biul.eksp.biol. i med. 40 no.10:41-44 Oct. '55. (MLRA 9:1)

1. Iz Kafedry normal'noy fiziologii (zav.-prof. G. Ya. Khvoles) Karagandinskogo meditsinskogo instituta (dir.-dotsent P.M. Pospelov)

(GASTRIC JUICE,
secretion, eff. of ther. mud)
(MUD THERAPY,
eff. of ther.mud on gastric secretion)

Zakharov, A. I.

6-1-6/16

AUTHOR: Zakharov, A. I.

TITLE: Two-Component-Lens-Compensators With Double Curvature (Dvukhkomponentnyy linzovyy kompensator dvoyakoy krivizny)

PERIODICAL: Geodeziya i Kartografiya, 1958, Nr 1, pp. 47 - 50 (USSR)

ABSTRACT: The range-finder attachment ДНБ-2 (manufactured by the plant "Aerogeopribor") was largely used during recent years. The description of the compensator fixed in this attachment and the dividing device is contained in the elaborate investigation by P. I. Durneva (Geouzdat Publishing house, 1953). It is shown that for increasing the accuracy of distance-measurements by means of this range-finder, the accuracy of the measurement of the parallax angle increases and a surveyor's rod of greater length should be used. Further it is shown that an increase of the accuracy of measurement of line lengths can only be obtained by a modification of the construction of the attached device on the range-finder, especially by changing the main part of the same, viz. the compensator. In 1956, the manufacturers elaborated a new design of a compensator and manufactured experimental types of a range-finder attach-

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Two-Component-Lens-Compensators With Double Curvature

ment ДНТ to the theodolite TT-50. This compensator is a two--component-lens-compensator with double curvature. From the scheme of the compensator given here it results that due to such a scheme it was made possible to combine the front semi--lenses in a common mounting. Moreover, these front semi--lenses can be displaced with respect to the semi lenses in the rear, by which both pictures of the object are displaced in opposed directions. In this case a parallax is missing between the pictures, as well as a difference in the enlargement of the two pictures, since the distance between the principal planes of the components equals zero. It is shown that the range-finder ДНТ makes it possible to use a two meter surveyor's rod with measuring distances over 200 m, whereas with working with one meter rods only the half of such distances can be measured. Due to the simultaneous displacement of both picutres of the rod marks, the same coincide each time with the measurement of the double parallax angle exactly in the center of the field of view. When measuring the single parallax angle, they are found symmetrically to the center, however, (with the second coincidence - exactly in the center). Consequently, the construction of the new compensator satis-

fies the basic requirements of increasing the accuracy of measurement. There is 1 figure and 1 non-Slavic reference.

AVAILABLE: Library of Congress

ZAKHAROV, A.I.

AUTHORS: Durneva, P. I., ~~Zakharov, A. I.~~ SOV/6-58-9-3/26

TITLE: The Novel Thirty-Second Transit TT5 (Novyy tridtsati-sekundnyy teodolit TT5)

PERIODICAL: Geodeziya i kartografiya, 1958, Nr 9, pp 18 - 27 (USSR)

ABSTRACT: This is a description of the new type of transit, which is to replace old TT50, which is no longer produced. This new transit tachymeter TT5 is designed to measure horizontal and vertical angles with a mean square deviation better than ± 15" in one run and to determine distances by means of the cross-hair range-meter. The new transit is lighter by 2 kg as compared to the old one. With legs it weighs 3,2 kg. A description of attachments furnished on request is presented: The range-meter set DNT - 2 for measuring distances from 50 to 700 m with a mean square deviation of 1:500, the range-meter set DD Z for measuring distances from 20 to 200 m with a mean square deviation of 1:2000, the optical centering device OTs-2_x, the compass with an azimuthal circle BKT and a set of electrical attachments KEO for work

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at dusk and at night. This paper also includes a description of a variant of the TT5, the transit-tachymeter TTP. This instrument is used in the measurement of horizontal and vertical angles, in the determination of distances with the cross-hair range-meter, and, in combination with the attachments DNT-2 and LOZ in the measurement of azimuthal angles. It can be used in leveling work and in the accurate measurement of sightings with a great angle of inclination. Apart from this instrument the level transit TT5 was developed for town surveying and engineering surveys on the initiative of the Mosgorgeotrest, which is based upon the same transit TN. A short description of this instrument is included in this paper. Finally, results from the testing of the three new instruments are presented. There are 10 figures and 1 reference, which is Soviet.

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A001/A101

24.3300 (1051, 1057, 1163)

AUTHORS: Durneva, P.I., Zakharov, A.I., Kolkov, D.D.

TITLE: New geodetic instruments: TOM(TOM) theodolite and ДД 5 (DD5) range finder

PERIODICAL:- Referativnyy zhurnal. Astronomiya i Geodeziya, no. 12, 1961, 40, abstract 12G259 ("Geod. i kartografiya", 1961, no.8, 37 - 47)

TEXT: The authors describe the small TOM optical theodolite and the DD5 differential range finder (attachment) manufactured in serial production in the USSR since 1960. The results of their investigation carried out by TsNIIGAiK are presented. The main technical characteristics of the theodolite are as follows: magnification of the visual telescope is 18x, visual field is 2°, the optical diameter of the objective is 27 mm, diameter of exit pupil is 1.5 mm, equivalent focal length of the objective is 142.5 mm, minimum sighting distance is 2 m, diameters of the horizontal and vertical circles are 70 mm each, the least scale interval on the circles is 10', magnification of the reading microscope is 27x, precision of reading on the circles (ocular estimation) is 1', the scale interval on the level of the horizontal circle alidade is 45" per 2 mm,

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32686
S/035/61/000/012/040/043
A001/A101

New geodetic instruments ...

