L 8581-65 EWT(m) DIAAP/AFWL
ACCESSION NR: AP4048496 S/0120/64/000/004/0056/0059

AUTHOR: Budanov, Yu. A.; Dzhelepov, V. P.; Ivanov, V. G.; Lomakin, Yu. F.; Flyagin, V. B.; Shlyapnikov, P. V.

TITLE: Hydrogasdynamic computation of a mechanism for variation of the pressure in a large bubble chamber

SOURCE: Pribory* i tekhnika eksperimenta, no. 4, 1964, 56-59

TOPIC TAGS: hydrogasdynamic computation, bubble chamber, pressure variation mechanism, construction parameter, pneumonic device

Abstract: The article presents a hydrogasdynamic method for computing the basic parameters of construction of a bubble chamber and the mechanism for variation of the pressure, which was used during development of the meter bubble chamber at the Joint Institute of Nuclear Research. The mathemati-

wires, one of which shows the detailed construction of the beginning for

variation of pressure.

Card 1/2

L 6581-65
ACCESSION NR: AP4048496

ASSOCIATION: Ob"yedinennyy institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 04Aug63 ENCL: 00 SUB CODE: NP, MA

NO REF SOV: 012 OTHER: 007 JPRS

Card 2/2

BUDAGOV, Yu.A.; DZHELEPOV, V.P.; IVANOV, V.G.; LOMAKIN, Yu.F.;
FLYAGIN, V.B.; SHLYAPNIKOV, P.V.

Hydrodynamics of bubble chambers. Prib. i tekh. eksp.
9 no.2:46-50 Mr-Ap'64. (MIRA 17:5)

1. Ob"yedinennyy institut yadernykh issledovaniy.

L 05690-67 EWP(k)/EWT(m)/T/EWP(v)/EWP(t)/ETI IJP(c) JD/HM

ACC NR: AP6015503 (N) SOURCE CODE: UR/0181/66/008/005/1636/1639

51
49
B

AUTHOR: Ivanov, V. G.

ORG: none

TITLE: Recombination in high resistance silicon 27

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1636-1639

TOPIC TAGS: carrier lifetime, forbidden zone, recombination reaction, silicon single crystal

ABSTRACT: The lifetime of carriers in silicon single crystals with a resistivity from $6 \cdot 10^3$ to $4 \cdot 10^4$ ohm·cm was studied by measurements of the relaxation of photoconducting in an apparatus similar to that described by S. M. Ryvkin (1963). The samples (whose temperature varied from 90 to 520°K) were parallelpipeds of p-silicon of dimension ~10×10×15 mm; resistive contacts were formed by vacuum brazing of a vapor deposited aluminum coating. An equilibrium generation volume of carriers was obtained by passing light through a 1 cm thick silicon filter at room temperature. Under this method of measurement, the surface is found to have a negligible effect on the volume lifetime of carriers. Since the concentration of recombination centers in the samples was found to be slight, the relaxation time constant of photoconductivity τ is the same as the lifetime τ_n of electrons. The data for the dependence of τ_n on temperature and

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L 05690-67

ACC NR: AP6015503

2

injection level γ at high temperatures indicate that recombination occurs through multicharged centers. The temperature dependence of the time constant in a p-type semiconductor (in the case of doubly charged centers calculated using an activation energy of 0.41 ev) agrees with the results for the majority of samples. Furthermore, using the results of J. Okada (*J. Phys. Soc. Japan*, 14, 1150, 1959) for the dependence of τ on γ, the data indicate that the recombination level is in the lower half of the forbidden zone and has a donor character in agreement with known data on recombination levels in silicon. Finally, the activation energy E_c-E_s, the concentration σ and the capture cross section of carriers σ_{ns} and σ_{ps} for cohesion levels is determined from the temperature dependence of the lifetime in a region of cohesion by a method devised by S. M. Rivkin, et al (*FTT*, 2, 1966, 1960). The average values for the samples were $E_c-E_s = 0.6$ ev, $\sigma = (1\text{-}3\cdot10^7$ cm^{-3}, $\sigma_{ps} = 10^{-16}$ cm^2, $\sigma_{ns} = 10^{-11}$ cm^2. The unusual values for σ_{ns} and σ_{ps} can be explained by a scheme of transitions of electrons with the participation of several types of multiple cohesion levels. The author thanks V. A. Petrusevich for directing the work and L. G. Paritskiy for valuable comments. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 09Sep65/ ORIG REF: 003/ OTH REF: 004

Card 2/2

ACC NR: AP7001775 SOURCE CODE: UR/0048/66/030/012/1954/1956

AUTHOR: Ivanov, V.G.

ORG: Novgorod State Pedagogic Institute (Novgorodskiy gosudarstvennyy pedagogicheskiy institut)

TITLE: Use of a field emission microscope for investigating a germanium surface /Report Twelfth All-Union Conference on the Physical Fundamentals of Cathode Electronics held at Leningrad, 22 - 26 Oct. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no.12, 1966, 1954-1956

TOPIC TAGS: germanium single crystal, field emission microscope, adsorption, oxygen, oxidation, crystal surface, surface migration

ABSTRACT: This paper reports a continuation of earlier work of the author (Radiotekhnika i elektronika, 10, 576 (1965)) on the purification of the surface of germanium field emitters. The apparatus and experimental technique are described in the earlier paper. The germanium emitter was etched in $5HNO_3:2HF:4CH_3COOH$ as described by F.G.Allen (J. Phys. Chem. Solids, 19, 87, (1961)). The system was pumped down to 10^{-9} mm Hg and the germanium point was purified by the technique of E.C. Cooper and E.W.Müller (Rev. Scient. Instrum., 29, 309 (1958)). Oxygen was provided by a silvered copper wire which had been oxidized in liquid air and mounted in a side tube. The tip of the germanium point was cut on the [110] direction. Several field emission

Card 1/2

ACC NR: AP 7001725

micrographs are presented and discussed. The migration rate of oxides on the clean germanium surface was found to be enhanced by an inverse field and flashing at 100 to 150° C. Heating to 350° C drastically reduced the oxide migration rates and heating to 673° stabilized the oxide films, which could not subsequently be removed even by heating nearly to the melting point with application of a field. Introduction of oxygen at 4×10^{-8} mm Hg led to rapid covering of the germanium point by oxygen and decrease in the brightness of the image except at certain locations marking clusters of oxides. Adsorption of oxygen took place as rapidly at liquid air temperature as at room temperature. A lattice defect, marked by a chain of oxides on (113), (011), (110), and (131) faces, was noted on one of the germanium points. Before the point was cleaned the defect was marked by a dark band on the field emission image, indicating enhanced etching; selective oxidation on the defect took place after removal of about 100 atomic layers in the desorption field and flashing at 400-450°C. The author thanks T.A.Smorodina for suggesting the topic and I.L. Sokolskaya for discussing the work. Orig. art. has: 2 figures.

SUB CODE: 20 SUBM DATE: None ORIG. REF: 003 OTH REF: 015

Card 2/2

ROZENBERG, D.A.; IVANOV, V.G.

Practices in constructing precast reinforced concrete water reservoirs. Prom. stroi. 42 no.5:23-25 '65. (MIRA 18:8)

1. Trest "Dneprospetsstroy".

IVANOV, V.S.; MIRIN, P.V.

Determining the intake capacity of injection wells in the Dolina field, Neft. i gaz.prom. no.3:49-51 Ja-Mr '58. (MIRA 13:8)

IVANOV, V.G.

Proposals of railroaders. Put' i put.khoz. 9 no.6:27 '65.
(MIRA 18:6)

1. Zamestitel' nachal'nika Sumskoy distantsii puti, Yuzhnoy dorogi.

IVANOV, V.G., inzh.

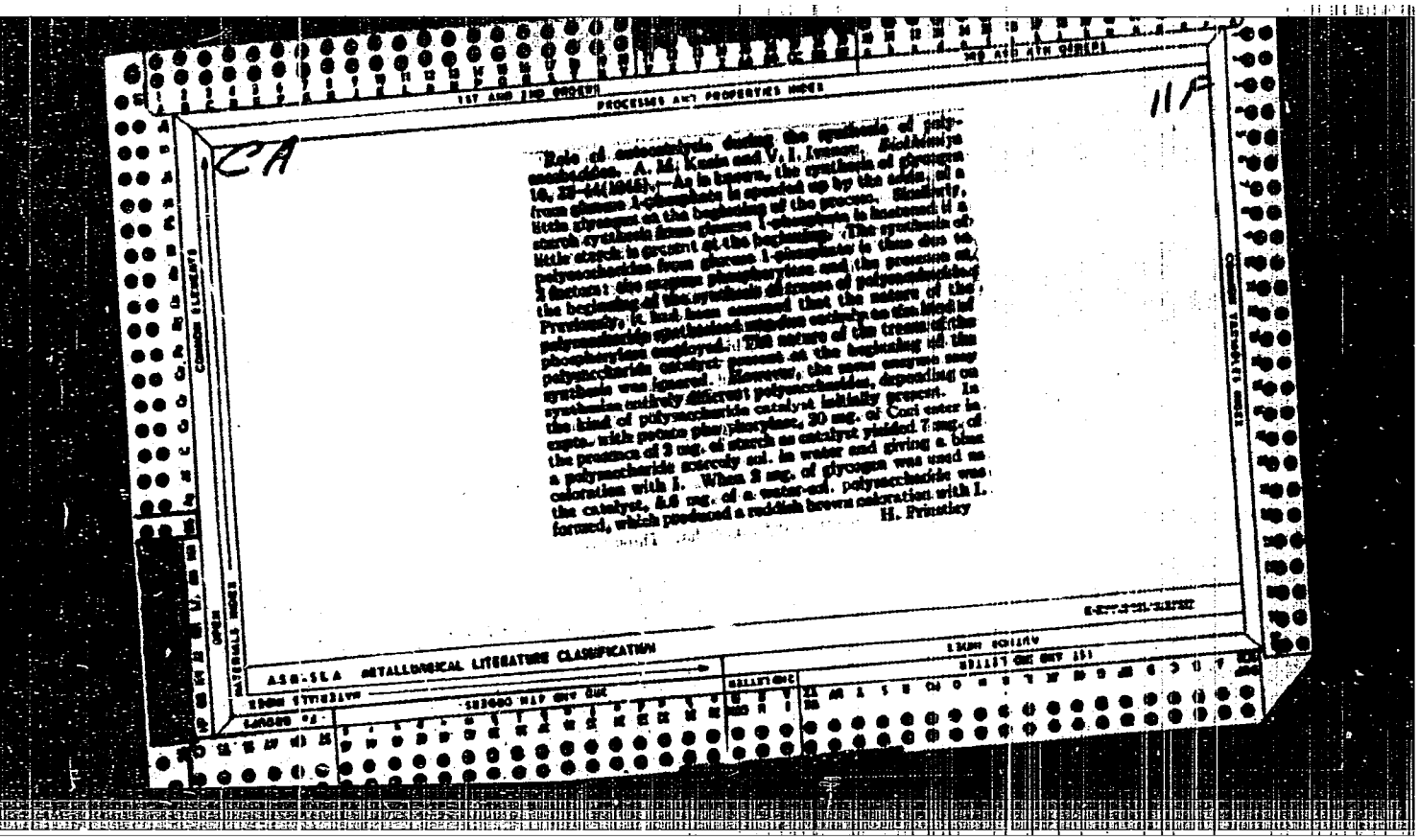
Improvement of the ZhR-3 transmitter. Avtom., telem. i sviaz. 9 no.1:29-30 Ja '65. (MIRA 18:2)

1. Dorozhnaya radiolaboratoriya Sverdlovskoy dorogi.

IVANOV, V.I.

