USSR/Chemistry - Metallurgy, Decomposition Potential

Jun 50

"Secondary Decomposition Potentials in Molten Salts," O.K. Kudra, E.B. Gitman, Inst of Gen and Inorg Chem, Acad Sci Ukrainian SSR

"Ukrainskiy Khimicheskiy Zhurnal" Vol XVI, No 1, pp 128-136

The decompn potentials of pure molten silver halides (AgCl, AgBr, and AgI) are measured employing a modified method of taking current-voltage curves using various sized cathodes and the same anode. Two decompn potentials, for each molten salt, caused by 2 different cathode processes, are established. The presence of a 2d potential in such simple systems cannot be ascribed either to the decompn of the solvent or to gradual dissocn and therefore can only be attributed to the decompn of complex ions.
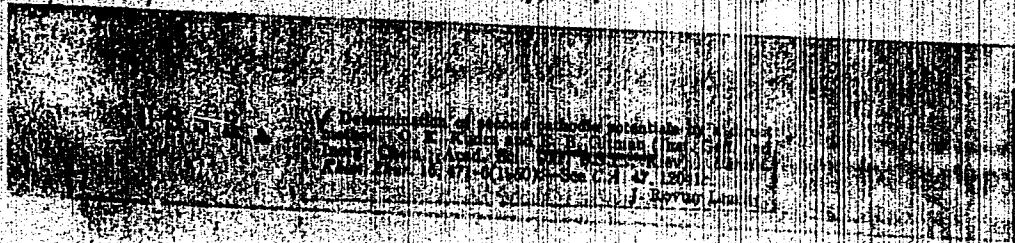
212T7

212T7

KUDRA, O.K.; GITMAN, Ye.B.; SHILAK, N.S.

Relation between current density, time, and concentration in electro-precipitation of lead. Ukrain. Khim. Zhur. 16, No.5, 477-83 '50.(MLRA 6:4)
(CA 47 no.22:12054 '53)

1. Inst. Gen. Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev.

KUDRA, O.K.; GITMAN, Ye.B; SHILAK, N.S.

Relation between concentration, current density, and time in electroprecipitation of cobalt. Ukrain. Khim. Zhur. 16, No.5, 484-91 '50.   (MLRA 6:4)
(CA 47 no.22:12053 '53)

1.   Inst. Gen. Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev.

KUDRA, O.K.; GITMAN, Ye.B.

Effect of concentration, current density, and time on electroprecipitation
of spongy silver. Ukrain. Khim. Zhur. 17, 890-901 '51.   (MLRA 6:4)
(CA 47 no.22:12058 '53)

1. Inst. Gen. and Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev.

GITMAN, Ye.

BOOK   Call No.:   A7623815
Authors: KUDRA, O., and GITMAN, Ye.
  Full Title: ELECTROLYTICAL PRODUCTION OF METAL POWDERS
  Transliterated Title: Elektroliticheskoye polucheniye metallicheskikh poroshkov
Publishing Data
  Originating Agency: Academy of Sciences, Ukrainian SSR
  Publishing House: Publishing House of the Academy of Sciences, Ukrainian SSR
  Date: 1952   No. pp.:   144   No. of copies: 3,000
  Editorial Staff
    The authors express thanks for valuable assistance to Prof. N. N. Voronin, to
    senior scientific coworkers I. A. Sheka and Z. A. Sheka and to Prof. Ya. A.
    Fialkov, Corr. Mem. of the Acad. of Sci., Ukr. SSR, editor of the monograph.
Text Data
  Coverage: The production of metal powders of loose cathode deposits is already
    used on an industrial scale in the USSR. Accounts of the investigations of
    Soviet scientists and engineers (Igaryshev, Kudryavtsev, Borok, Bal'shin,
    Gavrilov, Yesin and Levian, Levin, Loshkarev, Kuz'min and others) are not yet
    systematized. The authors present this monograph as a first preliminary at-
    tempt to generalize the available data on the electrolytical production of
    metal powders.

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Elektroliticheskoye polucheniye metallicheskikh poroshkov   AID 446 - I

A large amount of reports dedicated to this problem at the All-Union Electro-
chemical Conferences (in Ivanovo in 1945, in Kiev in 1948) shows the need in
theoretical works. The rather extensive patent literature indicates the in-
creasing demand of industries for electrolytic powders. The monograph is
provided with tables and diagrams.   PAGES

TABLES OF CONTENTS   3-4

2/3

Elektroliticheskoye polucheniye metallicheskikh poroshkov   AID 446 - I

Purpose: For persons interested in the production of metal powders by
    means of electrolysis.
Facilities: None
No. of Russian and Slavic References: 126
Available: A.I.D., Library of Congress.

3/3

GITMAN, YE. B.

Dissertation: "Investigation of Certain Rules Governing the Separation of Powder Metals With the Help of High Densities of Current." Cand Chem Sci, Inst of General and Inorganic Chemistry, Acad Sci UkrSSR, Kiev, 1954.
(Referativnyy Zhurnal--Khimiya, Moscow, No 5, Mar 54)

SO: SUM 243, 19 Oct 54

Gitman, Ye. B.

USSR/ Chemistry - Physical chemistry

Card   1/1   Pub. 116 - 6/30

Authors   : Delimarskiy, Yu. K.; Turov, P. P.; and Gitman, Ye. B.

Title   : Transference numbers of melted lead halides

Periodical   : Ukr. khim. zhur. 21/3, 314-317, June 1955

Abstract   : Analysis is made of results obtained in measuring the transference numbers
               of $PbCl_2$ and $PbBr_2$ in melted state. The relation between the transference
               number and the nature of the anion is explained. It is shown that this re-
               lation cannot be explained only with full consideration of the charge,
               radius and anion mass and that other yet unknown factors must also be de-
               termined. It is assumed that the forces promoting the unipolar conductiv-
               ity of the salts investigated in solid state also retain their value even
               in liquid state. Four references: 3 USSR and 1 German (1914-1949).
               Tables; drawing; diagram.

Institution : Acad. of Sc., Ukr. SSR., Inst. of Gen. and Inorgan. Chem.

Submitted   : October 12, 1954

Gitman, Ye. B.

USSR/Chemistry - Inorganic chemistry

Card 1/2   Pub. 116 - 1/29

Authors   : Delimarskiy, Yu. K.; Turov, P. P.; and Gitman, Ye. B.

Title   : Electrochemical cleavage of binary alloys consisting of Pb-Bi, Pb-Sb,
              Pb-As and Pb-Sn in a melted electrolyte

Periodical : Ukr. khim. zhur. 21/6, 687-693, Dec 1955

Abstract   : Experiments were conducted to determine the conditions for electrolytic
              cleavage of binary Pb-Bi, Pb-Sb, Pb-As, and Pb-Sn alloys by using a ternary
              $PbCl_2$-KCl-NaCl eutectic in the role of the melted electrolyte. The anodic
              polarization originating during anode current densities was found to be com-
              pletely depended upon the concentrational changes occurring in the salt
              phase. The large scale polarization originating as result of concentration
              changes in the metal phase was observed in cases where the Pb was almost com-
              pletely separated from the fusion. It was established that Bi, Sb and As

Institute : Acad. of Sc., Ukr. SSR, Inst. of Gen. and Inorgan. Chem.

Submitted : July 4, 1955

Card 2/2   Pub. 116 - 1/29

Periodical   : Ukr. khim. zhur. 21/6, 687-693, Dec 1955

Abstract   : accumulate in the anodic fusion during electrolysis and that the separation
                of Pb from Sn is quite a difficult process. Nine references: 5 USSR,
                2 USA and 2 Germ. (1926-1955). Graph; tables.

Gifman, E.B.

Decomposition potential of some compounds of lead dissolved in and fused with sodium hydroxide. Yu. K. Delimarskii, P. F. Turov, and E. B. Gilman. Zhur. Priklad. Khim. 28, 1170-3 (1955). — Decomposition potential of PbSO₄ and PbO₂ dissolved in NaOH was detd. with Fe and with Ni electrodes at 450–500°. In both series of expts. 2 breaks in the i–v curves were found. H₂O–NaOH, v = 1.28 and 1.00 v.; PbSO₄–NaOH v = 0.52 and 0.93 v. at f = 0.48 and 0.95 ma.; PbO₂–NaOH v = 0.4 and 0.92 v. To explain these results the values of η of the system PbO–NaOH were redetd. (cf. Zoimovich, et al., C.A. 47, 7349e) and 2 breaks at v = 0.75 and 1.25 v. were found. The 1st break is attributed to the discharge of Pb ion, the 2nd to the discharge of anion complex of Pb.   J. B.