the scale interval on the level at the telescope is 30" per 2 mm. The weight of the theodolite in a metallic box is 3.2 kg. The visual telescope of the theodolite is anallactic with inner focusing. The telescope objective has three lenses, it is non-glued. The reticule has range finding dash lines; coefficient of the range finder is 100. A cylindrical level is fastened on the visual telescope, which enables one to perform leveling with the horizontal ray. The theodolite is equipped with a round dismountable compass. All main parts of the instrument are manufactured of light and durable alloys. A lens compensator is used in the DD5 range finder, the constant parallactic angle is equal to 17'11".3 (coefficient of the range finder is 200). The operational principle of the range finder is the same as in DD2 and DD3 range finders (cf. RZhAstr, 1959, no. 7, 5844, no. 11, 8650). The DD5 range finder is intended for measuring distances 40-200 m with a vertical rod. The rod is two-sided, 1.5 m long, divisions are made on a stretched invar band. In measuring distances from 40 to 160 m, the red side with 2-cm divisions is used, whereas in measuring distances from 100 to 200 m the side with 5-cm divisions is used. It was found as a result of investigating two TOM theodolites: mean-square error in measuring a direction by one observation (distances to sight targets 1 - 3 km) was ± 0.22 - 0'.29; mean-square error of a horizontal angle measured by the method of circular observations was ± 0.3 - 0'.4, divergences

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A001/A101

New geodetic instruments ...

in angle values in different observations did not exceed 1', misclosures in triangles were ~1' (maximum 1'.8), mean-square error in measuring a vertical angle by one observation was ± 0'.4 - 0'.7, mean relative error in determining distance with a filament range finder was 1:300 - 1:400, error in leveling by horizontal ray (at the length of sight ray 100 m) was ± 22 mm/km. Time consumption for observations of 5 directions, once for each, amounts to 4 min, and for measuring a horizontal angle by one observation 1.3 min. Precision of measuring distances from 48 to 200 m with the DD5 range finder (at inclination angles 0-33°) is characterized by mean-square relative error of the order of 1:1,200 - 1:1,600. No more than 1 min is spent for measuring a distance and a vertical angle.

4

V. Sinyagina

[Abstracter's note: Complete translation]

Card 3/3

ZAKHAROV, Anatoliy Ivanovich; ZUYKOV, Ivan Ivanovich; YELISEYEV, S.V., red.

[Medium-precision theodolites and optical telemeters] Teodolity srednei tochnosti i cpticheskie dal'nomery. Moskva, Nedra, 1965. 171 p. (MIRA 19:1)

L 04275-67 EWT(d)

ACC NR: AP6013288 (A) SOURCE CODE: UR/0413/66/000/008/0084/0084

37
B

AUTHOR: Zakharov, A. I.

ORG: none

TITLE: Self-correcting double-image range finder. Class 42, No. 180814

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 84

TOPIC TAGS: optic range finder, optic instrument, optic lens

ABSTRACT: This Author Certificate presents a self-correcting double-image range finder with a variable instrument base. The latter is formed of two movable pentagonal prisms placed symmetrically in respect to the objective of the viewer tube, and of wedge-shaped compensators producing the parallax angle (see Fig. 1). To correct automatically the magnitude of this angle in measuring the slope distances without using a rod and to simplify the construction of the apparatus, the wedges of the compensator are rigidly attached to the body of the range finder. They retain their position in respect to the horizon when the viewing tube is inclined.

UDC: 531.719.24

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L 04275-67

ACC NR: AP6013288

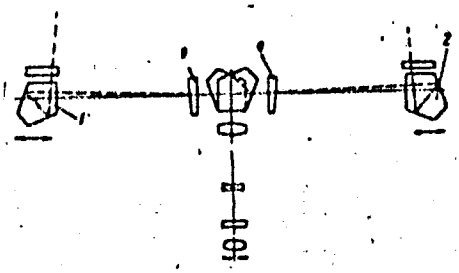

Fig. 1. 1 and 2 - movable pentagonal prisms; 3 and 4 - wedges of the compensator

Orig. art. has: 1 figure.

SUB CODE: 17, 20/ SUBM DATE: 20Apr65

Card 2/2 fv

ZAKHAROV, A.I.; KADOMTSEVA, A.M.; LEVITIN, R.Z.; PONYATOVSKIY, Ye.G.

Magnetic and magnetoelastic properties of the metamagnetic alloy iron-rhodium. Zhur.eksp.i teor.fiz. 46 no.6:2003-2010 Je '64. (MIRA 17:10)

1. Moskovskiy gosudarstvennyy universitet.

ZAYKOV, M.A.; TSELUYKOV, V.S.; KAMINSKIY, D.M.; KUZNETSOV, A.F.; BELINSKIY, Ye.D.; SHAMETS, Ya.V.; FEDOROV, N.A.; BARITSKIY, S.I.; ZAKHAROV, A.I.; ZHURAVLEV, M.A.; KOBYZEV, V.K.

Investigating energy and power parameters in plate rolling on reversing mills. Izv. vys. ucheb. zav.; chern. met. 7 no.2:100-107 '64. (MIRA 17:3)

ZAKHAROV, A.I.

Effect of radiation on the physical properties and structure of a solid body. Dos. such. fiz. no.5:150-194 '57. (MIRA 16:6)

(Solids, Effect of radiation on)

20-114-6-16/54

AUTHORS: Zakharov, A. I., Maksimova, O. P.

TITLE: Martensite Transformations as Influenced by Bombardment With Neutrons (Vliyaniye neytronnogo obluchcheniya na martensitnoye prevrashcheniye)

PERIODICAL: Doklady Akademii Nauk SSSR,1957,Vol.114,Nr 6,pp.1195-1198(USSR)

ABSTRACT: The present paper represents the first attempt to use the bombardment with neutrons in the study of martensite transformations. Steels and alloys were investigated in which the influence of the previous plastic deformation upon the martensite transformation was first thoroughly studied. The samples (2 x 3 x 24 mm) were bombarded in the active zone of a physical testing reactor with heavy water close to the uranium rods after previous (here described) heat treatment. One part of the samples was bombarded for 100 hours, the other part 200 hours with 10^{17} neutrons per cm^2. The modification of the strength of the austenite was estimated from the form of magnetometric curves on deep cooling and on heating.