Manufacture of germanium emitters and derivation of an autoelectron image of pure germanium. Radiotekh. i elektron. 10 no.3:576-578 Mr '65. (MIRA 18:3)

1. Novgorodskiy pedagogicheskiy institut.

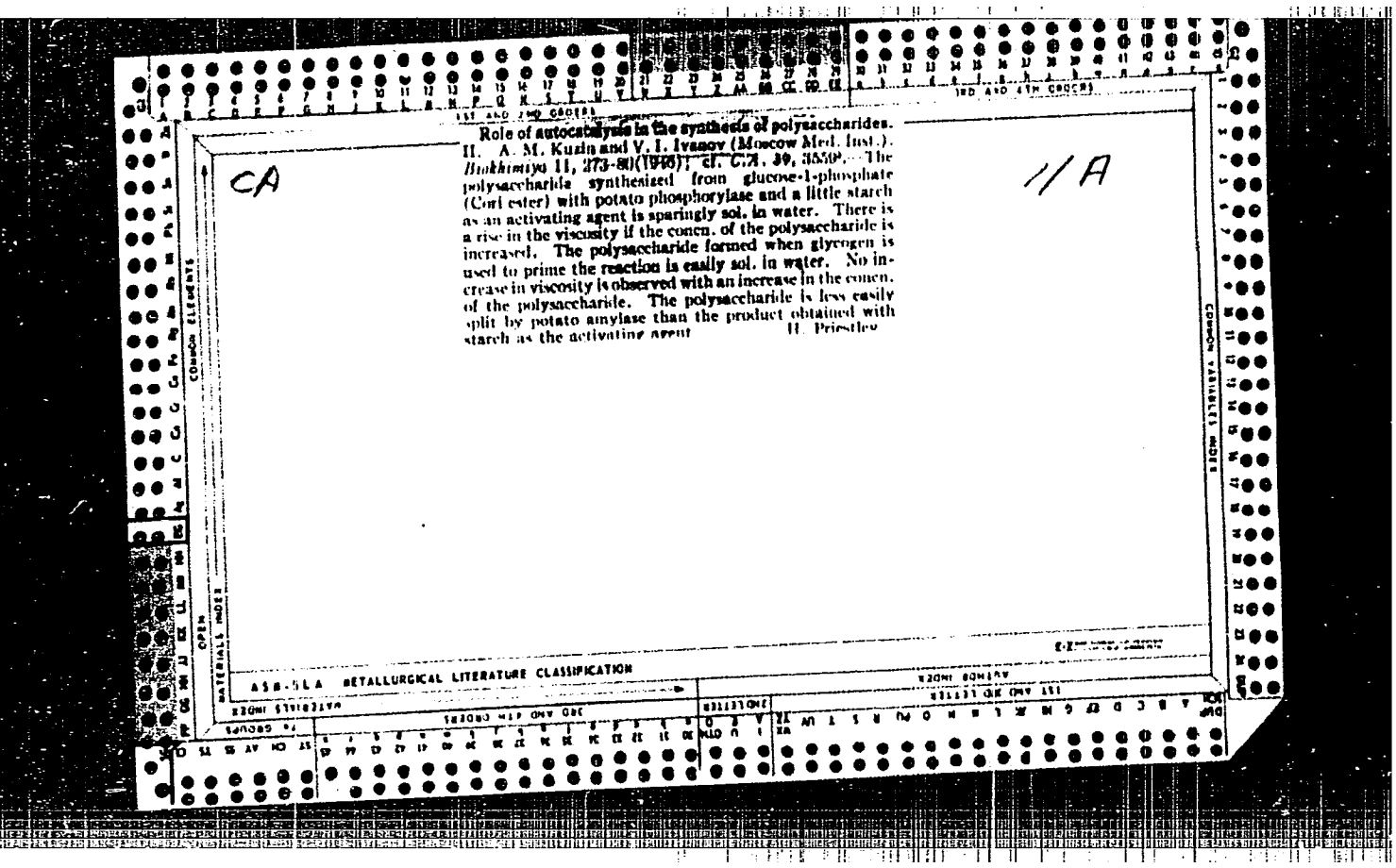


CA

11F

Role of autocatalysis during the synthesis of polysaccharides. A. M. Kuzin and V. I. Ivanov. Biokhimiya 19, 233-44(1954).—As is known, the synthesis of glycogen from glucose 1-phosphate is speeded up by the addn. of a little glycogen at the beginning of the process. Similarly, starch synthesis from glucose 1-phosphate is increased if a little starch is present at the beginning. The synthesis of polysaccharides from glucose 1-phosphate is thus due to 2 factors: the enzyme phosphorylase and the presence at the beginning of the synthesis of traces of polysaccharides. Previously, it had been assumed that the nature of the polysaccharide synthesized depended entirely on the kind of phosphorylase employed. The nature of the traces of the polysaccharide catalyst present at the beginning of the synthesis was ignored. However, the same enzyme may synthesize entirely different polysaccharides, depending on the kind of polysaccharide catalyst initially present. In expts. with potato phosphorylase, 20 mg. of Cori ester in the presence of 2 mg. of starch as catalyst yielded 7 mg. of a polysaccharide scarcely sol. in water and giving a blue coloration with I. When 2 mg. of glycogen was used as the catalyst, 5.6 mg. of a water-sol. polysaccharide was formed, which produced a reddish brown coloration with I.

H. Priestley



CA

11A

Role of autocatalysis in the synthesis of polysaccharides. II. A. M. Kuzin and V. I. Ivanov (Moscow Med. Inst.). *Biokhimiya* 11, 273-80(1946); cf. C.A. 39, 3550. The polysaccharide synthesized from glucose-1-phosphate (Cori ester) with potato phosphorylase and a little starch as an activating agent is sparingly sol. in water. There is a rise in the viscosity if the concn. of the polysaccharide is increased. The polysaccharide formed when glycogen is used to prime the reaction is easily sol. in water. No increase in viscosity is observed with an increase in the concn. of the polysaccharide. The polysaccharide is less easily split by potato amylase than the product obtained with starch as the activating agent. H. Priestley

ASM-MLA METALLURGICAL LITERATURE CLASSIFICATION

IVANOV, V.I.

[illegible] of Clostridium perfringens and some of its [illegible] V. I. Ivanov and A. V. Lobanova (Biochem. Lab., [illegible] and Vaccine Control Inst., Ministry Health U.S.S.R., Moscow). *Biokhimiya* 19, 257-60(1954).—The [illegible] of *C. perfringens* in bacterial suspension is [illegible] than in exts. and has a zone of optimal activity at pH 7-8. Ions of Mg and of Co augment the [illegible] in exts. of *C. perfringens*. Mg under similar conditions has no effect on the activity of the enzyme, while Co depresses it. B. S. Levine

(1)

IVANOV, V.I.

USSR.

Use of a bacterial standard in applying the thymol turbidity test to the blood of donors. V. I. Ivanov, S. [illegible] [illegible] Khait, and V. M. Vafeshkina. *Terap. Arkh.* [illegible] 5(1954).—One hundred million bacteria/cc. was taken as unit of turbidity. The usual procedure is carried out and the turbidity is matched with multiples of the bacterial unit. Matching with bacterial suspensions is easier than with suspensions of $BaSO_4$ owing to greater similarity between thymol and bacterial turbidities. Donors whose blood shows more than 4 units should not be used in view of probable hepatic involvement. A. Mirkin

IVANOV, V.F.

The properties of phosphorylase and of amylase of Clostridium perfringens. A. K. Volchok, V. I. Ivanov, and A. V. Lobanova (Ministry Health U.S.S.R., Moscow). *Biokhimiya* 20, 522–6(1955).—*C. perfringens* strain SK-12 was used. Phosphorylase and amylase of *C. perfringens* sharply rises intra- and extracellularly when the cells are grown in a medium contg. polysaccharides as the source of carbohydrates. Phosphorylase of *C. perfringens* can be distinguished from phosphorylase of muscles and of potatoes in that it is able to split maltose. B. S. Levine

IVANOV, V. I.

USSR

The effect of glutamic acid upon phosphorus compounds of the brains. V. I. Ivanov and P. A. Rozenberg. *Byull. Eksptl. Biol. i Med.* 39, No. 2, 33–5(1955).—Glutamic acid has a stimulating effect upon adenosinetriphosphate (ATP) in the first few hrs. after its administration. The effect is decreased at the end of 24 hrs. Repeated administrations of glutamic acid increased again the amt. of ATP during the first 3 days but declined beyond this period, remaining however higher than that of control animals. A. S. Mirkin

STEPANOV, B.A.; IVANOV, V.I.; GOLOMZIK, A.I.; NAGIRNYAK, F.I.

Microbiological leaching of sulfide ores. Fiz.-tekh. probl. razrab. pol. iskop. no.4:118-121 '65. (MIRA 19:1)

1. Politekhnicheskiy institut, Tashkent. Submitted March 2, 1965.

GOLOVLIK, A.I.; IVANOV, V.I.

Investigating the use of sulfur bacteria in hydrometallurgy. Izv. vys. ucheb. zav.; tsvet. met. 8 no.5:33-42 '65. (MIRA 18:10)

1. Ural'skiy nauchno-issledovatel'skiy i proyektnyy institut mekhanicheskoy obrabotki poleznykh iskopayemykh.

GOLOMZIK, A.I.; IVANOV, V.I.