GITMAN, Ye.B.; DELIMARSKIY, Yu.K.

Electrochemical separation of lead-gold alloys. Ukr.khim.zhur.
22 no.6:731-736 '56.   (MLRA 10:7)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
            (Lead-gold alloys)   (Electrometallurgy)

DELIMARSKIY, Yu.K.; TUROV, P.P.; GITMAN, Ye.B.

Recovering the lead of worn-out storage batteries. Ukr.khim.zhur.
23 no.6:817-822 '57.   (MIRA 11:1)

1.Institut obshchey i neorganicheskoy khimii AN USSR.
              (Lead)   (Storage batteries)

GITMAN, Ye. B.,A. A. KOLOTIY, Yu. K. DELIMARSKIY, E. D. PANCHENKO

"Electrolytic Production of Lead by Electrolysis of Fused Salts"

IONKh Ac. Sc. Ukr SSR.

report submitted at a conference on new methods of lead production from concentrates, Gintsvetmet (State Inst. Non-Ferrous Metallurgy), Moscow 22-25 June 1958.

(for entire conf. see card for LIDOV, V. P.)

MARKOV, B.F.; GITMAN, Ye.B.

Simultaneous deposition of metals during electrolysis of fused salts
with concentration polarization. Ukr.khim.zhur. 24 no.5:581-584 ' 58.
(MIRA 12:1)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
(Alloys) (Electroplating)

GITMAN   Ye. B.

GORLSITETSKIY   YA. P.

5(4)

PHASE I BOOK EXPLOITATION   SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...; sbornik) (Transactions of the Fourth Conference on Elect-
rochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR.,
1959. 668 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh
nauk.

Editorial Board: A.N. Frumkin (Resp. Ed.) Academician, O.A. Yesin,
Professor; S.I. Zhdanov (Resp. Secretary) B.N. Kabanov, Pro-
fessor; S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, V.V. Losev, P.D.
Ya. M. Kolotyrkin, Doctor of Chemical Sciences; Professor;
Lukortsev, Professor; Z.A. Solov'yeva; V.V. Skender, P.ofessor;
and O.M. Florianovich; Ed. of Publishing House; N.G. Yegorov;
Tech. Ed.; T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engi-
neers, physicists, metallurgists and researchers interested in
various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at
the Fourth Conference on Electrochemistry sponsored by the Depart-
ment of Chemical Sciences and the Institute of Physical Chemistry,
Academy of Sciences, USSR. The collection pertains to different
branches of electrochemical kinetics, double layer theories and
galvanic processes in metal electrodeposition and industrial elect-
rolysis. Abridged discussions are given at the end of each divi-
sion. The majority of reports not included here have been
published in periodical literature. No personalities are mentioned.
References are given at the end of most of the articles.

Gochishvili, Ya. P. (Institut geokhimii i analiticheskoy khimii
imeni V.I. Vernadskogo - Institute of Geochemistry
AN Sci: imeni V.I. Vernadskiy iment V.I. Vernadskiy, Academy of
and Analytical Chemistry iment V.I. Vernadskiy and the Polaro-
Sciences, USSR). Diffusion of Electrolytes and the Polaro-   677
graphic Method

Rogailer, T. and K.A. Zhiralova (Institute of Physical
Chemistry, Academy of Sciences, USSR). Diffusion of Oxygen   684
Through Thin Films of Electrolytes

Discussion [O.S. Ksenzhek, Yu. A. Chizmadzhev, Yu. A. Vdovin,   689
O.B. Kunchturyan and contributing authors]

PART VIII. ELECTROCHEMICAL PROCESSES IN NONFERROUS   695
METALLURGY

Stender, V.V. (Dnepropetrovsk Institute of Chemical Technology
imeni F.E. Dzerzhinskiy; Institute of Chemistry, Academy
of Sciences, KazSSR). Electrolysis as a Means of Combining

Card 27/34

Several Metallurgical and Chemical Production Processes   691
(Some New Processes of Hydro-electric Metallurgy)

Aacinyskiy, M.T. (Kazakh State University, Academy of Sciences,
KazSSR). Some Problems of Amalgam Metallurgy - Cementation   704
of Metals With Amalgams

Delimarskiy, Yu. K., B.F. Markov, I.D. Panchenko, Ye. B.
Gitman, and A. A. Kolotiy (Institute of General Chemistry,
organic Chemistry, Academy of Sciences, USSR). Elect-
rolytic Purification of Lead From Fused Salts

Chizhikov, D.M., and V.M. Kopylova (Institute of Metallurgy,
Academy of Sciences, USSR). Investigation of the Potentials   716
and Anodic Polarization of Metallic Sulfides and Their
Alloys

Lazev, V.I., and I.A. Bauman (Deceased)(Vsesoyuznyy nauchno-
issledovatel'skiy Institut tsvetnykh metallov - All-Union
Scientific Research Institute of Nonferrous Metals). Special

Card 28/34

Features of the Anode Process During the Purification of a
Copper-Nickel Anode in a Sulfate-Chloride Electrolyte

Zaretskiy, S.A., I.G. Zharnitskiy (Deceased), and I.A. Bogdanova.
Anodic Behavior of Manganese and Its Alloys

5(2)   SOV/80-32-3-19/43

AUTHORS: Gitman, Ye.B., Delimarskiy, Yu.K.

TITLE: Electrolytic Separation of Binary Alloys of Lead With Silver
              and Arsenic (Elektroliticheskoye razdeleniye binarnykh splavov
              svintsa s serebrom i mysh'yakom)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 3, pp 578-582
              (USSR)

ABSTRACT: The treatment of crude lead by pyrometallurgical methods does
              not separate silver and arsenic which are contained in it. In
              electrolysis silver remains in the anode alloy. At a content
              of 0.25% silver in the initial alloy the cathode metal contains
              only some thousandth parts of a percent. The electrolyzer should
              be designed to reduce stirring of the electrolyte in order to
              obtain the best separation results. At a silver content of
              0.25 - 2.5% in the initial metal only 0.0016% of silver is
              found in the cathode metal. The elimination of arsenic was
              studied in an alloy containing 2% of arsenic. The radioactive
              As-76 was used as a tracer. The arsenic remains almost com-
              pletely in the anode alloy. At a content of 1.5% arsenic in
Card 1/2   the initial anode alloy, a current density of 0.2 a/cm^2 and a

Electrolytic Separation of Binary Alloys of Lead With Silver and Arsenic

SOV/80-32-3-19/43

50%-extraction of lead, arsenic cannot be detected in the cathode metal. Only at a 96%-extraction of lead some hundredth parts of a percent of arsenic are present in the cathode metal. There are 3 tables and 5 references, 4 of which are Soviet and 1 German.

SUBMITTED: May 27, 1957

Card 2/2

S/073/61/027/001/001/002
B103/B216

AUTHORS: Markov, B. F., Gitman, Ye. B., and Belyakova, Ye. P

TITLE: Electrolysis of titanium tetrachloride in fused salts.
             Stepwise cathodic reduction

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 27, no. 1, 1961, 39-43

TEXT: The authors applied several methods to investigate the cathodic
reduction of $TiCl_4$, $TiCl_3$ and $TiCl_2$ in fused salts ($KCl - NaCl$), i.e by
taking the current voltage curves, 1 b) by recording the same curves in
the ЭПП-09 (EPP-09) recording potentiometer, 2) electrolysis by controlled
potential and 3) emf measurement of voltaic cells. Electrolysis under
these conditions involves various processes: a) $TiCl_4$ may be reduced to
$TiCl_3$ and $TiCl_2$, which dissolve in the electrolyte melt with formation of
a complex compound; b) apart from electrochemical processes, the reduction
products of $TiCl_4$ react chemically with each other. The following
heterogeneous equilibriums must be taken into account: $2TiCl_3$ (melt) + Ti

Card 1/3

Electrolysis of titanium...

$$Ti (solid) \rightleftharpoons 3TiCl_2 (melt) \text{ and } TiCl_2 (melt) + TiCl_4 \rightleftharpoons 2TiCl_3 (melt) \text{ which}$$

have partially been studied previously by other researchers. To 1): The
authors passed $TiCl_4$ vapor mixed with argon over the KCl-NaCl melts in
electrolyzers of various designs. Fig. 1 represents a typical curve with
3 reduction potentials at 720°C, i.e. I, slightly above 1 v; II,
approximately 2 v and III, approximately 3 v. III corresponds to back-
ground reduction, namely reduction of sodium ion. At potential II
titanium chlorides are reduced to metal. Potential I corresponds to the
reduction of $TiCl_4$ to $TiCl_2$. To 1b): A cell with separate electrode
compartments was used applying a silver anode with an anolyte containing
silver chloride. The authors draw the following conclusions from the test
series performed: Two reduction potentials were observed during cathodic
reduction of a mixture of chlorides of di- and trivalent titanium, the
lower one being the reduction potential of the system Ti^{+2}/Ti^{+3}, and the
higher one the potential corresponding to reduction of $TiCl_4$ to metal.
$TiCl_4$ was electrolyzed between graphite and tungsten electrodes