Test results: Previous bombardment with neutrons exerts considerable influence upon the resistance of austenite to marten-

Card 1/3

Martensite Transformations as Influenced by Bombardment With Neutrons

site transformation. The modification of resistance varies according to different materials. In steels the bombardment (independent of the carbon content and of the character of the alloys) increases the intensity of martensite transformation on subsequent deep cooling. In iron-nickel-manganese (N23G3 and N22G3) alloys with no content of carbon the bombardment always exerts a stabilizing influence on the γ-phase. The influence of bombardment and the influence of plastic deformation have much in common. If the bombarded samples are left lying for a long time at room temperature, the resistance of austenite is increased. On bombardment structural changes take place in the metals and alloys which influence the resistance of austenite in opposite directions. The total action (activating and retarding) depends on the total flux of neutrons and on the peculiarities of the material. There are 3 figures and 16 references, 9 of which are Slavic.

ASSOCIATION: Central Scientific Research Institute for Ferrous Metallurgy (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii)

PRESENTED: February 11, 1957, by G. V. Kurdyumov, Member of the Academy

20-114-6-16/54

Martensite Transformations as Influenced by Bombardment With Neutrons

SUBMITTED: November 21, 1956

Card 3/3

ZAKHAROV, A.I., Cand Phys-Math Sci --(diss) "The effect of neutron radiation on the transformation of austenite into martensite." L., 1958. 11 pp (Min of Higher Education USSR. Moscow Engineering-Phys Inst), 120 copies (KL, 46-58, 137)

Zakharov, A.I.

SOV/137-58-8-17677

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8 p 211 (USSR)

AUTHORS: Zakharov, A. I., Maksimova, O. P.

TITLE: Employment of Neutron Irradiation in Studying Martensite Transformations (Primeneniye neytronnogo obluchenivа dlya issledovaniya martensitnogo prevrashcheniya)

PERIODICAL: Sb. tr. In-t metalloved. i fiz. metallov Tsentr. n.-i. in-ta chernoy metallurgii, 1958, Vol 5, pp 124-135

ABSTRACT: The effect of neutron irradiation (NI) on martensite transformation (T) was investigated on five types of steel containing respectively: 0.48% C, 7.7% Mn, 2.2% Cu (steel 50G8); 1.4% C, 4.0% Mn (steel 140G4); 0.50% C, 21.0% Ni (steel 50N21); 0.025% C, 22.7% Ni, 2.88% Mn (steel N23G3); 0.020% C, 22.4% Ni, and 3.48% Mn (steel N22G3). The effect of NI was evaluated by the change of progress of the martensite curves during cooling of specimens to a temperature of -196°C and heating to a temperature of 20°. The specimens were subjected to NI in the active zone, near the U rods, of an experimental physical heavy water reactor for periods of 100 and 200 hours. Following the NI the specimens

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Employment of Neutron Irradiation in Studying Martensite Transformations

were allowed to age at room temperature The NI significantly influences the position of the martensite point and the over-all T effect; the latter also depends on the type of material in question. In the case of carbon steels, the NI elevates the martensite point and increases the T effect during deep cooling. In the case of carbon-free alloys, the NI affects austenite in an opposite fashion viz. the martensite point is lowered and the intensity of T during cooling is reduced In carbon steels, a certain amount of martensite is formed already during the NI process The manner in which irradiation affects martensite T has much in common with the effect of plastic deformation. The aging of specimens at room temperature results in improved stability of austenite. The poor temperature stability of the activating effect of NI indicates that it is governed by formation of defects of the vacancy interstitial-intrusion type which produce elastic deformations in the crystal lattice. The stabilizing effect of NI is brought about by the formation of defects that are caused by division and disorientation of crystals, as a result of which the chances for the appearance and growth of martensite crystals are diminished.

M. Sh.

1. Martensite--Transformations 2. Martensite--Effects of radiation 3. Neutrons--Metallurgical effects

Card 2/2

Zakharov A.I.

SOV/137-58-8-17644

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 207 (USSR)

AUTHORS: Maksimova, O. P., Zakharov, A. I.

TITLE: On the Laws Governing the Elimination of Radiation Damage Upon Annealing. (A Survey) [O zakonomernostyakh ustraneniya radiatsionnykh narusheniy pri otzhige. (Obzor)]

PERIODICAL: Sb. tr. in-t metalloved. i fiz. metallov. Tsentr. n.-i. in-ta chernoy metallurgii, 1958, Vol 5, pp 528-549

ABSTRACT: A review of the laws governing the elimination of radiation damage upon the annealing of metals. The character of and the laws governing the complex modifications of physical and mechanical properties and phase transformations in metals occurring upon irradiation, and the processes and the laws governing the restitution of the initial properties to metals upon annealing were examined together with an analysis of modifications occurring in five temperature ranges. Bibliography: 37 references.