Adaptation of Thiobacillus ferroxidans to increased concentrations of hydrogen and iron ions. Mikrobiologiia 34 no.3:465-468 My-Je '65. (MIRA 18:11)

1. Institut biologii Ural'skogo filiala AN SSSR, Sverdlovsk.

IVANOV, V.I.; LYALIKOVA, N.N.

Taxonomy of iron-oxidizing Thiobacilli. Mikrobiologiia 31 no.3:468-469 My-Je '62. (MIRA 15:12)

1. Institut mikrobiologii AN SSSR i Ural'skoye otdeleniye Vsesoyuznogo nauchno-issledovatel'skogo geologo-razvedochnogo instituta.

(BACTERIA, SULFUR)

IVANOV, V.I.; NAGIRNYAK, F.I.

Accelerating the leaching of copper sulfide minerals by sulfur bacteria. TSvet.met. 35 no.8:30-36 Ag '62. (MIRA 15:8)
(Copper sulfide) (Leaching) (Bacteria, Sulfur)

IVANOV, V.I.

Role of thiobacteria in the leaching of sulfide ores. Dokl. AN SSSR 146 no.2:447-449 S '62. (MIRA 15:9)

1. Institut biologii Ural'skogo filiala AN SSSR i Ural'skiy institut mekhanicheskoy obrabotki i obogashcheniya poleznykh iskopayemykh. Predstavleno akademikom A.L. Kursanovym.
(BACTERIA, SULFUR) (COVELLIN) (PYRITES)

IVANOV, V. I.

PA 3/49T77

USSR/Medicine - Carnosine Mar/Apr 48
Medicine - Carbohydrates

"Effect of Carnosine on the Carbohydrate-Phosphorus Exchange of Muscles," S. Ye. Severin, V. I. Ivanov, N. P. Karuzina, R. Ya. Yudelovich, Chair of Med Chem, Moscow Med Inst, MZ RSFSR, 11 pp

"Biokhimiya" Vol XIII, No 2

Reports series of experiments. Carnosine, when added to suspension of frog's muscle in phosphate buffer solution, accelerates esterification of inorganic phosphate and whole process of glycogenolysis. Describes action of histidine, anserine and β-analin. Submitted 1 Aug 47.

3/49T77

Ivanov, V.I.

USSR / Microbiology. Medical and Veterinary Microbiology. F-5

Abs Jour: Referat Zh.-Biol., No 6, 25 March, 1957, 21975

Author : Ivanov, V.I.
Inst :
Title : Typhoid and Dysentery Bacteria Antigens.

Orig Pub: Uspekhi sovrem. biologiy, 1954, 37, No 1, 114-121

Abstract: A review of methods for obtaining total antigens (extractions by trichloracetic acid, hydrochloric acid, by tryptic digestion, extraction by ethylene-glycol, etc.). As complete antigens are purified, along with an increase of their immunogenic activity, their toxicity also is increased. Methods of detoxication of complete antigens are stated: action of formalin, iodic acid, ultra-violet rays, oxidation, acetylation, etc. The author states the best results in detoxication were obtained by partial hydrolysis of antigens; these preparations had 20 times less toxicity and preserved high immunogenesis.

Card : 1/1

Method for obtaining nontoxic antigens. L. A. Gints, and S. I. Chernyshinkee. Zhur. [illegible] Khim. 6, [illegible] (1953); Referat. Zhur., Khim. 1954, No. 13076.—The complete antigen extd. with trichloroacetic acid from the typhoid bacillus was acetylated with Ac_2O for 1.5-24 hrs. This caused the sepn. of the antigen into 2 parts, one pptg. and the other remaining in soln. The N content decreased from 3.5 to 2.8, reducible substances from 45 to 32, and P decreased. The toxicity decreased to 1/n and less while retaining good immunogenicity, particularly the part which pptd. Acetylation for 48 hrs. destroyed the toxic as well as the immunizing property of the antigen. Phosphorylation with $POCl_3$ in pyridine did not lower the toxicity. Partial hydrolysis of antigen caused a decrease in the reducible substances from 45 to 34% and phosphate decreased. The toxicity of the prepns. was greatly lowered thereby, while the immunogenicity was retained at the same level as before. M. Hoch

IVANOV, V. I.

Biological and chemical properties of complete antigen extracted from the media of typhus cultures and subjected to detoxication. L. A. Gintsie and V. I. Ivanov. *Zh. Mikrobiol. Epidemiol. i Immunobiol.*, 1954, No. 6, 33-8.—Immunogenic properties of antigens were assayed by detg the minimal immunizing dose which, after 3 applications insured survival of 50% of mice which were infected with lethal doses of typhus culture Ty.-0116. Animals were observed for 72 hrs. Complete antigens were prepd. from culture media by pptn. with trichloroacetic acid. Acetylation and partial hydrolysis of the antigens resulted in a 2-fold decrease in its toxicity. Passive and active immunizing activity was decreased by acetylation of the antigen; partial hydrolysis, on the other hand, had little, if any, effect on the immunizing properties of the antigen.

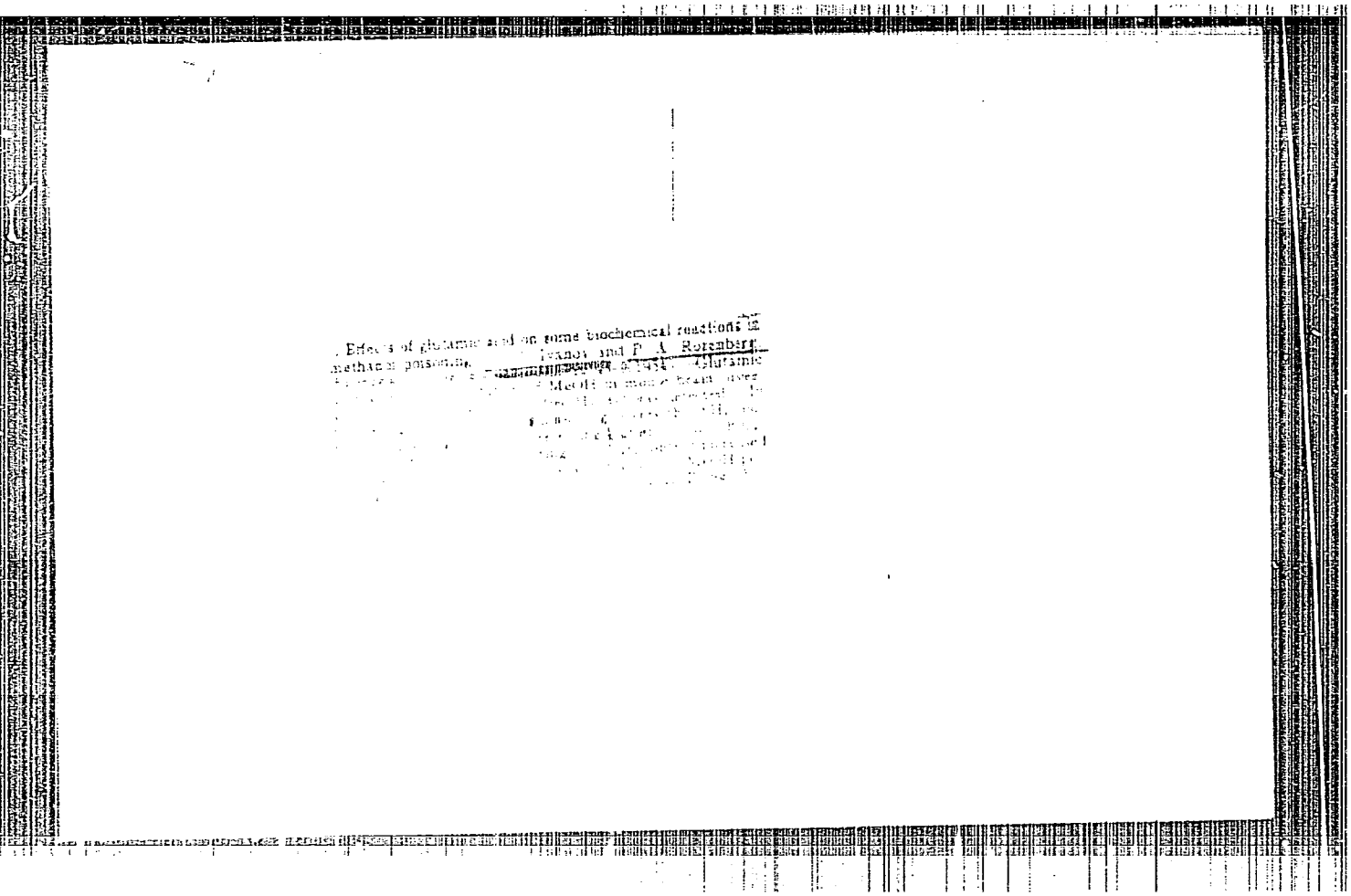
J. A. Stekol

State Control Inst. im. Pasteur, L. A. Tarasevich

IVANOV, V.I.

Distribution of labeled antigens in the animal organism. V. I. Ivanov, M. M. Prisckov, S. I. Chernyakhover, and S. V. Lesnyak. *Zhur. Mikrobiol., Epidemiol. i Immunobiol.* 1954, No. 11, 71-6.—Antigens of typhus bacterin labeled with P^{32} were prepd. by growing the bacteria on medium contg. radio-P, extn. of the antigen from the cells by trichloroacetic acid, dialysis to remove free radiophosphate, and pptn. of the labeled antigens with EtOH. Antigens were injected intraperitoneally, subcutaneously, or orally into white mice. Animals were sacrificed at intervals following injection of the labeled antigen extending to 8 days, and various organs and blood were assayed for P^{32}. Intraperitoneally injected antigen accumulates principally in the liver (about 30% in the first day), with much lower amts. in other organs. None was found in the brain. On subcutaneous injection the distribution of P^{32} was similar, but in much lower concns. in all organs. Only 1–1.5% of total P^{32} administered orally was found in all organs combined. When radiophosphate was injected intraperitoneally, its distribution in various organs was different from that observed with antigen-P^{32} administered in the same manner.

J. A. Stekol



IVANOV, V.I.; VEDESHKINA, V.M.; GAVRILENKOVA, V.Yu.

Distribution of tagged antigens in animals. Zhur.mikrobiol.epid. i immun. 27 no.5:30 My '56. (MLRA 9:8)

1. Iz Gosudarstvennogo kontrol'nogo instituta imeni Tarasevicha.
(ANTIGENS AND ANTIBODIES)

IVANOV, V.I.; PELEVINA, M.V.; GAVRILENKOVA, V.Yu.