Electrolysis of titanium...   ,   S/073/61/027/001/001/002
                             B103/B216

separated by a diaphragm. A controlled potential was applied to the electrodes. Fig. 2 shows the results from which it is apparent that $TiCl_4$ is reduced mainly to $TiCl_2$ after electrolysis for 6-8 hr at a constant low voltage (1.2-1.4 v). At a voltage of 2.2-2.4 v, the titanium in the melt is mainly in the Ti^{3+} form. Cathodic reduction of titanium chloride to metal sets in at 1.8 v. To 3): The authors studied the behavior of a KCl – NaCl melt containing $TiCl_2$ and $TiCl_3$ at 700°C in order to determine the redox potential, measuring the emf of the cell $Pt|Ti^{2+}$, Ti^{3+}, KCl—$NaCl|$ diaphragm$|KCl$— $NaCl$, $AgCl|Ag$. The redox potentials obtained in this manner were reduced to the potential of a chlorine electrode by adding the emf value (from published data) of the cell $Ag|AgCl$, KCl—$NaCl|Cl_2$ to the measured values. The authors mention publications by M. V. Kamenetskiy and M. V. Smirnov. There are 5 figures, 1 table, and 21 references: 8 Soviet-bloc and 13 non-Soviet-bloc. The 2 references to English language publications read as follows: M. B. Alpert et al., J. Electro-chem. Soc., 104, 555 (1957) and 106, 142 (1959), Ref. 18.

Card 3/4

30869
S/073/61/027/006/001/005
B110/B147

5 2200

AUTHORS: Markov, B. F., Gitman, Ye. B., and Tishura, T. A.

TITLE: Equilibrium between $TiCl_3$, $TiCl_2$ and Ti metal in molten chlorides of alkali metals

TEXT: The technologically important equilibrium between low Ti chlorides and Ti metal in individually molten alkali chlorides was investigated. In the absence of neutral salts, $TiCl_2$ is formed: $2 TiCl_3 + Ti \rightarrow 3 TiCl_2$ (1) ($\Delta Z \sim 22$ kcal/700°C). If $TiCl_2$ and $TiCl_3$ are found in simplest physical solution in molten salts $TiCl_3$ forms complexes with CsCl, RbCl, KCl, NaCl. Me_3TiCl_6, and $MeTiCl_4$, whose resistance to heat decreases from Cs to Na. $TiCl_2$ forms compounds of Me_2TiCl_4 and $MeTiCl_3$. No complexes are formed in LiCl melt. In CsCl they form complex anions.

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Equilibrium between $TiCl_3$, $TiCl_2$, and ..

S/073/61/027/006/001/005
B110/B147

The equilibrium is determined by the ratio of the activities of $TiCl_2$ and $TiCl_3$, $TiCl_3$ being the better complex former. When changing from $CaCl_2$ to $LiCl$ the equilibrium is shifted from left to right. In the $LiCl$ melt ($615^{\circ}C$), almost complete $TiCl_2$ formation takes place ($Ti^{2+}/(Ti^{2+} + Ti^{3+})$) = 95-100%; in $NaCl$ melt ($860^{\circ}C$, only 80-85% of $TiCl_2$ is formed, with $TiCl_3$ forming complexes. In melts with KCl ($800^{\circ}C$), 59-82% of $TiCl_2$ is found, and $TiCl_3$ and $TiCl_2$ are forming complexes with KCl. When the temperature is reduced from 860 to 380°C, only 60-67% of TiO_2 is observed in the molten KCl-$LiCl$ eutectic ($380^{\circ}C$). 63-72% of $TiCl_2$ is found in molten $CaCl_2$ ($720^{\circ}C$), since with increasing stability of the $TiCl_3$ complex the $TiCl_2$ complex also becomes more stable. It was found that the equilibrium was shifted in a melt in which low Ti chlorides are dissolved. This is caused by the variation of activity of titanium chlorides as a

Card 2/3

30869
S/073/61/027/006/001/005
B110/B147

Equilibrium between $TiCl_3$, $TiCl_2$, and. .

result of complex formation. A study of S. F. Belov and S. I. Sklyarenko is mentioned. There are 4 tables and 15 references: 8 Soviet and 7 non-Soviet. The three most recent references to English-language publications read as follows: S. Mellgren, W. Opie, J. Metals. 9. 266 (1957); W. Kreye, H. Kellogg, J. Electroch. Soc 104. 504 (1957). R. B. Head, Austr. Journ. of Chem., 13. 332 (1960).

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR
               (Institute of General and Inorganic Chemistry AS UkrSSR)

SUBMITTED: November 11, 1960

Card 3/3

S/073/62/028/009/011/011
Volt-ampere characteristics of the...   A057/A126

responding temperatures. Almost all curves showed easily reproducible inflections
corresponding to the formation of $TiCl_2$, i.e., the most favorable anodic process.
Inflections corresponding to the formation of titanium ions of higher valencies
were not attained even at relatively high current densities. In some cases
curve inflections could be observed at higher current densities corresponding to
the emf of decomposition of $TiCl_3$, but these curves were not well reproducible.
The bad reproducibility of the emf for more positive anodic reactions is probab-
ly due to a superposing of the curves because of the relatively small difference
in the emf of decomposition of $TiCl_2$ and $TiCl_3$. There are 2 figures and 1 table.
ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR (Institute of
             General and Ihorganic Chemistry AS UkrSSR)

SUBMITTED: June 20, 1962

Card 2/2

GITMAN, Ye.B., kand.khim.nauk

Electrolytic refining of titanium. Met. i gornorud. prom.
no.2:90-92 Mr-Ap '62.   (MIRA 15:11)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.
(Titanium--Electrometallurgy)

GITMAN, Ye.B.

    Voltampere characteristics of the electrolytic solution
of titanium in fused salts. Ukr.khim.zhur. 28 no.9:1116-1117
'62.   (MIRA 15:12)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.
       (Fused salts)   (Titanium)
              (Electromotive force)

GITMAN, Yevgeniya Borisovna; GOROSHCHENKO, Ya.G., doktor khim.
nauk, otv. red.; BYCHKOVA, A.I., red.

[Electrochemistry of titanium in fused salts; an an-
notated bibliography] Elektrokhimiia titana v rasplavien-
nykh soliakh; annotirovannaiabibliografiia. Kiev, Naukova
dumka, 1965. 96 p.   (MIRA 18:3)

GITMAN, Y.B.

Current efficiency and nature of the cathodic deposit in
the electrolysis of lower titanium chlorides with a soluble
anode. Ukr. khim. zhur. 31 no. 12:1275-1280 '65
                                          (MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.
Submitted December 3, 1964.

L '36082-66   EWT(m)/T/EWP(t)/ETI   IJP(c)   DS/JD

ACC NR: AP6015901   (N)   SOURCE CODE: UR/0073/65/031/012/1275/1280

AUTHOR: Gitman, Ye. B.

ORG: Institute of General and Inorganic Chemistry, AN UkrSSR (Institut obshchey i neorganicheskoy khimii AN UkrSSR)

TITLE: Yield with respect to the current and the nature of the cathode deposit in electrolysis of the lower chlorides of titanium with a dissolving anode

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 31, no. 12, 1965, 1275-1280

TOPIC TAGS: electrolytic deposition, titanium compound, chloride

ABSTRACT: The conditions of the experimental electrolysis were such as to eliminate the effects of oxygen and of traces of moisture. The electrolyzer and the anode were in the form of a titanium beaker which was placed in a cylinder made of stainless steel with a water cooled cover which could be hermetically sealed. The cathodes were steel rods. The distance between the cathodes and the walls of the anode beaker was from 25 to 30 mm, and the distance between the cathode and the bottom of the electrolyzer was varied from 20 to 50 mm depending on the conditions of the experiment. Experimental results are given in a table which

UDC: 541.13

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L 36082-66

ACC NR: AP6015901

shows the yield of titanium with respect to the current and the nature of the deposit as fuctions of the $Ti^{2+}/Ti^{2+} + Ti^{3+}$ ratio in the electrolyte and of D_k. In general, the results show that an increase in the yield of metallic titanium with respect to the current, as well as the production of deposits with a large crystal grain size, in the electrolysis of the lower chlorides of titanium in KCl--NaCl and KCl solutions, with a dissolving anode, is connected with an increase in the $Ti^{2+}/Ti^{2+} + Ti^{3+}$ ratio. Orig. art. has: 4 figures and 3 tables.