1. Metals--Effects of radiation
2. Metals--Heat treatment

V. A.

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SOV/24-58-7-1/36

AUTHORS: Zakharov, A.I. and Maksimova, O.P. (Moscow)

TITLE: On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation (Ob izmenenii kinetiki martensitnogo prevrashcheniya pod vliyaniyem oblucheniya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 7, pp 3 - 9 (USSR)

ABSTRACT: So far, in the theory of martensitic transformation the problem of the nature of loci of germination of a new phase has not been clarified. Also, the process of formation of martensite germinations involves such phenomena as incomplete martensitic transformation and austenite stabilisation. Investigations aimed at elucidation of the nature of the process of formation of martensite germinations are of particular importance from the point of view of the development of the theory of martensitic transformations. The development of nuclear techniques has provided new possibilities for creating various defects in the crystal lattice. Irradiation by means of fast particles may produce more elementary disturbances in the structure than can be obtained otherwise. In

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On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation

earlier work (Refs 1,2), the authors applied neutron irradiation in investigating martensitic transformations. They established that preliminary neutron irradiation, with a dose of the order of 10^{17} n/cm^2, has a considerable influence on the stability of the austenite and on the martensite transformation. This change in the stability differed with the material. In steels, irradiation brought about an intensification of the martensitic transformation during subsequent deep cooling with a constant speed. In carbon-free iron, nickel, and in Mn-alloys, irradiation always had a stabilising effect on the γ-phase; it brought about a decrease of the martensitic point and of the transformation intensity. The aim of the work described in this paper was to investigate the influence of preliminary neutron irradiation on the kinetics of isothermal martensitic transformation at various temperatures. Furthermore, the authors aimed at elucidating the phenomena of eliminating the after effects of the radiation during annealing with a gradually increasing

On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation

temperature. For solving the problem the authors used thermomagnetic, microstructural, X-ray and microhardness investigations. The experiments were carried out on 2.5 x 3.5 x 24.5 mm specimens of the alloy N22GZ (0.02% C, 22.4% Ni, 3.48% Mn, T_m = -15 °C) after homogenisation annealing at 1 150 °C in vacuum for 10 hours, followed by removal of the surface layer to a depth of 0.25 mm. The irradiation was effected in the active zone of a reactor in the neighbourhood of the uranium rods. During irradiation the temperature of the specimens increased by no more than 40 °C; the integral flux of the neutrons equalled $6.5 \cdot 10^{17}$ n/cm^2. As can be seen from Figure 1, the stabilisation effect of this dosage of irradiation was about twice as intensive as in earlier experiments in which a flux intensity of $4.2 \cdot 10^{17}$ n/cm^2 was used. In Figure 1 the martensitic transformation curves are graphed for a specimen which has been irradiated and also for one which has not been irradiated. In Figure 2 the curves of isothermal martensitic transformation at various temperatures are graphed for the irradiated and non-irradiated states.

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On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation

In Figure 3, the curves of isothermal martensitic transformation for irradiated and non-irradiated austenite are graphed for the temperatures of -25 and -50 °C. In Figure 4, the initial speed of isothermal martensitic transformation, as a function of the temperature, is graphed for irradiated and non-irradiated austenite. The graph, Figure 6, shows the influence of annealing on the stability of preliminarily irradiated austenite. In Figure 7, the changes are graphed of the martensitic point and of the microhardness during annealing of irradiated austenite. In Figure 5, microstructure photographs are reproduced of the martensite which formed in irradiated and non-irradiated specimens after isothermal holding for 7 hours at -50 °C. The results are in agreement with those obtained during earlier investigations relating to the influence of irradiation on the kinetics of martensitic transformation (Ref 1). The relations determined earlier (Ref 2) were confirmed and new relations were established which give a better understanding of the disturbances to

On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation

which the changes in the kinetics of martensitic transformation are attributed. The authors conclude that as a result of irradiation, defects of two distinct types are generated in the γ-phase which influence differently the stability of the austenite relative to that of the martensite. Low-stability defects bring about activation of the austenite. On the other hand, stabilisation of the γ-phase is due to the occurrence of radiation disturbances which possess a high stability. Elimination of the radiation effects of activation during storage and during annealing at relatively low temperatures (20-200 °C) in steels and further intensification of the stabilisation observed under the same conditions in alloys are phenomena which can be attributed to the removal of radiational disturbances of the same type. Obviously, these disturbances are "defects" which bring about an increase in the electric resistance of the irradiated metals. Such a conclusion can be derived from the results described in this paper and from analysis of literary data which indicate a coincidence of the temperature ranges of radiation effects during

On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation

annealing. The increase of the electric resistance during irradiation is due mainly to the occurrence of elementary defects of low stability of the penetration-atom type, which can be easily eliminated by recombination during storage and during low-temperature annealing. Thus, as a result of annealing, a decrease should take place in the concentration of the pair defects in the volumes affected by "thermal peaks". On the basis of the assumption that elastic distortions, brought about by "thermal peaks" and possessing a sufficiently high concentration of pair defects can lead to the germination of martensite crystals, the phenomenon of reduced activation and intensified stabilisation of the austenite during low-temperature annealing is understandable. It was found that elimination of the increased stability of the austenite in the irradiated alloy N22GZ will begin during annealing in the temperature range above 200 °C and this process is terminated on heating to 600-700 °C. It is known that the annealing temperature range between 200 and 500 °C is the

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On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation

temperature range of removal of the effect of hardening brough about by irradiation (Ref 7). In the given case, the main part of the hardness increase of the irradiated austenite can also be eliminated by annealing in the temperature range 200-500 °C. Consequently, the process of re-establishment of the mechanical properties and of the stabilisation effect of the radiation of the austenite proceeds during heating in the same temperature range. In view of this, the assumption can be made that changes in the fine crystalline structure of the austenite, which bring about the radiation hardening of the γ-phase, are to a large extent responsible for the observed stabilisation of the irradiated austenite. Accordingly, the stabilisation effect of the radiation can be explained by the limitation of the growth of the martensite crystals in the distorted and hardened matrix.

SOV/24-58-7-1/36

On the Changes in the Kinetics of Martensitic Transformation as a Result of Irradiation

There are 7 figures and 8 references, 6 of which are Soviet and 2 English.

SUBMITTED: April 19, 1958

Card 8/8

S/137/62/000/004/138/201
A060/A101

26.2244

AUTHOR: Zakharov, A. I.