Chemical and biological properties of antigens of Vibrio comma.
Zhur. mikrobiol., epidem. i immun. 27 no.3:65-69 Mr '56.
(MLRA 9:7)

1. Iz Gosudarstvennogo kontrol'nogo instituta syvorotok i vaktsin imeni Tarasevicha.
(VIBRIO COMMA, immunology,
antigens (Rus))
(ANTIGENS AND ANTIBODIES,
Vibrio comma antigens (Rus))

USSR/Microbiology - General Microbiology. F-1

Abs Jour : Ref Zhur - Biol., No 10, 1958, 43173

Author : Ivanov, V.I., Volchok. A.K., Lobanova, A.V.
Inst : -
Title : Synthesis and Some Properties of Polysaccharides of B. Oedematiens and B. Perfringens.

Orig Pub : Biokhimiya, 1956, 21, No 6, 760-763.

Abstract : When grown on media containing glucose and maltose, Bacillus oedematiens synthesizes an intracellular polysaccharide composed of low- and high-molecular dextrins. B. perfringens forms a similar polysaccharide only on media with dextrins, though not always. A synthesis of starch-like polysaccharides by phosphorylases from extracts of B. oedematiens and B. perfringens is activated by starch and maltose. The synthesis is slowest of all when the initial culture is cultivated on media containing glucose. When cultivated on a medium containing maltose,

Card 1/2

State Control Inst. Vaccines & Sera.

IVANOV, V.I.

EXCERPTA MEDICA Sec.14 Vol.11/7 Radiology Jul 57.

1192. IVANOV V.I., PRYADKINA M.D., and VEDESHKINA V.M. Lab. of Dangerous Infect. and Biochem. Lab., Tarasevich State Inst. for Control of Vaccines and Sera, Moscow. * A new strain of B. pestis E.V. 76 obtained under the influence of radioactive irradiation (Russian text) MED. RADIOL. 1956, 2 (52-56) Tables 4 Illus. 4

Avirulent strains of B. pestis were subjected to the activity of the radioactive isotopes of those elements which are found in the bacterial cell itself. The B. pestis E.V. 76 usually used for the production of vaccine was grown on culture media containing radioactive phosphorus (P^{32}) of varying activity, from 0.6 μc./ml. to 20 μc./ml. From the medium containing 2.5 μc./ml. a mutation of B. pestis was obtained different from the original strain in morphology, biochemical characteristics and metabolic rate. This new achromogenic strain of B. pestis E.V. 76 is constant, its newly acquired features remaining unchanged after 15 months of culture and passage through experimental animals. Its antigenic structure is analogous to that of the original strain. The stability of the changes thus induced is also shown by the absence of any regression of these changes after culture on selective media. References 17.

Nevskaya - Moscow

Ivanov V.I.

IVANOV, V.I.; PELEVINA, M.V.; GAVRILENKOVA, V.Yu.

Chemical and biological properties of O-antigens in Vibrio comma [with summary in English]. Vopmed.khim. 3 no.4:269-272 Jl-Ag '57. (MIRA 10:11)

1. Gosudarstvennyy kontrol'nyy institut syvorotok i vaktsin Ministerstva zdravookhraneniya SSSR, Moskva.
(VIBRIO COMMA, immunology,
O antigens, chem. & biol. properties (Rus))

IVANOV, V.I.; ROZENBERG, P.A.

Change in the phosphorus content of the following intoxications by various organic solvents [with summary in English]. Vop.med. khim. 4 no.4:274-279 Jl-Ag '58. (MIRA 12:2)

1. Biochemical Laboratory, Institute of Labour Hygiene and Occupational Diseases, Academy of Medical Sciences of the U.S.S.R., Moscow.

(SOLVENTS, toxicity,
eff. on brain & musc. ATP & phosphocreatine (Rus))
(BRAIN, metabolism,
ATP & phosphcreatine, eff. of exper. pois. with solvents (Rus))
(MUSCLES, metabolism
same)
(ADENYLPYROPHOSPHATE, metab.
brain & musc., eff. of exper. pois. with solvents (Rus))
(COENZYMES,
phosphocreatine in brain & musc. in exper. pois. with solvents (Rus))

IVANOV, V. I.

TEBYAKINA, A.Ye., IVANOV, V.I., GAVRILENKOVA, V.Yu.

Effect of antibiotics on antigenic properties of Vibrio comma. [with summary in English]. Antibiotiki 3 no.1:105-110 Ja-F'58 (MIRA 11:5)

1. Gosudarstvennyy kontrol'nyy institut syvorotok i vaktsin imeni L.A. Tarasevicha.

(ANTIBIOTICS, effects on Vibrio comman antigenic properties (Rus))
(VIBRIO COMMA, effect of drugs on antibiotics, on antigenic properties (Rus))

IVANOV, V.I.; CHERNYAKHOVER, S.I.

Effect of hexose phosphates on the growth and certain metabolic reactions in dysentery bacteria and Escherichia coli. Biokhimiia 24 no.6:1020-1022 N-D '59. (MIRA 13:5)

1. Biochemical Laboratory, the State Control Institute of Medical Biological Preparations, Moscow.
(HEXOSES pharmacol.)
(SHIGELLA pharmacol.)
(ESCHERICHIA COLI pharmacol.)

IVANOV, V.I.

Relation of carbohydrate-phosphate metabolism to the formation of α-toxin in Bacillus perfringens. Vop.med.khim. 5 no.4:254-258 Jl-Ag '59. (MIRA 12:12)

1. Biokhimicheskaya laboratoriya Gosudarstvennogo kontrol'nogo instituta syvorotok i vaktsin imeni Tarasevicha, Moskva.
(CLOSTRIDIUM PERFRINGENS)
(CARBOHYDRATES metab.)
(PHOSPHATES metab.)

TUMERMAN, L.A.; ZAVIL'GEL'SKIY, G.B.; IVANOV, V.I.

Mechanism of the phenomenon of thermoluminescence in chloroplasts.
Biofizika 7 no.1:21-30 '62. (MIRA 15:5)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR, Moskva.
(CHROMATOPHORES) (LUMINESCENCE)

L 13409-63

ACCESSION NR: AP3000525 S/0020/63/150/002/0399/0402

AUTHOR: Krivisky, A. S.; Zavil'gel'skiy, G. B.; Ivanov, V. I.; Ly*senko, A. M.

TITLE: Kinetics of the mutagenic action of UV rays on extracellular S sub D bacteriophages of Escherichia coli

SOURCE: AN SSSR. Doklady, v. 150, no. 2, 1963, 399-402

TOPIC TAGS: kinetics, mutation, UV irradiation, Escherichia coli, S sub D bacteriophage

ABSTRACT: The authors studied the relationship between the mutation frequency of the phage and the dose of UV irradiation in vitro. Broth containing S sub D phage was diluted with 0.85% NaCl to a concentration of less than 5 x 10 sup 7 phages/ml. At these concentrations the screening effect was negligible. Phage was first adsorbed on bacteria or directly inoculated into Petri dishes by the two-layer method with E. coli, strain SK, and incubated 18-20 hours in the dark. Phage was exposed to UV radiation at room temperature with continuous rocking. A BUV-15 lamp, omitting about 80% monochromatic light with Lambda = 2537 angstroms was used as the source. The intensity was about 1 erg per mm sup 2 x sec. Doses were measured with a UV dosimeter. After irradiation the number of sterile plaques and mutant sterile plaques were counted. To explain the decrease in the percentage

Card 1/2

L 13409-63

ACCESSION NR: AP3000525

of mutations obtained with large doses of UV radiation, the authors advance the working hypothesis that the structure of DNA in phage particles is changed to a more radiation-resistant form, both with respect to the lethal and mutagenic action of UV rays. These results indicate that the characteristic, non-linear relationship between the mutation produced and the dose of UV radiation is the result of some primary mechanism of the reaction of DNA to UV radiation and is not related to an indirect effect of radiation on the cellular components and metabolism. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Institut radiatsionnoy i fiziko-khimicheskoy biologii Akademii nauk SSSR (Institute of Radiation and Physico-Chemical Biology, Academy of Sciences, SSSR)

SUBMITTED: 06Dec62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: GO NO REF SOV: 003 OTHER: 017

Card 2/2

POLYANOVSKIY, O.L.; IVANOV, V.I.

Dissociation of aspartic-glutamic transaminase in subunits.
Biokhimiia 29 no.4:728-734 Jl-Ag '64.
(MIRA 18:6)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR, Moskva.

MOROZOV, Yu.V., BAZHULINA, N.P., IVANOV, V.I., KARPEYSKIY, M.Ya., KUKLIN, A.I.

Optic and luminescent properties of vitamin B_6 and its derivatives. Biofizika 10 no.4:595-601 '65. (MIRA 18:8)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR, Moskva.

IVANOV, V.I.; ZAVIL'GEL'SKIY, G.B.; KRIVISKIY, A.S.

Protective versene action against injury of some Escherichia coli phages by ultraviolet rays. Radiobiologiia 5 no.1:112-118 '65. (MIRA 18:3)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii, Moskva.

ZAVIL'GEL'SKIY, G.B.; KRIVISKIY, A.S.; IVANOV, V.I.

Inactivating and mutagenic effect of ultraviolet rays on the extracellular bacteriophage. Izv. AN SSSR. Ser. biol. no.5: 700-713 S-O '65. (MIRA 18:9)

1. Institut radiatsionnoy i fiziko-khimicheskiy biologii AN SSSR.

IVANOV, V.I.; MINCHENKOVA, L.Ye.

Effect of metal ions of variable valency on the thermal DNA denaturation. Biokhimiia 30 no.6:1213-12.7 N-D '65.
(MIRA 19:1)

1. Institut molekulyarnoy biologii AN SSSR, Moskva. Submitted March 6, 1965.

IVANOV, V.I.

Role of metals in deoxyrubonucleic acid. Biofizika 10 no.1: 11-16 '65. (MIRA 18:5)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.

L 23781-66 EWT(1)/EWT(m)/T RM/JK

ACC NR: AP6015178 SOURCE CODE: UR/0217/65/010/001/0011/0016

AUTHOR: Ivanov, V. I.