SUB CODE:07,20/   SUBM DATE: 03Dec64/   ORIG REF: 006/   OTH REF: 005

LS

Card 2/2

GITNIK, S.M., inzh.; LAPKIN, M.Yu., inzh.

Precast prestressed reinforced concrete frames for single-story
industrial buildings. Nov.tekh. i pered.op. v stroi. 19 no.6:6-9
Je '57.   (MIRA 10:10)
                (Industrial buildings)
                (Prestressed concrete construction)

MALKOV, G.P.; GITNIK, S.M.

      Large industrial building made of precast reinforced concrete.
      Prom stroi. 39 no.6:31-36 '61.   (MIRA 14:7)
             (Factories—Design and construction)
             (Stavropol—Reinforced concrete construction)

GITNIK, S.M., inzh.; TSYRLINA, S.L., inzh.

Sectional principle in the design of enterprises for the construction industry. Prom. stroi. 39 no.9:40-47 '61.   (MIRA 14:10)
(Industrial buildings)

GITNIK, Semen Mikhaylovich, inzh.; TREGUB.V, Aleksandr Ivanovich,
inzh.; GOGOLITSYN, Vladimir Alekseyevich, inzh.;
MATVEEV, Abram Davidovich, inzh., ...Bid, G.-., nauchn.
red.

[New reinforced concrete elements for wide-span plants and
those without skylights; experience of the Construction
Administration of the Kuyshyshev Hydroelectric Power Station]
Novye zhelezobetonnye konstruktsii dlia bezfonarnykh i bol'-
sheproletnykh tsekhov; opyt Stroymetalloliteia. Moskva,
Stroiizdat, 1961. 107 p.   (MIRA 17:11)

GITNIK, S., inzh.

Large industrial building made of precast reinforced concrete. Na
stroi. Ros. 3 no.2:23-25 F '62.   (MIRA 16:2)
(Stavropol—Industrial buildings)   (Precast concrete construction)

GITOVICH, A., nachal'nik.

Further development of short wave radio amateur activities. Radio no.10:41
O '53.   (MLRA 6:10)

1. Kollektivnaya radiostantsiya kluba Smolensk.   (Radio, Short wave)

107-57-4-21/54

AUTHOR: P'yanchenkov and Gitovich A

TITLE: Smolensk Ultrashort-wave Amateurs on the Air (V efire --
ul'trakorotkovolnoviki Smolenska)

PERIODICAL: Radio, 1957, Nr 4, p 27 (USSR)

ABSTRACT: The Smolensk Oblast DOSAAF Radio Club pays great attention to the
development of ultrashort-wave radio amateurism. Twenty-two new radio
amateurs went on the air recently, among them Shchepetil'nikov, Daynenko,
Vol'skiy, Khibenkov, Losev, and others, who operate   almost daily.
Vol'skiy established the first contact with the boat, "Kooperatsiya," which
headed toward   Antarctica on December 9, 1956; his RSM was 595-595.
Lyubarets, a radio operator of "Kooperatsiya," reported that the communica-
tion he had had with Vol'skiy was most reliable.

Card 1/1

GITOVICH, A.I., kand.med.nauk

Late postpartal hemorrhages. Sov.med. 22 no.3:74-79 Mr '58.
(MIRA 11:4)

1. Iz kafedry akusherstva i ginekologii (zav. - prof. I.I.
Yakovlev) I Leningradskogo meditsinskogo instituta imeni akad.
I.P.Pavlova (dir. A.I.Ivanov)
(LABOR, hemorrh.
late postpartum, causes (Rus))

BULAVINTSEVA, A.I.; KORNILOVA, G.G.; GITOVICH, A.I.; OGANDZHANYANTS, 7.I.

Prognostic significance of the temporal-brachial coefficient
in parturients in physiological and pathological labor. Akush.
i gin. 39 no.3:101-105 My-Je '63   (MIRA 17:2)

1. Iz kafedry akusherstva i ginekologii (zav. -- zasluzhennyy
deyatel' nauki prof. I.I. Yakovlev) 1-go Leningradskogo medi-
tsinskogo instituta imeni I.P.Pavlova.

S/141/60/003/01/006/020
E192/E482

AUTHORS: Mogilevskiy, E.I., Gits, I.D. and Ioshpa, B.A.

TITLE: Electronic Circuitry of the Solar Magnetographs of
            IZMIRAN (Institute of Earth Magnetism and Radio Wave
            Propagation of the Academy of Sciences)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
            1960, Vol 3, Nr 1, pp 67-71 (USSR)

ABSTRACT: The method of measurement of the magnetic fields of the
            sun spots is based on the following principle. The
            Zeeman components which are elliptically polarized in
            various directions for different intensities in that
            portion of the Fraunhoffer line which is selected by
            means of a slit. By directing such a component onto a
            photo-cathode by means of a light analyser, a modulated
            light beam is obtained. From the depth of the
            modulation it is possible to determine the magnitude of
            the magnetic field. The situation is illustrated in
Card 1/5   Fig 1. The intensity of the magnetic field is

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Electronic Circuitry of the Solar Magnetographs of IZMIRAN
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defined by

$$H_z = \frac{\Phi_\sim}{\kappa F(\Delta_i\gamma_i)dJ/d\lambda} = \frac{m}{\kappa F(\Delta_i\gamma_i)d\Phi_z/d\lambda}$$

where Φ is the difference between the light beams of
two components at a given point of the contour.   k   is
a parameter describing the magnitude of the Zeeman
effect for a given line,   J   is the intensity at a
given point of the contour,   F   is a function describing
the polarization of the experimental equipment,
Φ_z is the average radiation,   M   is the depth of the
modulation and λ is the wavelength.   It is seen therefore
that the measurement of H_z amounts to a simultaneous
measurement of $\Phi_\sim$ and $dJ/d\lambda$.   This principle of
measurement was first realized in IZMIRAN in 1953 (Ref 1).
The electronic circuitry of the measuring instrument
Card 2/5   (magnetograph) should be designed in such a way that a ⌐

S/141/60/003/01/006/020
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Electronic Circuitry of the Solar Magnetographs of IZMIRAN
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Academy of Sciences)

stable and reliable gain for the signal $\phi_\smile$ is obtained;
secondly, the Doppler shift should be eliminated, as well
as the asymmetry of the contour and its changes at
various spots of the sun. The first magnetograph of the
IZMIRAN was furnished with a mechanical light modulator
(see Fig 2). However, later investigations showed that
the modulation frequency had to be increased to above
200 c/s. For this purpose the mechanical modulator
was replaced by an electro-optical modulator (Ref 7).
A Kerr cell was employed as the modulator and this
operated at the frequency of 225 c/s (see Fig 3).
Further development of the instrument aimed at the
increase of the signal-noise ratio. It was found that
this could be achieved by employing a balanced method
of signal reception. In this case the amplifier was in
the form of a photo-multiplier and a narrow-band

Card 3/5   amplifier. The signal applied to the measuring device

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Electronic Circuitry of the Solar Magnetographs of IZMIRAN
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Academy of Sciences)

was compensated so as to obtain a zero resultant
voltage. The block schematic of the resulting
magnetograph is shown in Fig 4. The device consists
of: (1) Kerr cell, (2) d.c. voltage source,
(3) amplifier, (4) a photo-multiplier, (5) a supply
source for the photo-multiplier, (6) a recording
device, (7) an audio generator, (8) an amplifier
(operating 225 c/s and having a band-width of 5 c/s),
(9) a phase detector, (10) a feed-back loop,
(11) recorder of the signal $\Phi_\sim$ and Π a polaroid.
In order to determine the true value of the measured
field it is necessary to ensure that the position of
the output slit on the contour of the line is rigidly
fixed during the measurement. In practice, this
condition is very difficult to meet. Consequently a
system in which the contour wobbles along the slit was
Card 4/5   introduced. In this the slit always passes through

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E192/E482

Electronic Circuitry of the Solar Magnetographs of IZMIRAN
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that point of the contour which has a maximum value of
dJ/dλ. When the contour is displaced, the signal is
modulated at the wobbling frequency. The depth of this
modulation gives the magnitude of the displacement.
Subsequently, the resulting signal is applied to a
feedback circuit which returns the contour line into
the position such that the slit "cuts" a linear portion
of the contour. A device operating on this principle is
illustrated in Fig 5. There are 5 figures and
8 references, 6 of which are Soviet, 1 German and
1 English.