TITLE: Determination of the total neutron flux under irradiation of materials in a nuclear reactor

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 92, abstract 4I555 ("Sb. tr. In-t metalloved. i fiz. metallov Tsentr. n.-i. in-ta chernoy metallurgii", 1959, 6, 389-393)

TEXT: A method is described for determining the absolute intensity of neutron flux using scintillators. A calculation of activation is given, as well as recommendations for the choice of scintillators. An analysis is given of methods of identifying the radiations from their hardness by the use of a Cd filter. A concrete example is given for the use of a W-scintillator. The methods described make it possible to take account of intrinsic absorption in the scintillator, absorption in the air, and the window material of the counter, reflection from the backing, etc. The absolute precision of the determination of total intensity is estimated to be of the magnitude of~ 50%. It is noted

/B

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S/137/62/000/004/138/201
A060/A101

Determination of the total neutron ...

that for comparative measurements it is possible to attain a precision of up to 1 - 2%.

N. Oevelin

[Abstractor's note: Complete translation]

B

Card 2/2

ZAKHAROV, A.I.

18(0) PHASE I BOOK EXPLOITATION SOV/2125

Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Institut Metallovedeniya i fiziki metallov

Problemy metallovedeniya i fiziki metallov (Problems in Physical Metallurgy and Metallophysics) Moscow, Metallurgizdat, 1959. 540 p. (Series: Its: Sbornik trudov, 6) Errata slip inserted. 3,600 copies printed.

Additional Sponsoring Agency: USSR. Gosudarstvennaya planova komissiya.

Ed. of Publishing House: Ye.N. Berlin; Tech. Ed.: P.G. Islent'yeva; Editorial Board: D.S. Kamenetskaya, B.Ya. Lyubov (Resp. Ed.), Ye.Z. Spektor, L.M. Utevskiy, L.A. Shvartsman, and V.I. Malkin.

PURPOSE: This book is intended for metallurgists, metallurgical engineers, and specialists in the physics of metals.

COVERAGE: The papers in this collection present the results of investigations conducted between 1954 and 1956. Subjects

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covered include crystallization of metals, physical methods of influencing the processes of crystallization, problems in the physical chemistry of metallurgical processes, development of new methods and equipment for investigating metals, and production control. References follow each article.

TABLE OF CONTENTS:

Problems in Physical Metallurgy (Cont.) SOV/2125

Pliskin, Yu.S. Method of Designing Installations for Levitation Melting of Metals 401
Methods of levitation melting of metals are compared, and a simple method of designing an inductor sufficiently accurate for practical purposes is proposed.

Teumin, I.I. Principles of Designing Magnetostrictive Vibrators 412
Basic principles of designing magnitostrictive vibration for ultrasonic industrial equipment are presented. Special attention is given to the analysis of operating conditions in machining crystallizing metals and alloys

Latyshev, V.K., and A.K. Felinger. Logarithmic Electron Converter for Type MF-4 Microphotometer 453

Tatochenko, L.K., Yu.V. Moysh, V.V. Lyndin, and B.S. Tokmakov. Magnetic Particle Inspection Method Used in Metallurgy 460

Zakharov, A.I. Proportional Neutron Counters Utilizing Boron Trifluoride 466
The author states that, ordinarily, gas obtained from the composition of a solt by heating is used in proportional neutron counters. However, he further states, BF_3 obtained from glass containers is also effective.

Anrnev, Yu.V., Candidate of Physical and Mathematical Sciences. A Simple Electronic Magnetic Spectrometer for Identifying Radioactive Isotopes 481
A simple portable design of a beta-spectrometer based on focusing electrons by means of a transverse uniform magnetic field is described.

Tatochenko, L.K., and V.V. Lyndin. Instrument for Rapid Determination of the Curie Point 485
The instrument described is successfully being used at the TsNIIChM for investigating properties of ferromagnetic alloys.

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S/070/62/007/003/020/026
E132/E460

AUTHORS: Ponyatovskiy, Ye.G., Zakharov, A.I.

TITLE: On the question of the crystal structure of the high temperature modification of thallium

PERIODICAL: Kristallografiya, v.7, no.3, 1962, 461-463

TEXT: The results of this paper were presented at the 7th Scientific-Technical Conference for the use of X-rays for investigation of materials.
A polycrystalline film of Tl, the surface of which had been mechanically freed from oxide, was examined in an X-ray diffractometer with Cu radiation at temperatures between -190°C and the melting point of Tl. On first heating up to 232°C the h.c.p. structure was found up to this temperature where the alpha to beta transformation took place very sharply in less than a second (heating 1.5°/min). Recrystallization rapidly took place, big grains being formed. The structure was then b.c.c. Further cycles through the transformation did not reduce the grain size. To avoid these grain size effects a special specimen of fine grains mixed with aluminium filings was prepared. At 250°C the

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On the question of the crystal ... S/070/62/007/003/020/026
E132/E460

β-Tl had a = 3.871 ± 0.002 Å. Discrepancies in the literature as to whether the high-temperature form was f.c.c. or b.c.c. are satisfactorily resolved. There are 3 figures.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I.P.Bardina
(Central Scientific Research Institute for Ferrous Metallurgy imeni I.P.Bardin)

SUBMITTED: October 26, 1961

Card 2/2

S/078/62/007/010/003/008
B144/B186

AUTHORS: Zakharov, A. I., Ponyatovskiy, Ye. G.

TITLE: Phase diagram of thallium - tin alloys

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 10, 1962, 2374-2377.