ORG: Physics Faculty, Moscow State University im. M. V. Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Role of metals in deoxyribonucleic acid

SOURCE: Biofizika, v. 10, no. 1, 1965, 11-16

TOPIC TAGS: DNA, bacterial genetics, UV radiation, copper, iron, ascorbic acid, radiation biologic effect

ABSTRACT: A theory is developed according to which Fe^{++} stabilizes double-strand DNA by the formation of coordination compounds, while the presence of Fe^{+++} formed from it by oxidation results in separation of double-strand DNA into single-strand molecules. Bacterial mutations under the action of Cu ions or ultraviolet radiation, which are accompanied by a sharp increase in the G + C/A + T ratio, are explained by assuming that formation of complexes of purines in DNA with Cu^{++} or Fe^{+++} formed by oxidation of Fe^{++} under the action of the radiation produces replacement of AT in double-strand DNA with GC pairs. This is accompanied by disturbances in respiration, because the structure of double-strand DNA is stabilized by GC pairs, and a greater amount of Fe capable of being converted to Fe^{+++} is required to produce separation into single-strand DNA. This mechanism is brought into relation with cancerogenesis. It is pointed out in connection with this that substances such as 2,4-dinitrophenol, which produce disturbances in respiration and modify the Fe^{++}/Fe^{+++} ratio, have a mutagenic and cancerogenic effect. Participation of ascorbic acid in the redox processes involving Fe contained in DNA is postulated. [JPRS]

Card 1/2 UDC: 577.3

SUB CODE: 06 / SUBM DATE: 03Nov63 / ORIG REF: 009 / OTH REF: 014

Card 2/2 PB

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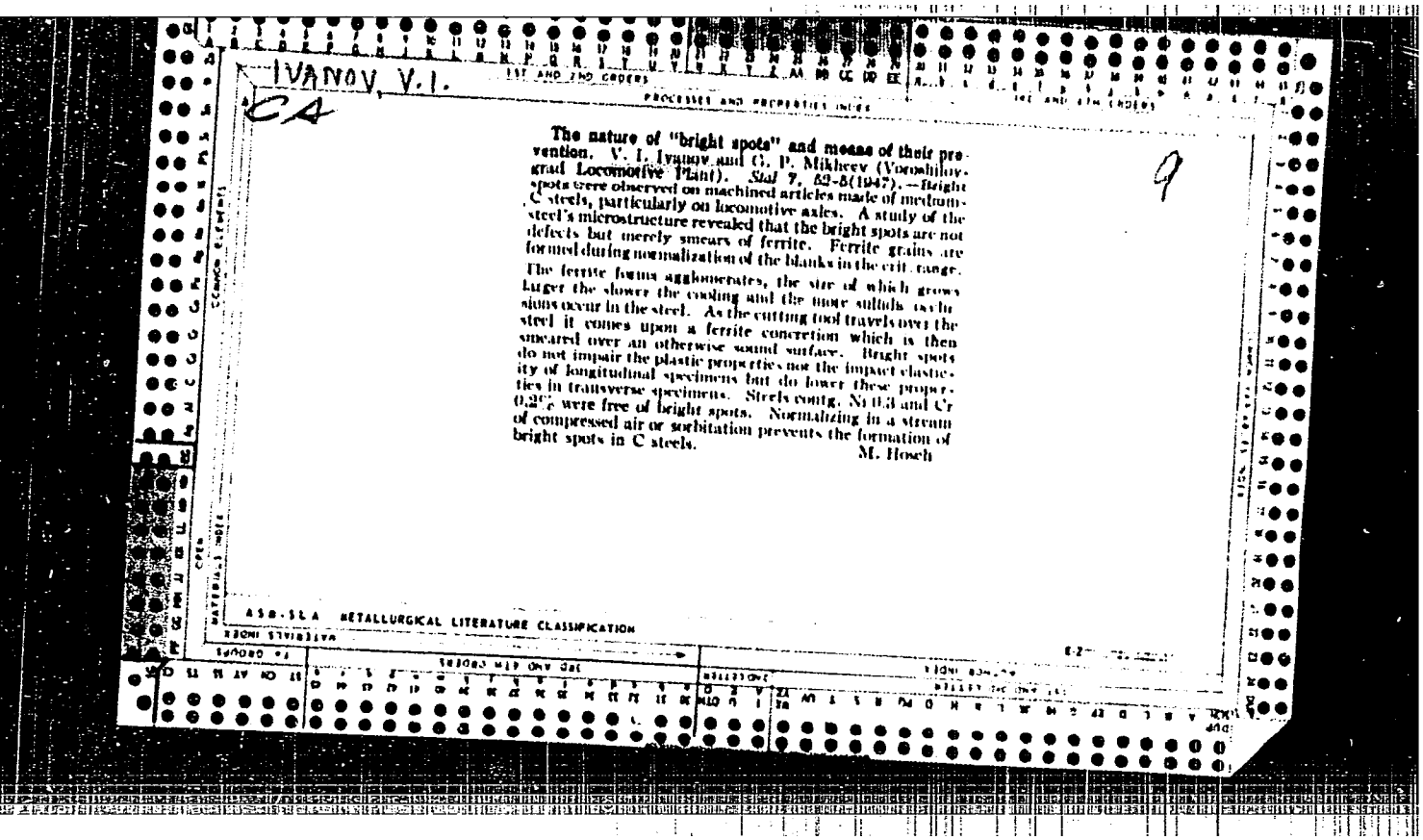

IVANOV, V.I.

CA

9

The nature of "bright spots" and means of their prevention. V. I. Ivanov and G. P. Mikheev (Voroshilovgrad Locomotive Plant). *Stal* 7, 82-8(1947).—Bright spots were observed on machined articles made of medium-C steels, particularly on locomotive axles. A study of the steel's microstructure revealed that the bright spots are not defects but merely smears of ferrite. Ferrite grains are formed during normalization of the blanks in the crit. range. The ferrite forms agglomerates, the size of which grows larger the slower the cooling and the more sulfids occlusions occur in the steel. As the cutting tool travels over the steel it comes upon a ferrite concretion which is then smeared over an otherwise sound surface. Bright spots do not impair the plastic properties nor the impact elasticity of longitudinal specimens but do lower these properties in transverse specimens. Steels contg. Ni 0.3 and Cr 0.2% were free of bright spots. Normalizing in a stream of compressed air or sorbitation prevents the formation of bright spots in C steels.

M. Hosch

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

IVANOV, V.I., inzhener; MIKHEYEV, G.P.

Radiation steam superheaters in open-hearth furnaces. Stal' 7 no.3:270-271 '47. (MLRA 9:1)

1.Vorochilovgradskiy parovozostroitel'nyy zavod.
(Open-hearth furnaces)(Superheaters)

IVANOV, V. I.; MIKHEYEV, G. P.

Engr., Voroshilovgrad Locomotive Construction Factory, -c1948-.

"Steel pig with easily detached shrinkage heads," Stal', No. 7, 1948

CA IVANOV, V. I. 7

The spectroscopic determination of small amounts of nickel in carbon steels. M. N. Shtutman and V. I. Ivanov (Central. Zavodskaya Lab., Magnitogorsk. Metallurg. Kombinat.) *Zavodskaya Lab.*, 16, 45–7(1950).—Ni 4711.4 is compared visually with Fe 4721.0; power is supplied by a Sventitskii activated a.-c. arc operated at 10 amp. The counter-electrode is a 10 mm. Cu rod whose tip is sharpened to a diam. of 3–4 mm. Cyrus Feldman

IVANOV, V. I.

USSR/Metals - Steel, Casting Oct 51

"Ingot Molds Made of Steel Poured Into Metal Molds," V. I. Ivanov, S. N. Mylko, Engineers, Voroshilovgrad Locomotive Bldg Plant

"Litey Proizvod" No 10, pp 9-11

Discusses application of steel as material for molds, used in making ingots intended for subsequent rolling or forging, and describes experience of Voroshilovgrad Plant in this respect. Emphasizes economical effect of such substitution. Data of other plants show 3-10 time increase in life of steel-ingot molds over cast-iron molds.

198T65

ALEKSEYEV, B.D.; ALAVERDOV, A.I.; BABIN, I.D.; BIDNEV, A.I.; BUROVOY, I.A.; GUSOV, A.V.; IVANOV, V.I.; KAYDAK, A.M.; LEYZEROVICH, G.Ya.; RUPPUL', V.K.; SEREBRYANNIKOV, E.Ya.; SHTEYNGARDT, G.M.

Roasting zinc concentrate in a gas fired boiling fuel bed. Prom. energ. 13 no.8:19-20 Ag '58. (MIRA 11:10)
(Zinc--Metallurgy)

69657

S/180/60/000/02/013/028
E111/E135

18.7500

AUTHORS: Ivanov, V.I., and Osipov, K.A. (Moscow)

TITLE: Investigation of the Kinetics of Recrystallization of Technically Pure Iron during Rapid Electric Heating

PERIODICAL: Izvestiya Akademii nauk SSSR,Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960,Nr 2, pp 87-92 (USSR)

ABSTRACT: The authors point out that recent investigations (Refs 1-8) of the recrystallization of cold-worked metal at high rates of heating have enabled recrystallization time to be reduced to fractions of a second. But the various explanations proposed (Refs 4, 8) have not been supported by adequate experimental data. In the present work the authors describe their investigation of recrystallization kinetics under isothermal conditions of iron (0.016% C, 0.15% Mn, 0.06% Si, 0.008% P, 0.01% S) in relation to heating rate. Ring specimens, 50 mm in diameter, and 1 mm wall thickness, were machined from a deep-drawn cup. During deformation and machining the specimens were carefully cooled and kept at below -10 °C between operations. Heating in the experiments was in a single-coil inductor at 2500 c.p.s. and in a salt bath:

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E111/E135

Investigation of the Kinetics of Recrystallization of Technically Pure Iron during Rapid Electric Heating

heating rates were 500 and 0.5 °C/sec respectively. The temperature was measured with 0.08 mm diameter chromel-alumel thermocouples welded to the specimen. On reaching the required temperature the specimen was kept at that temperature ± 3 °C. Fig 1 shows a typical oscillograph. After the isothermal holding the specimen was quenched in water after induction heating or in an air jet after salt-bath heating. Fig 2 shows the logarithm of time of start of recrystallization as a function of annealing temperature in the salt-bath (curve 1) and inductor (curve 2). In Fig 3 the same relationships are shown for a heating rate of 500 °C/sec but for different heat treatments: tempering at 450 °C for 15 min before annealing (curves 1 and 3); heating with isothermal holding at 450 °C for 15 min (curves 2 and 4). The work showed that increasing the heating rate from 0.5 to 500 °C/sec had little effect on recrystallization kinetics at 520-600 °C. Above 600 °C the higher rate leads to a step-wise reduction to

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S/180/60/000/02/013/028
E111/E135

Investigation of the Kinetics of Recrystallization of Technically Pure Iron during Rapid Electric Heating

fractions of a second of the time of start of recrystallization and a reduction in the activation energy of the initial stage from 57.25 to 26.9 kcal/g atom. The main cause of these changes is the coexistence of the reversion and recrystallization in time and temperature (a schematic representation is given in Fig 4 in terms of the relations illustrated previously). Preliminary reversion can have a different effect on recrystallization kinetics depending on heating rate and annealing temperature. There are 4 figures, 2 tables and 18 references, of which 13 are Soviet, 2 English, 2 German and 1 Czech.