ASSOCIATION: Institut zemnogo magnetizma i rasprostraneniya
radiovoln AN SSSR (Institute of Earth Magnetism and
Radio-Wave Propagation of AS USSR)

SUBMITTED: March 18, 1959

Card 5/5

GITS, I.D.

Polarization in coronal rays. Astron.zhur. 38 no.3:474-477 My-Je
'61.   (MIRA 14:6)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya
radiovoln AN SSSR.
            (Sun—Corona) (Polarization (Light))

MANOLIU, V., starshiy nauchnyy sotrudnik; GITSAN, T. [Ghitan, T]

Some historical medical information from the time of Stephen the
Great. Zdravookhranenie 4 no.6:52-56 N-D '61.   (MIRA 15:2)

1. Bukharestskiy institut gigiyeny i sanitarii Rumynskoy Narodnoy
Respubliki (for Manoliu). 2. Zaveduyushchiy kabinetom kafedry istorii
meditsiny Kluzhskogo mediko-farmatsevticheskogo instituta (for
Gitsan).
                    (RUMANIA—MEDICINE)

S/053/63/000/001/065/120
A160/A101

AUTHOR: Gitse, L.

TITLE: An investigation of the light scattering in the water-dioxane
            system

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 67, abstract 1D472
            ("Rev. Phys. Acad. RPR", no. 4, 1961, 6, 519 - 526)

TEXT: A description is given of the results of measuring Rayleight's con-
stant and the depolarization degree for an observation angle of 90^0 in a binary
system with a strong bond between the molecules of the components (water-dioxane).
The measurings were carried out with the help of a photoelectric installation.
The concentration relations of the calculated coherent and incoherent scattering
components are graphically shown. The calculations were conducted by two meth-
ods corresponding to different points of view regarding a change of the refrac-
tion index in the elementary solution volumes. The depolarization degree and the
intensity of the scattered light (calculated from the point of view of the macro-
scopical theory) on the density fluctuations reveal a minimum in the region of

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An investigation of the light scattering in...   S/058/63/000/001/065/120
                                                        A160/A101

those concentrations at which the system possesses a strong bond. The experi-
mental results correspond well to the phenomenological theory of light scatter-
ing.

[Abstracter's note: Complete translation]   N. Voyshvillo

Card 2/2

ILIYESKU, K.K., prof. [Iliescu, K.K.]; KLEYNERMAN, L., doktor; STEFANESKU, T.,
doktor; GITSE, M., doktor; BANDU, I., doktor; YEFRAIM, N., doktor;
ROSHETSYANU, Zhorzhetta, doktor

Catheterization of the left heart through the interauricular septum.
Kardiologiia 2 no.1:9-13 Ja-F '62.   (MIRA 15:5)

1. Iz kardiologicheskoy kliniki (dir. -- prof. K.K.Iliyesku) Bukharestskogo
mediko-farmatsevticheskogo instituta.
        (HEART--EXAMINATION)   (CATHETERS)

GITSEL'TER, YA. M.

AID P - 592

Subject   : USSR/Engineering

Card 1/1   Pub. 93 - 7/11

Author   : Gitsel'ter, Ya. M., Engineer

Title   : Attachment for cutting sectors out of pipes for pipe-
              bend-fitting-elements

Periodical : Sbor. mat. o nov. tekh. v stroi., 8, 15-17, 1954

Abstract   : A special attachment is suggested which when set on lathes
              enables cutting pipes under angle into sectors necessary
              for a fitting assembly for a pipe-bend. The details of
              such attachments are shown on diagrams.

Institution: None

Submitted : No date

GITSEL'TER, Ya.M., inzhener

Experience in wintertime electric welding of pipelines for
technical uses. Sbor. mat. o nov. tekh. v stroi. 17 no.4:28-30
'55.   (MIRA 8:6)
        (Electric welding--Cold weather conditions)

CA GITSEL'ZON, I I

Mechanism of reversion of hemolysis I A Terskov and I I Gitsel'zon (Krasnoyarsk Med. Inst *Doklady Akad Nauk S.S.S.R.* 79, 839–42(1951). Expts with human erythrocytes in hypo- or hypertonic NaCl solns followed spectrometrically (results given graphically) showed that in the region of 0.43-0.83% NaCl reversion of hemolysis can be regularly established by the addn of a proper amt of hypertonic soln. For normal human specimens the max of reversion lies at 0.45% NaCl, with variations to 0.18 and 0.80% Complete return of hemoglobin into the cells was not achieved, but a 60% effect was readily found The reversion was possible only if the hemolysis was mildly done, as cell wall damage by very hypotonic solns prevented the phenomenon   G M Kosolapoff

GITSESKU, Tiberiu[Ghitescu, Tiberiu]

[Problems of experimental vascular and cardiac surgery]Prob-
lemy eksperimental'noi sosudistoi i serdechnoi khirurgii.
Bucharest, Izd-vo Akad. Rumynskoi Narodnoi Respubliki, 1962.
440 p.   (MIRA 16:3)

(CARDIOVASCULAR SYSTEM—SURGERY)
(SURGERY, EXPERIMENTAL)

GITSEVICH, G.A., inzh.; BASYROV, Z.B., inzh.; SAGAYDAK, V.G., inzh.

New data on the explosivity of hydrocarbon mixtures in liquid
oxygen. Kislorod 12 no.3:12-16 '59.   (MIRA 12:10)
            (Hydrocarbons) (Oxygen) (Explosions)

KREMENCHUK, G.A.; GITSEVICH, M.A.

Phage titer growth reaction in the study of external environment. Zhur. mikrobiol., epid. i immun. 40 no.11:146 N '63.

(MIRA 17:12)

KREMENCHUK, G;A.; GITSEVICH, M.A.; BOYARSHINOVA, K.P.

Use of the phage titer growth reaction for studying objects in the external environment. Report No.2: Use of the phage titer growth reaction in the analysis of water. Zhur.mikrobiol. epid. i immun. 32 no.7:124 Je '61.   (MIRA 15:5)

1. Iz Dorozhnoy sanitarno-epidemiologicheskoy stantsii Vostochn.- sibirskoy zheleznoy dorogi, Irkutsk.
            (BACTERIOPHAGE)   (WATER—MICROBIOLOGY)

GITSEVICH, M.A.; BOYARSHINOVA, K.P.; KREMENCHUK, G.A.

Use of the phage increase reaction in the examination of objects
in the external environment. Report No.1: Use of the phage increase
reaction in water analysis. Zhur.mikrobiol.epid.i immun. 32 no.3:
43-44 Mr '61.   (MIRA 14:6)

1. Iz laboratorii Dorozhnoy sanitarno-epidemiologicheskoy stantsii
Vostochno-Sibirskoy zheleznoy dorogi, Irkutsk.
             (WATER—MICROBIOLOGY)   (BACTERIOPHAGE)
                    (SALMONELLA TYPHOSA)

KARTAMYSHEV, Anatoliy Iossafovich, prof.; POTOTSKIY, I.I., red.; GITSHTEYN,
        A.D., red.

    [Textbook on skin and venereal diseases] Uchebnik po kozhnym i
    venericheskim boleznism. Izd.2., ispr. i dop. Kiev, Gos.med.
    izd-vo USSR, 1959. 415 p.   (MIRA 13:5)

    1. TSentral'nyy institut usovershenstvovaniya vrachey Ministerstva
    zdravookhraneniya SSSR (for Kartamyshev).
      (SKIN--DISEASES)   (VENEREAL DISEASES)

LAPIDUS, F.I.; POZMOGOV, A.I.[Pozmohov, O.I.], red.; GITSHTEYN, A.D.
     [Hitshtein, O.D.], tekhn. red.

    [Tomography of the maxillofacial region] Posharove rentgeno-
    logichne doslidzhennia shchelepno-lytsovoi dilianky. Kyiv,
    Derzh. med. vyd-vo URSR, 1961. 177 p.   (MIRA 15:3)
     (Jaws—Radiography)   (Face—Radiography)

GITSHTEYN, I.S.; YUDOCHKIN, V.G.

Time marker for the MPO-2 oscillograph. Priborostroenie no.9:28-29
S '60.   (MIRA 13:9)
        (Automatic timers)   (Oscillograph)

GITSU, D.

Cand Phys-Math Sci - (diss) "Anisotropy of galvanomagnetic prop-
erties of monocrystals of bismuth and its alloys." Leningrad,
1961. 10 pp; (Leningrad State Pedagogical Inst imeni A. I.
Gertsen, Chair of General Physics); 150 copies; price not
given; (KL, 5-61 sup, 172)

$Gitsu, D. V$

82538

S/181/60/002/007/013/042
B006/B070

247600

AUTHORS: Gitsu, D. V., Ivanov, G. A.