TEXT: A supplementary phase diagram of Tl-Sn alloys containing up to 15 at.-% Sn (Fig. 3) was plotted for the temperature range from 20°C up to the melting point in order to elucidate the inconsistencies between, on the one hand, the previous data of the present authors (Kristallografiya, 3, 461 (1962)) and of H. Lipson, A. R. Stokes (Nature, 146, 437 (1941)), and on the other hand, the data of M. Hansen (Constitution of Binary Alloys, N. Y., 1958, p. 1214) and of J. C. Blade, E. C. Ellwood (J. Inst. Met., 88, 186 (1959)). X-ray diffraction patterns of 10 different alloys were taken at different initial phase change temperatures. The temperature dependence of the intensity of line (102) of the hexagonal phase, and that of line (002) of the face-centered cubic phase, were recorded in addition to complete X-ray pictures. The patterns of an alloy containing 4.91% Sn taken at 20 and 112°C prove that heating of the sample results in eutectic

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Phase diagram of thallium - tin alloys

decomposition of the $\alpha+\delta$ phase and in formation of the β phase. There are 4 figures and 1 table.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy Institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy)

SUBMITTED: January 4, 1962

Fig. 3. Phase diagram of Tl-Sn alloys rich in Tl.
Legend: (1) hexagonal dense packing, α phase; (2) face-centered cubic lattice, δ phase; (3) body-centered cubic lattice, β phase; (4) $\alpha+\delta$; (5) interface of the appearance of the β phase; (6) interface of the appearance of the liquid phase; (a) at.-%; (b) % by weight; full lines with experimental points: interfaces based on the authors' results; full lines without points: data of Blade and Ellwood; broken lines: suggested interfaces.

ACCESSION NR: AP4042559 S/0056/64/046/006/2003/2010

AUTHOR: Zakharov, A. I.; Kadomtseva, A. M.; Levitin, R. Z.; Ponyatovskiy, Ye. G.

TITLE: Magnetic and magnetoelastic properties of a metamagnetic iron-rhodium alloy

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 2003-2010

TOPIC TAGS: magnetostriction, alloy Young modulus, alloy lattice parameter, ferromagnetic transition temperature, Curie point, iron rhodium alloy, alloy magnetization, alloy

ABSTRACT: The temperature dependences of the magnetization, magnetostriction, Young modulus, and lattice constant of an iron-rhodium alloy of close to equiatomic ($Fe_{0.5}$, $Rh_{0.5}$) composition have been investigated in the 50—750K temperature range. The experiments were conducted on vacuum-melted Fe-Rh alloy annealed at 1100C for 5 hr and then furnace cooled or water quenched from 1100C. In a field up to 2000 oe, the annealed alloy was antiferromagnetic at room temperature, with the transition to the ferromagnetic state occurring in a

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ACCESSION NR: AP4042559

field of 1700 oe at 358K with heating and at 352K with cooling. The Curie point of the alloy, determined in a 9-oe field, was about 660K. The transition temperature T_k was found to decrease by about 12K, with the field increasing to 14,500 oe. Isothermal curves for the magnetization in fields up to 140 koe showed that below the critical temperature T_k, the magnetization increases sharply in certain critical fields H_k, i.e., the antiferromagnetic-to-ferromagnetic transition occurs under the action of the field. The critical field H_k, defined as the field magnitude at which the most rapid increase in magnetization occurs, decreases linearly with increasing temperature at a rate of 0.0017 oe/deg. The lattice parameter increases gradually with the temperature increase to $T_k \approx 353K$, at which a new ferromagnetic phase is formed whose lattice parameter increases abruptly by 0.3%. Above the Curie point ($\theta \approx 660K$), the lattice parameter increases with temperature more rapidly than in the ferromagnetic region. With an increasing hydrostatic pressure, the transition temperatures, both in heating and cooling, increase approximately linearly at a rate of 0.00433 deg/atm. The Young modulus exhibits a sharp increase at the point of transition from the antiferromagnetic to the ferromagnetic state. The longitudinal magnetostriction λ and the relative change

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ACCESSION NR: AP4042559

of Young modulus ΔE/E are zero in the antiferromagnetic region but are at a maximum in the region of temperature transition. The maximum probably results from the superimposition of magnetoelastic effects, which are associated with the destruction of the antiferromagnetic structure under the action of the field, on the ordinary ΔE and magnetostriction effects which are caused by domain processes. The use of the data obtained for determining the applicability of the C. Kittel theory to ferromagnetism -- antiferromagnetism transition in the Fe—Rh alloy produced inconclusive results — and further research on the alloy is recommended. Orig. art. has: 8 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: 18Jan64 ATD PRESS: 3068 ENCL: 00

SUB CODE: MM,SS NO REF SOV: 006 OTHER: 009

Card 3/3

ZAKHAROV, A.I.; PONYATOVSKIY, Ye.G.

Phase diagram of thallium-tin alloys. Zhur.neorg.khim. 7 no.10:2374-2377 O '62. (MIRA 15:10)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.

(Thallium-tin alloys)

PONYATOVSKIY, Ye. G.; ZAKHAROV, A. I.

Crystalline structure of a high-temperature modification of thallium. Kristallografiia 7 no.3:461-463 My-Je '62. (MIRA 16:1)

1. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni Bardina.

(Thallium) (X-ray crystallography)

39022
Z/009/62/000/001/001/001
E073/E335

11.1260

AUTHORS: Macharáček, K., Zakharov, A.I. and Aleshina, L.A.

TITLE: Heats of combustion and formation of isomeric dinitroanilines

PERIODICAL: Chemický průmysl, no. 1, 1962, 23 - 24

TEXT: The heats of combustion of all isomeric dinitroanilines were measured at constant volume and from the obtained values the heats of combustion at constant pressure and the heats of formation at constant volume and pressure were calculated. The values (averages of three measurements) obtained for the molar heats of combustion and formation (kcal/mole) are given in Table 2. There are 2 tables.

ASSOCIATIONS: Ústav teoretických základů chemické techniky ČSAV, Praha (Institute of Theoretical Fundamentals of Chemical Engineering, ČSAV, Prague)
Lensovet Leningrad Technological Institute, Leningrad, USSR.

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S/126/62/013/002/008/019
E039/E135

18.1220

AUTHOR: Zakharov, A.I.