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SUBMITTED: November 15, 1959

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18.3200

78037
SOV/130-60-3-6/23

AUTHOR: Ivanov, V. I. (Chief Metallurgist)

TITLE: Removal of Sulfur and Phosphorus in the Acid Electric Furnace

PERIODICAL: Metallurg, 1960, Nr 3, pp 8-9 (USSR)

ABSTRACT: On the premise that the productivity of basic furnace is 1.5 times lower than that of acid furnace, the workers of Lugansk Locomotive Plant imeni October Revolution (Luganskiy teplovosostroitel'nyy zavod imeni Oktyabr'skoy Revolutsii) Perov, V. P., Zhikhor, V. V., Val'demirov, V. A., and Ivanov, V. I., investigated the possibility of sulfur and phosphorus removal in the acid electric furnace during smelting of alloyed steel. In the beginning, after melting of the charge and after first slag tapping, ferrous-lime slag was added, for the decrease of phosphorus content (2.5-3 kg of dry iron ore and 5-6 kg dry lime per ton of steel). This second slag was tapped after 20-25 min, reducing phosphorus

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Removal of Sulfur and Phosphorus in the Acid Electric Furnace

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content by 0.005-0.01%. Upon the suggestion of Topaller, M. I., addition and removal of slag was done before complete melting of the bath, reducing phosphorus content by 0.005-0.015%. For the decrease of sulfur content new slag was added (freshly calcined lime 8-10 kg/ton, and crushed chamotte 2-2.5 kg/ton). After 15-20 min slag was completely removed and new deoxidizing slag was applied (limestone, sand, and chamotte in the amount of 2% of metallic part of charge in ratio 1.2:1:1). At the same time, ferromanganese was added in order to obtain 0.15-0.20% manganese content in steel. The steel produced at the plant conformed to State Standards (GOST) and is successfully used by plant shops. There are 3 tables.

ASSOCIATION: Lugansk Locomative Plant imeni October Revolution (Luganskiy teplovosostroitel'nyy zavod imeni Oktyabr'skoy Revolutsii)

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80982

S/180/60/000/03/014/030
E193/E383

18.7100

AUTHORS: Ivanov, V.I. and Osipov, K.A. (Moscow)

TITLE: Recrystallization of Technical Titanium During Rapid Heating by Passage of Electric Current

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, Nr 3, pp 79 - 82 (USSR)

ABSTRACT: In spite of the deleterious effects of oxygen and some other gases on the properties of titanium it is not often that under industrial conditions this metal is annealed in vacuum or in a protective atmosphere, the modern tendency being to anneal titanium in air and reduce the degree of oxygen absorption and scale formation by reducing to minimum the time at elevated temperatures. This is most conveniently achieved by the application of high-frequency induction or electrical resistance heating and the object of the investigation described in the present paper was to study the characteristic features of the recrystallization process taking place under these conditions as well as the effect of various factors (annealing temperature, heating and cooling rates) on the properties of so annealed titanium. The experiments were

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Recrystallization of Technical Titanium During Rapid Heating by Passage of Electric Current

carried out on specimens measuring 2 x 8 x 150 mm, cold-rolled to 60% reduction in thickness after a preliminary vacuum annealing at 780 °C. An alternating current (2 500 cps) was used for heating, the rate of heating achieved in this way varying between 20 and 1 000 °C/sec. The temperature and time intervals of the primary recrystallization were determined by hardness measurements and the beginning and the end of recrystallization were pin-pointed by metallographic examination. The results were compared with those obtained on identical specimens vacuum-annealed for half-an-hour at various temperatures. It was found that when electrical resistance heating was employed, the recrystallization range was displaced towards higher temperatures; thus, for instance, when the rate of heating of 100 °C/sec was employed, the temperatures of the beginning and end of recrystallization (t_n and t_k) were, respectively, 140 and 100 °

higher than in the case of the furnace (vacuum) annealed

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Recrystallization of Technical Titanium During Rapid Heating by Passage of Electric Current

material. With increasing rate of heating v this difference increased, as is shown in Figure 2, where t_n and t_k are plotted against v ($^{\circ}C$/sec). The rate of heating had no effect on hardness (Brinell) of recrystallized titanium, which never exceeded 180 kg/mm^2. The reduction in time, necessary for the process of recrystallization to proceed to completion, observed in specimens heated by the passage of electric current, was attributed to the fact that under the conditions of rapid heating, the processes of recovery and recrystallization took place both at the same time and temperature. High-frequency induction heating was used in the last series of experiments, in which titanium strips (2 x 10 x 150 mm) were annealed by passing them at a constant rate through a loop inductor so as to attain the temperatures of 800-825 or 850-880 $^{\circ}C$ in 10 or 3.5 sec, respectively. The mechanical properties and the degree of oxidation of specimens annealed by this method were compared with those of similar specimens annealed in the furnace (10 min at

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Recrystallization of Technical Titanium During Rapid Heating by Passage of Electric Current

700 °C followed by cooling in air). It was found that the UTS of titanium was the same, irrespective of the method of annealing but the ductility of metal, annealed by rapid heating, was slightly higher and its grain size was approximately 1.5 times smaller; in spite of higher temperature attained, the degree of oxidation of the rapidly heated specimens was several times lower than that of the furnace-annealed material. In addition to these advantages, the technique of rapid annealing by means of electrical heating opens wide possibilities of mechanization and automation of the process of annealing of cold-worked titanium. There are 3 figures, 1 table and 2 Soviet references.

ASSOCIATION: Institut metallurgii Akademii nauk SSSR (Institute of Metallurgy of the Ac.Sc., USSR)

SUBMITTED: December 29, 1959

Card 4/4

IVANOV, V.I.(Moskva); OSIPOV, K.A.(Moskva)

Investigating the basic parameters of the recrystallization of commercial iron during rapid electric heating. Izv. AN SSSR. Otd.tekh.nauk Met.i topl. no.5:161-166 S-O '60.
(MIRA 13:11)

(Iron--Heat treatment) (Crystallization)

IVANOV, V.I. (Moskva)

Kinetics of the recrystallization of commercial iron during continuous rapid heating. Izv. AN SSSR. Otd. tekh. nauk. Met. i topl. no.1: 74-77 Ja-F '61. (MIRA 14:2)

1. Institut metallurgii AN SSSR.
(Iron--Heat treatment) (Crystallization)

IVANOV, V. I.

S/137/61/000/012/082/149
AC06/A101

AUTHORS: Vasichev, B. N., Latyshev, V. K., Pliskin, Yu. S., Polinger, A. K., Lyubchenko, A. A., Farfel', Yu. A., Lebedev, O. P., Ivanov, V. I.

TITLE: A device to measure the thickness of hot rolled metal

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1961, 13-14, abstract 12D92 (V sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, vol. 3" Moscow, Gostoptekhizdat, 1961, 205, 206)

TEXT: An instrument for measuring the thickness developed at TsNIIChM, is based on the method of dynamic compensation. The device consists of a receiving unit, a container of the measuring source, an electric driven clamp, a feed unit, a recording and an indicating unit. To control the operation of the device a coarse-wedge sector is mounted. The device is employed in a thickness range from 14 to 44 mm; it can however be designed for any range within 5 to 50 mm. In the case of the given model the device is an indicating one. It is intended to be incorporated into the programming unit, controlling the clamping screws of the mill, as a correcting device on periodic-rolling mills, and as an indicator in an automated reduction control system on continuous mills. The accuracy

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3/137/61/000/012/053/149
A005/A101

A device to measure the thickness ...

of the device is ± 0.1 mm on the whole range; the operational speed is one measurement per second.

N. Yudina

[Abstracter's note: Complete translation]

Card 2/2

DUBININ, N.P.; BARINOV, N.A.; FOKIN, G.F.; TIMONICH, D.D.; IVANOV, V.I.

Practice of preparing highly resistant cast iron in basic cupola furnaces. Lit. proizv. no. 4:41-42 Ap '61. (MIRA 14:4)
(Cast iron--Metallurgy) (Cupola furnaces)

33182
S/180/61/000/006/016/020
E193/E383

10.7300 1413

AUTHORS: Ivanov, V.I., Osipov, K.A. and Sotnichenko, A.L. (Moscow)

TITLE: A study of the kinetics of the process of creep and recovery

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.6, 1961, 137-143

TEXT: The object of the present investigation was to study the relationship between the activation energy for creep of α-iron and the applied stress as well as the relationship between the activation energy for recovery of this metal and the degree of plastic deformation. Technical purity (99.76%) iron, preliminarily annealed in vacuum (10 hours at 700°C followed by 50 hours at 450°C), was used in creep tests carried out in vacuum (10^{-4} mm Hg) at 250 - 500°C under a constant stress ranging from 10-35 kg/mm^2. The ln $\dot{\varepsilon}$ versus 1/T relationship, where $\dot{\varepsilon}$ is the rate of creep and T - temperature, was linear over the entire range of the applied

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stresses studied. The variation of the activation energy for steady creep (ΔH) is demonstrated in Fig.2, where ΔH (kcal/g atom) is plotted against the applied stress σ (kg/mm^2). It will be seen that the limiting value of ΔH = 20 kcal/g·atom was attained at $\sigma \geq 30$ kg/mm^2. At $\sigma > 35$ kg/mm^2 fracture of the specimens took place in a very short time. The process of recovery was studied on both technical and high-purity iron (99.67 and 99.99%, respectively). The experimental wire specimens, 0.6 and 1.5 mm in diameter, preliminarily annealed in vacuum (3 hours at 800°C) were deformed plastically at room temperature to 80, 84, 94 and 98% reduction in area. The kinetics of recovery were studied by measurements of the thermo-emf of plastically-deformed against annealed material, which were taken immediately after deformation and during subsequent isothermal treatment at various temperatures. The value of $(1 - e/e_0)$, where e_0 and e denote the specific thermo-emf ($\mu V/^\circ C$)

before and after isothermal annealing, respectively, was taken as the measure of the degree of recovery attained. The results obtained for high-purity specimens, deformed to 94% reduction, are reproduced in Fig. 3, where $(1 - e/e_o)$ is plotted against time (τ, sec) at temperatures indicated by each curve. This relationship can be described by

$$1 - \frac{e}{e_o} = a + b \ln \tau$$

where a and b are temperature-dependent constants. In the next series of experiments the temperature dependence of $(1 - e/e_o)$ was determined. The results are reproduced in Fig. 4, where $(1 - e/e_o)$ is plotted against temperature ($^{\circ}C$) of the isothermal treatment of technical and high-purity iron (graphs a and б, respectively); Curves 1 - 4 in graphs a relate to specimens held at the temperature for