TITLE. The Electric Properties of Single Crystals of Bismuth and Its Alloys. I. The Galvanomagnetic Properties of Pure Bismuth

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2. No. 7, pp. 1457-1463

TEXT: The authors have measured the Hall coefficient R and the magnetic resistance $\Delta \rho / \rho$ of very pure single crystals of bismuth in magnetic fields between 1300 and 18,000 oe ($\Delta \rho / \rho$ was measured also for the range 780 . 5600 oe) (H longitudinal). They report on the method of measurement and the results obtained. The bismuth was 99.97% pure, and was obtained from the Sverdlovskiy zavod khimicheskikh reaktivov (Sverdlovsk Works for Chemical Reagents). It had impurities of Pb and Sb and traces (1/1000 % and less) of Zn, Fe, Cd, B, Ag, and Cl. It was subjected to zone refining, and cylindrical single crystals were produced by Kapitsa's method. The samples were prepared with the undermentioned

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The Electric Properties of Single Crystals   S/181/60/002/007/013/042
of Bismuth and Its Alloys. I. Galvanomagnetic   B006/B070
Properties of Pure Bismuth

orientations of the crystallographic axes relative to the axis of the
sample: A) The trigonal axis parallel to the axis of the sample. B) One
of the binary axes parallel to the axis of the sample. C) The trigonal
and one of the binary axes perpendicular to the axis of the sample. All
samples were subjected to a tempering at 200°C for 36 hours, and there-
after slowly cooled. All electrical measurements were made by a
compensation method with a potentiometer of the type ПМС-48 (PMS-48).
The errors of measurement were no more than 3-5%. The results are shown
diagrammatically. Fig. 1 shows rotation diagrams $R(\Theta)$ and $\frac{\Delta\rho}{\rho}$ (Θ) for

crystals of the A-type; the curves show three symmetric maxima between 0
and 180°, at 30, 90, and 120°. Fig. 2 shows, for the same crystals,

$R(H)$ and $\frac{\Delta\rho}{\rho}$ (H) for the maxima (curve a) as well as for the minima
(curve b) of the rotation diagram. Fig. 3 shows rotation diagrams of the
B-type crystals, obtained by rotating the sample about one of the binary
axes; here, the curves $R(\Theta)$ and $\frac{\Delta\rho}{\rho}$ (Θ) have no similarity. Fig. 4 again

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The Electric Properties of Single Crystals   3/181/60/002/007/013/042
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shows $R(H)$ and $\frac{\Delta \rho}{\rho}$ (H) for the crystals of this type, the curves a and b
showing the courses for $\theta = 90^\circ$ and $\theta = 0^\circ$. The situation for the crystals
of the third type is shown in Figs. 5 and 6. For $\theta = 0^\circ$, the trigonal
axis parallel to $\vec{H}$. is perpendicular at $\theta = 90^\circ$; in the former case $R(\theta)$
and $\frac{\Delta \rho}{\rho}$ (θ) have a minimum and in the latter a maximum. Fig. 6 shows
$R(H)$ and $\frac{\Delta \rho}{\rho}$(H) for $\theta = 90^\circ$ and $\theta = 0^\circ$. Finally, the measurement of $\frac{\Delta \rho}{\rho}$
in the longitudinal $\vec{H}$ field is briefly mentioned. Fig. 7 shows $\frac{\Delta \rho}{\rho}$(H)
for all three types of orientations. It was found that $\frac{\Delta \rho}{\rho} \simeq \alpha H^2$ holds with
$\alpha_A \simeq 4.7 \cdot 10^{-10} \text{oe}^{-2}$, $\alpha_B \simeq 21 \cdot 10^{-10} \text{oe}^{-2}$. and $\alpha_C \simeq 29 \cdot 10^{-10} \text{oe}^{-2}$. The following
values of resistivity were found at $20^\circ C$. $\rho_A = 1.37 \cdot 10^{-4}$ ohm.cm. and
$\rho_B = \rho_C = 1.04 \cdot 10^{-4}$ ohm.cm. There are 7 figures and 20 references: 8 Soviet,
5 US, 3 British, and 2 German.

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The Electric Properties of Single Crystals
of Bismuth and Its Alloys. I. Galvanomagnetic
Properties of Pure Bismuth

S/181/60/002/007/013/042
B006/B070

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut im.
A. I. Gertsena (Leningrad State Pedagogical Institute
im. A. I. Gertsen)

SUBMITTED: September 17, 1959

Card 4/4

(Gitsu, D V

8253 9

S/181/60/002/007/014/042
B006/B070

24.7600

AUTHORS.   Gitsu, D. V. Ivanov, G. A.

TITLE: The Electric Properties of Single Crystals of Bismuth and
Its Alloys. II. The Galvanomagnetic Properties of Alloys
of Bismuth With Tellurium (Solid Solutions)

PERIODICAL: Fizika tverdogo tela. 1960, Vol. 2. No. 7, pp. 1464-1476

TEXT: Following the previous work (I), the authors give results of
measurement of the Hall coefficient R and the magnetic resistance $\Delta \rho / \rho$
in magnetic fields between 1300 and 18,000 oe for single crystals of
bismuth-tellurium alloys, as well as results of measurements of $\Delta \rho / \rho$
in longitudinal magnetic field. The cylindrical single crystals
investigated were again placed in three different orientations of the
crystallographic axes relative to the axis of the sample: A) The
trigonal axis parallel to the axis of the sample. B) One of the binary
axes parallel to the axis of the sample. C) The trigonal and one of the
binary axes perpendicular to the axis of the sample. (These three cases

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S/181/60/002/007/014/042
B006/B070

The Electric Properties of Single Crystals of
Bismuth and Its Alloys. II. The Galvano-
magnetic Properties of Alloys of Bismuth With
Tellurium (Solid Solutions)

are designated by A, B, B). The samples had tellurium impurities of 0.02
to 0.5 at%. Fig. 1 shows rotation diagrams of A-type crystals: $R(\Theta)$ and
$\frac{\Delta \rho}{\rho}$ (Θ) between 0 and 60°. A clear dependence on the concentration of

tellurium is seen; the higher the impurity concentration, the lower is the
angular dependence. For 0.5 - 0.3 at% of tellurium, R and $\Delta \rho / \rho$ are
practically independent of Θ; for 0.02 at% there is a distinct maximum at

30°. Fig. 2 shows $R(H)$ and $\frac{\Delta \rho}{\rho}$ (H) for different Te concentrations for

$\Theta = 30°$ and 0° (maximum and minimum in the rotation diagram). Also here,
for concentrations 0.3 at% there is no more dependence on H. Analogous
results were obtained on investigations of the crystals of the other two

types. Fig. 3 shows $R(\Theta)$ and $\frac{\Delta \rho}{\rho}$ (Θ) between 0 and 180°; Fig. 4, $R(H)$ and

$\frac{\Delta \rho}{\rho}$ (H) for the type B, and Figs. 6 and 7 for the type C. The numbers in

the vicinity of the curves give the concentration of tellurium; Figs. 5 and

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The Electric Properties of Single Crystals of
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Tellurium (Solid Solutions)

6 show R as a function of tellurium concentration. In a longitudinal
magnetic field, $\Delta \rho$ approximately obeys the law $\Delta \rho \sim \alpha H^2$. Fig. 9 shows α
as a function of the tellurium concentration; α falls exponentially with
increasing concentration. The results of measurement of resistivity for
pure bismuth and for bismuth doped with tellurium $(0.02 - 0.5$ at% of Te)
are collected in a Table. Then, a phenomenological theory of the galvano-
magnetic phenomena in crystals of the type D_{3d} is given. The results
obtained are discussed in detail. The authors finally thank Professor A. R.
Regel', Doctor of Physical and Mathematical Sciences, and Professor A. V.
Stepanov for their interest and advice. There are 9 figures, 1 table, and
12 references: 4 Soviet, 2 German, 2 US, 2 Japanese, and 2 British.

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut
               A. I. Gertsena (Leningrad State Pedagogical Institute
               A. I. Gertsen)

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The Electric Properties of Single Crystals of
Bismuth and Its Alloys. II. The Galvano-
magnetic Properties of Alloys of Bismuth With
Tellurium (Solid Solutions)

82539

S/181/60/002/007/014/042
B006/B070

SUBMITTED: September 17, 1959

Card 4/4

S/137/62/000/007/037/072
A057/A101

AUTHORS: Gitsu, D. V., Ivanov, G. A.