TITLE: On the question of the influence of neutron exposure on the modulus of elasticity and internal friction of copper

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.2, 1962, 241-247

TEXT: It is known that the exposure of metals to charged particles produces an increase in the modulus of elasticity and a decrease in internal friction. This was predicted from theory. In this paper the influence of irradiation by neutrons on the modulus of elasticity and internal friction for polycrystalline and single crystal copper is studied. Experimental data are obtained for three conditions, namely: after machining; after annealing; and after exposure to neutrons. The polycrystalline sample no.1 was of cold forged copper having a high value of internal friction. The single crystal samples were such that their geometric axis coincided with the 111 direction for

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sample no.2 and with the 100 direction for sample no.3. A resonance method was used for obtaining the experimental data and the results are given in Table 2, showing how the resonant frequency and modulus of elasticity change with the form of treatment. Samples were annealed at 600 °C for 2 hours under vacuum and irradiated for 10 minutes in a thermal neutron flux of 1.5×10^{13} n/sec containing 10% neutrons of 10^3 eV energy. The dependence of the internal friction on the amplitude of bending oscillations is shown graphically. Sample no.2 in the annealed condition had a much larger value of internal friction than sample no.3. After exposure to neutrons the internal friction was reduced to almost a half its previous value for sample no.2 but there was no change in sample no.3. The conclusions drawn are as follows. Exposure of polycrystalline and single crystal copper to neutrons increases the modulus of elasticity and reduces plastic deformation and internal friction. In addition it causes a displacement of the threshold amplitude dependence on internal friction in the direction of large amplitude oscillations. The effect of exposure is removed by

annealing in the range of the temperature of recrystallisation. In the polycrystalline sample the influence of radiation is similar in character to the effect of a small admixture. The nature of the dislocations produced by radiation is discussed in detail.

There are 6 figures and 2 tables.

SUBMITTED: Initially, July 26, 1960.
After revision, June 17, 1961.

29605

S/120/61/000/004/015/034
E202/E592

55800

AUTHOR: Zakharov, A.I.

TITLE: X-ray diffractometer

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1961, 109-113

TEXT: The author describes an X-ray diffractometer designed primarily for work with polycrystalline samples in the shape of thin plates, but capable also of work with other shapes and single crystals. Very simple adjustment to specimen holder permits this instrument to be used over a very wide temperature range viz. from -196 to +600°C. The geometry of the system is shown in Fig.1. The diffracting surface of the flat sample 1 is coplanar with the horizontal plane, while the X-ray tube 2 and the detecting crystal 4 traverse synchronously in the opposite directions around the axis contained in the plane of the sample. Prior to its entry to the detector, the diffracted beam falls on the bent quartz monochromator 3, which changes the direction of the beam and thus allows this system to be used in the study of radioactive samples. A series of vacuum locks permit changing the sample without stopping the oil diffusion pump. The sample itself is in

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X-ray diffractometer

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E202/E592

tight thermal contact with the thermostat or cryostat and, for high temperature work, these may be replaced by a heater. For Debye-Shearer work the sample may also be rotated. The rotation of the X-ray tube and the monochromator with the scintillation counter arms may be either manual or by means of a synchronous motor geared for three fixed velocities viz. 2; 1 and 0.5 deg/min. The angles of turn of the tube and detector are read from a vernier to 1'. The HV is applied to the cathode of a 3CB-3 (VSV-3) or VSV-6 X-ray tube from a HV transformer by means of a flexible cable. The recording installation has two channels. The main channel registers the diffraction spectrum using a scintillation counter of the type described by B. N. Vasichev, V.A. Il'ina, V.K.Latyshev and Yu.S. Pliskin (Ref.1: PTE, 1960, No.2, 51). The scintillations are registered by two photomultipliers which are followed by a coincidence circuit and a single channel differential amplitude analyser which rejects all the impulses with amplitudes which are not derived from the characteristic radiation of the target (e.g. cosmic rays, radioactivity, secondaries). The intensity of the selected impulses is evaluated and either read directly or

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X-ray diffractometer

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E202/E592

registered continuously and recorded graphically. The second (subsidiary) channel registers the stability of the primary beam. The latter is made to pass through a thin Al foil 8, which scatters some of the beam and some of this scattered radiation enters a G.M. counter. Any variations in the intensity of the primary beam are accompanied by a proportional variation in the intensity of the scattered beam reaching the counter, which in turn may be regulated and registered, e.g. by feeding the suitably amplified output to the stabiliser of the anode current of the X-ray tube. In the particular design quoted, the anode current stabilisation is achieved by varying the heater voltage on the cathode of the X-ray tube. Details of such a circuit are given in the paper of M. A. Blokhin, I. V. Busler, O.P. Kramarov and I. P. Chernyavskaya (Ref.2: PTE, 1959, No.1, 106). The author does not give detailed performance figures of the diffractometer, but two contrasting examples are quoted: one showing the heights of the intensity peaks of (0002) line of thallium at -196 and +20°C, and the other illustrating the intensity curve due to the same line over a range covering the transformation from the (α)Tl phase → (β)Tl. There are 5 figures and 2 Soviet references.

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X-ray diffractometer

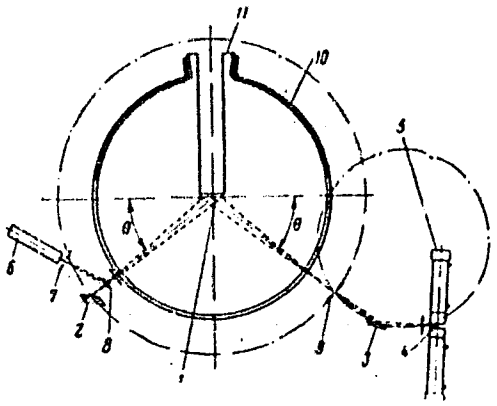
S/120/61/000/004/015/034
E202/E592

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Inatitute of Ferrous Metallurgy)

SUBMITTED: October 21, 1960

Fig.1. Legend. Geometry of the diffractometer.