1 800, 180, 30 and 2.5 sec, respectively, Curves 1 - 5 in graphs 5 relating to a holding time of 3 600, 900, 180, 60 and 30 sec, respectively. These data were used to determine the activation energy for recovery of the metals studied. To this end, the temperatures T at which various degrees of recovery could be attained after various times τ were determined from curves in Fig. 4. These were used to construct curves reproduced in Fig. 5, where $\ln \tau$ (τ, sec) is plotted against $\frac{1}{T} = 10^4$, the numbers given by each curve indicating the value of $(1 - e/e_o)$, graphs a and 5 relating to technical and high-purity specimens, respectively. Since all the curves reproduced in Fig. 5 were straight lines, it was possible to calculate the activation energy , ΔH , for recovery, from:

$$\ln \tau = A \exp [\Delta H/RT] \qquad (2)$$

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A study of the kinetics ....

where R is the gas constant, and
T is the temperature of the isothermal treatment (^{o}K).
The results are reproduced in Fig. 6, where ΔH (kcal/g.atom) is plotted against $(1 - e/e_o)$, the circles (1) and triangles (2) relating, respectively, to high-purity and technical-grade iron. It will be seen that the activation energy for recovery is at its minimum at low values of $(1 - e/e_o)$, remaining practically constant up to $(1 - e/e_o) = 0.3$ and then increasing rapidly to reach $\Delta H = 47.6$ kcal/g.atom at $(1 - e/e_o) = 0.8$. Similar results were obtained for material deformed to 98% reduction, which indicated that ΔH would not decrease even for more heavily deformed material. In the last series of experiments the effect of elastic deformation on the kinetics of recovery was studied. To this end $(1 - e/e_o)$ was determined for high-purity specimens deformed to 94% reduction, which were stressed in the elastic range during the isothermal annealing. The results are reproduced in Fig. 7,

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A study of the kinetics ....

where $(1 - e/e_o)$ is plotted against the duration of treatment (t, sec) at temperatures indicated by each curve. Comparison of isotherms reproduced in Figs. 2 and 7 shows that the elastic strain superimposed on plastic deformation brings about a significant increase in the rate of recovery only when $(1 - e/e_o)$ exceeds 0.3. The results of calculation showed that for $(1 - e/e_o) = 0.2$, 0.3 or 0.4, the value of ΔH was 12.3, 14.0 and 18.2 kcal/g.atom, respectively, the corresponding value for specimens not stressed elastically being 12.2, 14.7 and 22.8 kcal/g.atom. This indicates that elastic deformation does not affect the limiting (minimum) value of ΔH. It was inferred from the results obtained that the activation energy for recovery is a function of several states of the crystal lattice, which vary not only with the degree of preliminary deformation but also with the degree of recovery attained. The dependence of the activation energy on the degree of recovery can be attributed to the following factors:

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1) the presence in a deformed metal of volumes with different density of defects of various types;
2) variation of the density and distribution of defects during isothermal treatment;
3) different stability of different types of defects;
4) dependence of the activation energy for recovery on the nature of the defects and their density in elemental volumes in which they migrate.

There are 7 figures, 1 table and 11 references: 7 Soviet-bloc and 4 non-Soviet-bloc. The two English-language references quoted are: Ref. 3: H. Bross and A. Seeger - The Physics and Chemistry of Solids, 1958, v.4, no. 3, 161;
Ref. 8: Silcock, J.M., Acta metallurgica, 1959, v.7, no. 5.

SUBMITTED: January 10, 1961

Card 7/[illegible] 7

24528
S/659/61/007/000/015/044
D217/D303

15.8100

AUTHORS: Ivanov, V.I., and Osipov, K.A.

TITLE: Ultimate and varying activation energy of recovery of thermoelectromotive force of cold-worked pure iron

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam, v. 7, 1961, 151 - 158

TEXT: The results of an investigation of the recovery kinetics of the thermoelectromotive force (t.e.m.f.) of cold-worked iron are reported, and it is shown that an ultimate and variable activation energy exists for this process. The investigation was carried out on high purity iron (99.99 %) in the form of wire of 0.6 mm diameter having undergone degrees of cold plastic deformation of 80, 94 and 98 %. Prior to deformation, the wire was annealed in vacuo at 800°C for 3 hours. Plastic deformation was carried out at room temperature. Recovery of t.e.m.f. was studied on thermocouples consisting of an annealed and a deformed wire, the t.e.m.f. being measured on each thermocouple immediately after deformation, and after isothermal tempering at various temperatures. The tempering time

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Ultimate and varying activation ...

was changed within the limits 30 - 3600 seconds. The specimens were heated at 200°C/second by means of an electric current. The temperature was measured with an accuracy of ± 0.1°C. For measurement of t.e.m.f., a mirror galvanometer of scale sensitivity 3 x 10^{-8} v/mm was used. The measurements were carried out by two methods: 1) Compensation and 2) by the angle through which the galvanometer mirror turned. The specific t.e.m.f. in μv/degree was calculated by dividing the full measured value of t.e.m.f. by the difference in temperatures between the junctions. The existence of an ultimate and variable energy of activation of recovery was confirmed. The energy of activation varies in relation to the degree of recovery from 12.25 to 47.6 kcal/g atom. At degrees of recovery below 0.3, the energy of activation remains practically constant, and with an increase in degree of recovery above 0.3, it rises steeply. On changing the degree of deformation from 80 to 98 % and also on application of additional elastic deformation during tempering, the ultimate energy of activation (12.25 kcal/g atom) does not change and remains close to the value of the theoretically calculated energy of activation (11.7 kcal/g atom). There are 6 figures, 1 table and

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D217/D303

Ultimate and varying activation ...

15 references; 7 Soviet-bloc and 8 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: R.M. Treco, J. Metals, sec. 2, 8, no. 10, 1956; I.N. Lomer and H.U. Rosenberg, Phil. Mag., 4, no. 10, 1959; A. Seeger, Phys. and Chem. of Solids, 4, 3, 1958; C.W. Berghout, Acta Metallurgica 6, no. 10, 1958.

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IVANOV, V.I.

Using bacterial methods for dressing nonferrous metal ores.
Trudy Inst.mikrobiol. no.9:144-146 '61. (MIRA 15:5)

1. Nauchno-issledovatel'skiy i proyektnyy Institut Sverdlovsk.
(Ore dressing)
(Mine water—Microbiology)
(Thiobacillus)

IVANOV, V.I.; OSIPOV, K.A.

Investigating the kinetics of thermoelectromotive force recovery in cold-deformed iron. Fiz. met. i metalloved 11 no.3:360-367 Mr '61. (MIRA 14:3)

1. Institut metallurgii AN SSSR.
(Activity coefficients)
(Thermoelectricity)

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AUTHORS: Ivanov, V. I. and Osipov, K. A.

TITLE: A study of the grain growth in highly pure α-iron

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 2, 1961, 338-341

TEXT: The iron investigated contained the following impurities: 0.001 % O, 0.001 % C, 0.002 % S, less than 0.002 % N and traces of Cu, Ni, and Si. Iron rods of 7.7 mm diameter were subjected to a preliminary treatment during which they were cold formed and, subsequently, subjected to a recrystallization annealing; the resulting grain size diameter was less than 0.2 mm. Grain growth was studied at electric heating and a mean rate of 200 degrees/sec. In the range of from 700 to 900°C, the rate of heating was reduced from 300 to 150 degrees/sec. After heating to a pre-determined temperature, the specimens were chilled in water, the interval between the end of heating and dipping of the sample into water being less than 0.02 seconds. The temperature conditions of heating were registered with a Cr-Al thermocouple, which was fixed in the middle of the sample, by means of a loop oscilloscope and a ballistic galvanometer. The results of

measurement are graphically represented in Fig. 1. When heating at constant rate a, the rate of shifting of the grain boundaries G can be determined from the equation $G = \frac{1}{2} a dD/dt$, where $D = f(t)$ is the mean grain diameter. If a is not constant, $D = \psi(\tau)$ must always be determined (τ denotes the time). The lower part of Fig. 1 shows the temperature t as a function of time. The curve $t = \varphi(\tau)$ is determined from the oscillograms. The curve $D = \Phi(\tau)$ is constructed, as shown in Fig. 1, by means of the experimentally determined curve $D = f(t)$. (Fig. 1б). According to the above equation, the values G = 128; 188; 210; 230; 300 and $354 \cdot 10^{-5}$ cm/sec are graphically obtained from this curve at temperatures of 735, 765, 790, 810, 865 and 890°C. In another experimental series, the specimens with 700 degrees/sec were heated to 810 ± 5°C and kept at this temperature for a varying length of time according to the individual specimen, e.g. for 0, 0.4, 1.0, 2.25, 3.0, 125, 275, 660, 900 and 1800 seconds. The respective grain diameters were: 43, 63, 87, 128, 141, 175, 194, 205, 210 and $240 \cdot 10^{-4}$ cm. The mean linear shifting rate of the grain boundaries was in the given periods of time 250, 200, 164, 87, 1.31, 0.63, 0.20, 0.10 and

$0.17 \cdot 10^{-5}$ cm/sec. The slowing down of the shifting rates of the grain boundaries is explained by the reduction of the radius of curvature of the grains and the increasing concentration of impurities at the grains. Owing to the high purity of iron, this state occurs only with very large grains. From the discussion of the results the authors conclude that the mechanism for the grain growth as suggested by Mott (Proc. Phys. Soc., 60, 391, (1948)) is very probable. Accordingly, the grain, when growing, melts at its boundaries and solidifies again with the boundary being shifted in outward direction. The authors' experimental data can be easily described by Feltham's equation (J. Inst. Metals, 85, (2) 95, (1957); Acta metallurg., 5, 97 (1957); Proc. Phys. Soc., B 69, 1173 (1956))

$$D^2 - D_o^2 = K_o \exp(-\Delta H/RT)\tau \qquad (1).$$

D and D_o are the mean values, the initial and the permanent diameter of the grains, τ the time at which τ is constant, K_o a constant coefficient, ΔH the activation energy, R, the gas constant, T, the absolute temperature. By means of (1) G may be represented by

$$G = \frac{1}{2}\frac{dD}{d\tau} \simeq \frac{1}{2}\frac{K_o}{D}\exp(-\Delta H/RT) \qquad (2).$$