TITLE: Anisotropy of galvano-magnetic properties of bismuth and its
             alloys with tellurium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 13, abstract 7I75
             ("Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena", 1961,
             207, 13 - 29)

TEXT: The effect of admixtures on the anisotropy of electrical properties
of Bi was investigated. As starting material for the alloys was used Bi with a
purity of 99.97%. Among admixtures with a strong effect on electrical properties
of Bi were Pb ($<$0.01), Sb ($<$0.005), and also thousandths and smaller parts of
per cents of Zn, Fe, Cd, B, Ag, and Cl. Bi was purified by repeated zone melting.
Single crystals of the alloys were grown by the method of Kapitsa. All samples
were annealed after growth and the control on monocrystallinity in a thermostat
during 36 hrs at $200^{\circ}C$ with subsequent slow cooling. The electric resistance of
single crystals was determined both in a magnetic field (up to 18,000 oersted)
and without magnetic field, and also the Hall effect. It was observed that the

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Anisotropy of...

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A057/A101

Hall coefficient decreases in absolute magnitude, remaining negative, in samples
with any orientation of crystallographic axes relative to the current and mag-
netic field orientation when a sufficient quantity of admixture was added (0.05
at% Te). This is explained by the increase in concentration of electrons during
Te introduction and the decrease in concentration of holes. The addition of Te
admixture effects a decrease of the dependence of the Hall coefficient upon the
magnetic field. The admixture of Te effects a sharp drop of the concentration
of holes and rise of mobility of the latter; on the contrary, the concentration
of electrons rises, therefore decreases the dependence of the Hall coefficient
upon the magnetic field. A sharp decrease of the dependence of magnetic resis-
tance $\Delta\rho/\rho$ upon the field intensity is observed and some increase of the quadra-
ticity range of $\Delta\rho/\rho$, connected with the sharp decrease of efficiency of the
magnetic field in alloys because of the sharp drop of electron mobility with an
increase of Te admixture. There are 19 references.

Yu. Avraamov

[Abstracter's note: Complete translation]

Card 2/2

S/137/62/000/007/055/072
A057/A101

AUTHORS: Gitsu, D. V., Ivanov, G. A., Luzhkovskiy, V. G.

TITLE: The microhardness of bismuth alloys and its relation to electrical
             characteristics of these alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 66, abstract 7I424
             ("Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena", 1961, 207,
             45 - 50)

TEXT: An investigation of the microhardness of Bi-Te and Bi-Sn-Te alloys,
carried out with pressed samples, indicates apparently, that the microhardness of
alloys containing a small amount of admixture is determined principally by changes
of electron concentration effected by this admixture, rather than by the number of
admixture atoms.

                                                  T. Rumyantseva

[Abstracter's note: Complete translation]

Card 1/1

24 2700 (1043, 1137, 1482)

AUTHORS: Gitsu, D. V., Ivanov, G. A., and Popov, A. M.

TITLE: Thermoelectromotive force in bismuth and its alloys with
             tellurium

PERIODICAL: Fizika tverdogo tela, v. 4, no. 1, 1962, 22 - 28

TEXT: Measurement was made of the thermo-emf α of Bi single crystals with
a tellurium impurity. The temperature difference was between 2 and 10°C
in dependence on the Te concentration. When the temperature gradient was
oriented parallel to the trigonal axis, the differential thermo-emf was
denoted by $\alpha_{\parallel}$, for a perpendicular gradient it was $\alpha_{\perp}$; anisotropy was
thus characterized by $\alpha_{\parallel}/\alpha_{\perp}$. The measurements were carried out by a com-
pensation method using a ПΠТН-1 (PPTN-1) potentiometer and copper-
constantan thermocouples. α dropped rapidly with increasing Te content
(from 0 - 0.4 at%); the anisotropy also decreases, vanishing at 0.1 at% Te
where the $\alpha_{\parallel}$ and $\alpha_{\perp}$ curves meet. In order to explain this behavior the
rotation diagrams were taken for the thermo-emf of pure and impure single

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33338
S/181/62/004/001/004/052
Thermoelectromotive force in...   B102/B138

crystals. In the first case they were elliptic and in the second circular.
Exact measurements showed that there was no anisotropy between 0.1 and
0.3 at% Te. From the equations of the isoenergetic surfaces of conduction
and valence bands, on the assumption that the electron and hole mean free
paths were independent of carrier energy for both pure Bi and its alloys,

$$a_j = \frac{\sigma_{ij} \frac{\mu}{kT} - \sigma'_{ij} \frac{1}{eT}}{\sigma_{ij}}. \qquad (8)$$

was found;

$$\sigma_{ij} = -\frac{2e^2 \sqrt{2m_1 m_2 m_3}}{3\pi^2 \hbar^3 m_i} \delta_{ij} \int_0^\infty \tau E^{3/2} \frac{\partial f_0}{\partial E} dE \qquad (6)$$

$$\sigma'_{ij} = -\frac{2e^2 \sqrt{2m_1 m_2 m_3}}{3\pi^2 \hbar^3 m_i} \delta_{ij} \int_0^\infty \tau E^{5/2} \frac{\partial f_0}{\partial E} dE. \qquad (7)$$

μ denotes the level of chemical potential. For a relaxation time

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$\tau \sim E^{-1/2}$, $\alpha_j = \frac{k}{e} \left[\mu^* - \frac{2F_1(\mu^*)}{F_0(\mu^*)} \right]$ where μ^* is the reduced level of chemical

potential. The same relation is found for total thermo-emf, if the contributions of the sets of ellipsoids are added. $\alpha_{\parallel} = \alpha_{\perp} = \frac{1}{eT}\left(\mu - \frac{A'}{A}\right)$,

where

$$A = -\frac{2e^3\sqrt{2m_1 m_2 m_3}}{3\pi^3\hbar^3}\, \delta_{ij}\int_0^\infty \tau E^{3/2}\,\frac{\partial f_0}{\partial E}\,dE, \qquad (21)$$

$$A' = -\frac{2e^3\sqrt{2m_1 m_2 m_3}}{3\pi^3\hbar^3}\, \delta_{ij}\int_0^\infty \tau E^{5/2}\,\frac{\partial f_0}{\partial E}\,dE. \qquad (22)$$

These relations hold if one electron remains in the Bi alloy with increasing Te content. This contains the vanishing anisotropy found experimentally. In anisotropic metals (Zn, Cd, Hg), semimetals (Bi, Sb) and semiconductors (CdSb) anisotropy may be considerable (Bi: $\alpha_{\parallel} = 96.6$ μv/deg, $\alpha_{\perp} = 58.0$ μv/deg at 18°C). There are 2 figures, 1 table, and 13 references: 6 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: G. E. Smith. Phys. Rev., 115, 1561, 1959; B. Abeles a. S. Meiboom. Phys. Rev., 101, 544, 1956; A. H. Wilson. The theory of metals, Cambridge, 1954;
Card 3/4

Thermoelectromotive force in...   S/181/62/004/001/004/052
                                                   B102/B138

F. R. Drabble a. R. Wolfe. Proc. Phys. Soc., 69, 1101, 1956.

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut im.
            A. I. Gertsena (Leningrad State Pedagogical Institute imeni
            A. I. Gertsen)

SUBMITTED: June 21, 1961

Card 4/4

S/058/62/000/008/077/134
A061/A101

AUTHORS: Gitsu, D. V., Ivanov, G. A.

TITLE: Anisotropy of the galvanomagnetic properties of bismuth and its
             alloys with tellurium

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 28, abstract 8E207
             ("Uch.zap. Leningr. gos. ped. in-ta im. A. I. Gertsena", 1961,
             207, 13 - 29)

TEXT: The anisotropy of the galvanomagnetic properties of Bi and its al-
loys with Te in magnetic fields of up to 18 kilogauss was investigated. The
single crystals concerned had the shape of cylinders 3 - 4 mm in diameter and
5 - 8 cm long, and were oriented in one of the following three ways: A, the
trigonal axis parallel to the specimen axis; B, the binary axis parallel to the
specimen axis, and C, the specimen axis perpendicular to the binary and trigonal
crystal axes. In type-A specimens a trigonal symmetry of the Hall coefficient
R_H and the magnetoresistance $\Delta\rho/\rho$ was observed, and the maximum of the values
corresponded to a magnetic field perpendicular to the binary axis. However, on

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an increase of the Te concentration to 0.3 at.% this symmetry became circular.
At the same time, the magnitude of the effects decreased. The resistance, ρ,
of the alloy depended on the Te concentration, displaying a minimum at 0.2 at.%
Te. The properties of type-B specimens also became less dependent on the
magnetic field orientation on Te addition, without vanishing completely. The
maximum of $\Delta\rho/\rho$ sets in at an angle of, say, 20°, formed by the magnetic field
and the trigonal axis. In pure bismuth R_H has a minimum which is also shifted
by 10°, and where it changes its sign to positive. This sign change is removed
by a Te addition. The same effect of Te impurity is observed in C-type speci-
mens. In pure Bi the $\Delta\rho/\rho$ curve exhibits a double maximum for a magnetic field
being perpendicular to the trigonal crystal axis. ρ was found to change in the
longitudinal magnetic field of all specimen types concerned. This effect was
also reduced in magnitude by Te addition. These experimental results can be
explained qualitatively from the consideration that the complex character of
pure Bi anisotropy is due to the simultaneous presence of holes and electrons
possessing different effective masses and a different anisotropy of mobility.
The Te impurity leads to a decrease of the hole concentration and to an increase

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Anisotropy of the...