1 - sample;
2 - X-ray tube;
3 - monochromator;
4 - scintillator (detector)NaI(Tl) crystal;
5 - photomultiplier;
6 - G.M. tube;
7,9 - collimators;
8 - Al foil;
10 - camera;
11 - thermostat.



Card 4/4

ZAKHAROV, A. I.

PHASE I BOOK EXPLOITATION SOV/6176

Konobeyevskiy, S. T., Corresponding Member, Academy of Sciences USSR, Resp. Ed.

Deystviye yadernykh izlucheniy na materialy (The Effect of Nuclear Radiation on Materials). Moscow, Izd-vo AN SSSR, 1962. 383 p. Errata slip inserted. 4000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk; Otdeleniye fiziko-matematicheskikh nauk.

Resp. Ed.: S. T. Konobeyevskiy; Deputy Resp. Ed.: S. A. Adasinskiy; Editorial Board: P. L. Gruzin, G. V. Kurdyumov, B. M. Levitskiy, V. S. Lyashenko (Deceased), Yu. A. Martynyuk, Yu. I. Pokrovskiy, and N. F. Pravdyuk; Ed. of Publishing House: M. G. Makarenko; Tech. Eds: T. V. Polyakova and I. N. Dorokhina.

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9C

SOV/5176

The Effect of Nuclear Radiation (Cont.)

PURPOSE: This book is intended for personnel concerned with nuclear materials.

COVERAGE: This is a collection of papers presented at the Moscow Conference on the Effect of Nuclear Radiation on Materials, held December 6-10, 1960. The material reflects certain trends in the work being conducted in the Soviet scientific research orginization. Some of the papers are devoted to the experimental study of the effect of neutron irradiation on reactor materials (steel, ferrous alloys, molybdenum, avial, graphite, and nichromes). Others deal with the theory of neutron irradiation effects (physico-chemical transformations, relaxation of internal stresses, internal friction) and changes in the structure and properties of various crystals. Special attention is given to the effect of intense γ-radiation on the electrical, magnetic, and optical properties of metals, dielectrics, and semiconductors.

Card 2/14

Pravdyuk, N. F., Yu. I. Pokrovskiy, and V. I. Vikhrov. Effect of Neutron Irradiation on Internal Friction in Mono- and Polycrystals of Zinc 235

Zakharov, A. I. Effect of Neutron Irradiation and Plastic Deformation on Young's Modulus and Internal Friction 242

Konobeyevskiy, S. T., and F. P. Butra. Radiographic Effects in Neutron-Irradiated Crystals 251

Kolontsova, Ye. V. Radiation and Deformation Disturbances in Crystals 257

Telegina, I. V., Ye. V. Kolontsova and V. V. Zubenko. Radiation Disturbances in Crystals of Lithium Fluoride 264

Andronikashvili, E. L., N. G. Politov, and L. F. Vorozheykina. Effect of Lattice Disturbances on Mechanical and Optical Properties of Potassium Chloride Crystals 268

L 8562-66 EPF(n)-2/T/A(b)/EWT(m)/T/EWP(b)/EWP(w)/EWP(t)

AUTHOR: Zakharov, A. I.

ORG: none

TITLE: The effect of neutron irradiation and plastic deformation on the elastic modulus and internal friction

SOURCE: Soveshchaniye po probleme Deystviye yadernykh izlucheniy na materialy

242-250

TOPIC TAGS: copper, copper irradiation, neutron irradiation, copper plastic [illegible]

ABSTRACT: Machined specimens of [illegible] copper and copper single crystals with [illegible]

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L 8567-66

ACC NR: AT5023803

by about 5 times, and subsequent irradiation for 10 min at 50C decreased this value of the internal friction by about one half. An increase in the vibration

plastic deformation on the elastic modulus and internal friction can be explained by

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ACC NR: AT5023803

pinning of dislocations by radiation defects. A similar effect of large plastic deformation results from the dislocation density increasing to the extent that

SUB CODE: MM, IS SUBM DATE: [illegible] ORIG REF: 002 OTH REF: 012

jw

Card 3/3

86789

S/142/60/000/003/002/017
E192/E482

9,4310 (also 1143)

AUTHOR: Zakharov, A.I.

TITLE: Equivalent Circuit of a Spacistor Amplifier

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1960, No.3, pp.309-318

TEXT: The analysis given in this article represents a continuation of the author's earlier work (Ref.2). The idealized model developed by the author is employed and it is assumed that the expressions for the parameters μ (low frequency voltage amplification coefficient) and R_i (low frequency internal impedance which does not take into account the resistance of the electrode material) are known (Ref.2). Various feedback currents and leakages are neglected and only the injection of the carriers is taken into account. It is assumed that the system operates linearly, that is very small sinusoidal signals are considered. The velocity of the carriers is assumed to be constant, so that the signal of the conduction current is produced by the movement of a small quantity of additionally injected carriers. The emitter current component due to the displacement current is

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Equivalent Circuit of a Spacistor Amplifier

expressed by

$$I_{cm.\Phi} = - \alpha I = - \frac{i\omega \Phi_{\Phi} e}{4} \qquad (1)$$

where Φ_{Φ} is the flux of the electric field vector entering the emitter and α is a coefficient determining the portion of the emitter current which is produced by the displacement current. The collector current is determined by the injection current during time interval from $t - \tau$ to t, where τ is the transit time of the carriers through the depletion layer. This current is expressed by

$$I_K(t) = - \frac{1}{\tau} \int_0^{\tau} I(t - \vartheta) d\vartheta \qquad (2)$$

The collector current can also be represented as a difference between the injection current I and a quantity βI. The