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The results of the second experimental series are in good agreement with (2). Herefrom, 25.3 kcal/gram·atom is obtained as activation energy for the grain growth. In a preliminary study (Ref. 20 Izv. AN SSSR, Metallurgiya i toplivo, No. 2, (1960)), basing on the hypothesis on the activation energy of various processes in solids, the authors obtained theoretically an activation energy of 22.2 kcal/gram·atom. Finally, the fact is discussed that in the case of lead and iron ΔH and q are almost equally high (see Ref. 20). This is brought into relation with the melting and re-solidification of the grain boundaries. V. P. Fedotov supplied the pure iron for this study. There are 3 figures and 24 references: 11 Soviet-bloc and 13 non-Soviet-bloc.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences USSR)

PRESENTED: January 3, 1961, by G. V. Kurdyumov, Academician

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AUTHOR: Ivanov, V.I. (Moscow)

TITLE: The effect of the degree of deformation on the kinetics of recrystallization and on the grain size of titanium rapidly heated by passage of electric current

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo. no.3, 1962, 63-70

TEXT: Earlier investigations showed that with increasing rate of heating the rate of recrystallization of cold-worked Fe and Ti increased and the activation energy decreased. In the present investigation the effect of the rate of heating, during annealing of cold-worked commercial grade Ti, on the kinetics of recrystallization, the grain size of the recrystallized material and the critical degree of deformation, was studied. The experiments were carried out on 1.5 x 6 x 150 mm test pieces which, after the last intermediate annealing, had been plastically deformed to 9.8, 21, 40 and 60% reduction. Specimens were heated

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by passing mains A.C. at rates of heating ranging from 10 to 1000 °C/sec. Hardness of the central part of the test piece was measured, the grain size determined and, when necessary, X-ray diffraction analysis carried out. With isothermal annealing in which the effect of the degree of preliminary deformation, ε, and the rate of heating on τ_0 and τ_1 was studied (where τ_0 and τ_1 denote, respectively, annealing times required to start and complete the recrystallization process), it was found that with increasing ε both τ_0 and τ_1 decreased at a gradually diminishing rate, becoming negligible at $\varepsilon > 40\%$. Increasing the rate at which the test pieces were brought up to the annealing temperature also caused a decrease in both τ_0 and τ_1 for all values of ε, typical results obtained at 900 °C being as follows. For specimens deformed to 9.8% reduction and heated at a rate of 30 and 300 °C/sec, τ_0 was 15 and 8 sec respectively, the corresponding values of τ_1 being 70 and 50 sec; for specimens deformed to 40% reduction τ_0 was 3 sec at 30 °C/sec and 0.6 sec at 300 °C/sec, the corresponding values of τ_1 being 5 and 2 sec. In the non-isothermal annealing, each test

piece was heated through a range of temperatures to determine the effect of various factors on the temperature of the beginning and end of recrystallization of Ti (t_H and t_K, respectively) and it was found that, irrespective of the degree of preliminary deformation, both the beginning (t_H) and the end (t_K) of Ti recrystallization increased by 70-150 °C on accelerating the heating rate, the rate of increase in each case diminishing as the heating rate increased. At any given heating rate both t_H and t_K increased with increasing ε; the rate of this increase also became insignificant at $\varepsilon > 40\%$. Typical results are reproduced in Fig.3, where t_H and t_K (°C) are plotted against ε (%), graphs a and б relating, respectively, to specimens heated at a rate of 30 and 300 °C/sec. Points А, Б, В and Г denote specimens in which: А - no recrystallization detected; Б - recrystallization was detected; В - recrystallization was not completed; Г - recrystallization was completed. The results of the final series of experiments showed that the detrimental effect of preliminary deformation on the grain size of recrystallized Ti can be considerably reduced by increasing the rate of heating, thus obtaining finely-crystalline and more uniform structure. In Fig.5

the grain size of annealed Ti is plotted against the degree of preliminary deformation (ε, %) and various curves relating to the following annealing conditions in furnace and by passing electric current are also discussed: 1 and 2 - heating in a furnace to 840 or 730 °C respectively, holding at the temperature for 30 min, cooling in air; 3 - heating by passage of electric current to t_K at a rate of 10 °C/sec, cooling in air; 4 and 5 - heating by passage of electric current to t_K at a rate of 250 °C/sec, cooling in air (curve 4) or in water (curve 5); (the broken horizontal line represents the initial grain size). It was found that the critical degree of deformation, ε_K, can be slightly shifted towards lower values by increasing the heating rate, but only if the duration of the treatment is relatively short (2 - 5 min); in the case of non-uniformly deformed articles, rapid heating (without the following isothermal treatment) will suppress recrystallization in lightly deformed regions, ensuring at the same time recrystallization of regions where $\varepsilon \gg \varepsilon_K$. Wedge-shaped specimens were used in the deformation tests. There are 6 figures.

Card 4/4 SUBMITTED: September 25, 1961.

IVANOV, V.I.

Characteristics of recrystallization kinetics of commercial iron during rapid electric heating. Trudy Inst.met. no.10:168-180 '62. (MIRA 15:8)

(Crystallization) (Induction hardening)

DOBROSKOK, I.I.; SURIN, Ye.V.; BROVMAN, M.Ya.; MIKHAYLOV, G.M.; KRULEVETSKIY, S.A. Prinimali uchastiye: ASFANDIYAROV, R.F.; BELOV, Ye.M.; IVANOV, V.I.; MARKOV, V.I.; SOLOV'YEV, Yu.P.; PIMENOV, F.A.; TUROMSHEV, A.F.; KHVES'KO, V.A.; NIKITSKIY, N.V.

Investigating the power parameters of a continuous steel casting plant. Stal' 22 no.3:223-225 Mr '62. (MIRA 15:3)

1. Yuzhnoural'skiy mashinostroitel'nyy zavod (for Asfandiyarov, Belov, Ivanov, Markov, Solov'yev). 2. Novolipetskiy metallurgicheskiy zavod (for Pimenov, Turomshev, Khves'ko). 3. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (for Nikitskiy).
(Continuous casting—Equipment and supplies)

KORZH, P.D.; IVANOV, V.I.

Determination of iron in an agglomerate based on the absorption of radioactive radiation. Zav.lab. 28 no.8:965-966 '62. (MIRA 15:11)

1. Magnitogorskiy gornometallurgicheskiy institut.
(Iron--Analysis) (Radioactivity--Measurement)

IVANOV, V.I.; KORZH, P.D.

Radiometric determination of iron in sulfide ore concentrates and agglomerates. Zav.lab. 29 no.11:1296-1298 '63. (MIRA 16:12)

1. Magnitogorskiy gorno-metallurgicheskiy institut.

IVANOV, V.I.; PLETENETSKIY, G.Ye.; NECHIPORENKO, Ye.P.

Effect of highly refractory oxides on the thermoelectromotive force of tungsten, molybdenum, and tantalum, in vacuum at 1,500° C. Ogneupory 28 no.7:327-331 '63. (MIRA 16:9)

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ACCESSION NR AM4046727 BOOK EXPLOITATION S/

Ivanov, Vadim Ivanovich; Osipov, Kirill Afanas'yevich

Recovery and recrystallization in metals at rapid heating (Vozvrat i rekristallizatsiya v metallakh pri bystrom nagreve), Moscow, Izd-vo "Nauka", 1964, 184 p. illus., biblio. (At head of title: Akademiya nauk SSSR. Gosudarstvennyy komitet po chernoy i tsvetnoy metallurgii pri Gosplane SSSR. Institut metallurgii im. A. A. Baykova)

TOPIC TAGS: metal recrystallization, metal return, metal grain structure

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Card 2/2

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AUTHORS: Ivanov, V. I.; Shcherbakov, V. I.; Trakhtenberg, L. I.

ORG: none

TITLE: Ultrasonic method for measuring product thickness. Class 42, No. 176713

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 58

TOPIC TAGS: ultrasonic equipment, ultrasonic inspection, test method

ABSTRACT: This Author Certificate presents an ultrasonic method for measuring product thickness by determining the resonance frequency of the system which consists of the monitored product, a liquid layer, and an ultrasonic detector. To increase the accuracy of measuring small thicknesses, e.g., less than 0.5 mm, and to decrease the operating frequencies, the system is excited at two fixed frequencies. The liquid layer thickness is varied, obtaining system resonance successively for each of the frequencies. The thickness of the product is determined by the difference of the liquid layer thicknesses corresponding to the resonances.

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E111/E135

AUTHORS: Ivanov, V.I., and Osipov, K.A. (Moscow)

TITLE: Investigation of the Main Factors in the Recrystallization of Technical Iron in Rapid Electric Heating

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 5, pp.161-166

TEXT: The authors have previously studied the influence of heating rate on the kinetics of the first stage of recrystallization (Ref.1). They now describe their results on the investigation of later stages of primary recrystallization under isothermal conditions after rapid electric heating. Rings 50 mm in diameter and 1 mm wall thickness made of 99.76% pure technical iron with 55% cold deformation were used. A large (0.25-0.35 mm) grain was produced before cold deformation. Heating was effected by induction (2500 cps), the average heating rate at 550-700 °C being 500 °C/sec. When the required temperature had been reached power was automatically reduced, giving isothermal heating at that temperature. Recording and limitation of temperature were

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E111/E135

Investigation of the Main Factors in the Recrystallization of Technical Iron in Rapid Electric Heating

as described in earlier work (Ref.1). For hardness measurements, X-ray and metallographic investigation, the parts of the specimen close to the thermocouple position were used. Recrystallization isotherms, i.e. plots of recrystallized initial grain volumes against time in seconds, for heating at 500 °C/sec are shown in Fig.1 (curves 1-4, 8 and 9 after deformation, 5, 6 and 7 after tempering at 450 °C): time for developing primary recrystallization falls with rising annealing temperature. The logarithm of time to reach a given degree of recrystallization was found (Fig.2) to be linearly related to reciprocal of absolute temperature, enabling the activation energy of the process to be calculated. It is shown in Fig.3 in relation to degree of recrystallization. The true (curves 1 and 3) and average (curves 2 and 4) rates of recrystallization are shown in Fig.4 as functions of degree of recrystallization (curves 1, 2 after deformation, 3 and 4 after tempering): all show maxima, most pronounced in curve 1. The continual growth both of the number

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