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of the hole mobility. At the same time the electron concentration grows, while the electron mobility drops. Hence it is to be noted that pure Bi anisotropy, as from fields of 5 kilogauss, cannot be described phenomenologically in weak magnetic field approximation. The Bi-Te alloy anisotropy is to some degree better describable.

I. Farbshteyn

[Abstracter's note: Complete translation]

Card 3/3

S/137/63/000/001/013/019
A006/A101

AUTHORS: Gitsu, D. V., Ivanov, G. A.

TITLE: On calculating the anisotropy of galvanomagnetic properties in
             bismuth single crystals

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1963, 10, abstract 1I49
             ("Bul. Akad. Shtintse RSSMold., Izv. AN MoldSSR", 1962, no. 5,
             83 - 91, Moldavian summary)

TEXT: A multi-ellipsoidal Shoenberg model (D. Shoenberg "Phil. Trans.
Roy. Soc.", 1952, A245) was calculated for the case of Bi and Bi with Te admix-
ture and the results were compared with the experiment. It was found that the
given model was in agreement with experimental data. It follows that in repro-
ducing the picture of anisotropy of galvanomagnetic properties for single crys-
tals of Bi and its alloys with Te at room temperature, it is necessary to take
into account the inclination of the main axes of the ellipsoidal surfaces in the
conductivity zone, to the symmetry axes of the crystal. It is easy to select a
model of the zonal structure of crystals from the rotation diagrams of galvano-
magnetic effects.
[Abstracter's note: Complete translation]   A. Loshmanov
Card 1/1

Investigation of the efficiency coefficients in the solid solution
system AlSb-GaSb.   I. I. Burdiyan.   (10 minutes).

[Investigation of some properties of indium arseno-telluride doped
with bismuth.   D. V. Gitzu, S. I. Radautsan.   (Not Presented)].

Physico-chemical properties of the pseudo-binary alloys of arsenic
with indium telluride.   B. P. Kotrubenko, V. I. Lange, T. I. Lange.

Study of the anisotropy of microhardness of some semiconducting
compounds.   D. V. Gitzu, V. I. Lange, T. I. Lange.   -
(Presented by D. V. Gitzu--15 minutes).

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

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

Density of the electronic states in the conduction band of
bismuth. Fiz.tver.tela 5 no.5:1406-1410 My '63.

(MIRA 16:6)

1. Leningradskiy gosudarstvennyy pedagogicheskiy institut
imeni A.I.Gertsena.
(Bismuth--Electric properties)

NASLEDOV, D.N., prof., red.; GORYUNOVA, N.A., prof., red.;
GITSU, D.V., kand. fiz.-mat. nauk, red.; LANGE, V.N.,
kand. fiz.-mat. nauk, red.; RADAUTSAN, S.I., kand. fiz.-
matem. nauk, red.

[Research on semiconductors; new semiconductor materials]
Issledovaniia po poluprovodnikam; novye poluprovodnikovye
materialy. Kishinev, Kartia Moldoveniaske, 1964. 173 p.
(MIRA 17:5)

1. Akademiya nauk Moldavskoy SSR. Institut fiziki i matema-
tiki.

Card 2/2

ACCESSION NR: AP4043397   S/0181/64/006/008/2550/2551

AUTHOR: Gitsu, D. V.

TITLE: On the symmetry of rotation diagrams of magnetoresistance about an n-fold axis

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2550-2551

TOPIC TAGS: Hall effect, galvanomagnetic effect, resistivity, crystal structure

ABSTRACT: The structure of the rotation diagrams of the magnetoresistance $\Delta\rho/\rho$ about the C_6, C_4, and C_3 axes in crystals of class D_{6h}, O_h, and D_{3d} is considered phenomenologically in the weak magnetic field approximation, with terms of order higher than H^2 included in the expansions. The expressions are derived for the particular case when the current is directed along the C_n axis ($n = 3, 4, 6$) and the

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ACCESSION NR: AP4043397

field is perpendicular to the current. Separate expressions are
obtained for even n (including n = 2) and for odd n. It can be
shown similarly that the odd components of the Hall field have the
same angular dependence as the magnetoresistance. Although the
expressions are obtained in the weak magnetic field approximation,
they are applicable over a wide range of magnetic fields even at
low temperatures. Orig. art. has: 1 figure and 4 formulas.

ASSOCIATION: Institut fiziki i matematiki AN MSSR, Kishinev (Insti-
tute of Physics and Mathematics, AN MSSR)

SUBMITTED: 25Mar64

SUB CODE: SS   NR REF SOV: 002

ENCL: 00

OTHER: 005

Card   2/2

AUTHOR: Lange, T.I.; Gitsu, D.V.; Lange, V.N.

TITLE: Investigation of the microhardness anisotropy of some semiconductor com-
pounds /Report, Third Conference on Semiconductor Compounds held in Kishinev 16 to
21 Sep 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.6, 1964, 1080-1084

TOPIC TAGS: semiconductor, semiconductor property, microhardness, crystal structure

ABSTRACT: It is suggested that useful information concerning the forces within a
crystal may be obtainable from the easily measured microhardness anisotropy, and a
number of measurements, performed in an exploration of this possibility, are pre-
sented. The microhardness measurements were performed by a method described else-
where (Yu.S.Boyarskaya and M.I.Val'kovskaya, Kristallografiya 7,261,1962; V.N.Lange
and T.I.Lange, Fiz.tverdogo tela,5,2029,1963), which involves scratching the crys-
tal face in a controlled manner with a special machine. Materials investigated in-
clude InSb, In$_2$Te$_3$, Be, Bi, Sb, Te and Te-Sb alloys. In each case the microhardness
was plotted against the angle between the scratch and an appropriate crystallogra-

1/: Card 1/3

ACCESSION NR: AP4041382

phic axis, and a suitable trigonometric power series was fitted to the points. These curves differ considerably in shape from case to case. When the crystal symmetry is such that the period of the microhardness curve is 120°, the microhardness depends not only on the plane to which the scratch is parallel, but also on the direction in which it is traversed. This difference can amount to 30% in In_2Te_3. In some cases the authors plot other crystal properties together with the microhardness. Particularly striking is the agreement between the rather involved shape of the microhardness curve for the (0001) face of Bi and that of the curve relating direction and intensity of the Hall field. The addition to Bi of small quantities of Te or Pb, which oppositely affect the electron/hole ratio, distort the microhardness curve strongly and quite differently. The authors argue that it should be possible to obtain information concerning the band structure and the shape of the Fermi surface from microhardness anisotropy measurements. The authors characterize their arguments as "phenomenological" and "purely formal". Orig.art.has: 4 formulas, 4 figures and 1 table.

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ACCESSION NR: AP4041382

ASSOCIATION: Laboratoriya poluprovodnikovy*kh soyedineniy Akademii nauk MoldSSR
(Laboratory of Semiconductor Compounds, Academy of Sciences, MoldSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: SS, ME

NR REF SOV: 008

OTHER: 002

Card 3/3

GI... , ... 'White, E.V.]

Symmetry of the diagrams of rotation of magnetoresistance around the n-fold axis. Fiz. tver. tela 6 no.8:2550-2551 Ag '64.

(MIRA 17:11)

1. Institut fiziki i matematiki AN Moldavskoy SSR, Kishinev.

L 28560-66   EWT(m)/EWP(w)/ETC(f)/T/EWP(t)/ETI   IJP(c)   RDW/JD
ACC NR: AP6012511   SOURCE CODE: UR/0181/66/008/004/1293/1295

AUTHORS: Gitsu, D. V.; Ivanov, G. A.

ORG: Institute of Applied Physics, AN MSSR, Kishinev (Institut prikladnoy fiziki AN MSSR)

TITLE: Some features of the influence of Sn and Te impurities on the anisotropy of the galvanomagnetic properties of bismuth

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1293-1295

TOPIC TAGS: tin, selenium, bismuth, galvanomagnetic effect, impurity level, magnetoresistance, Hall constant, bismuth base alloy, ternary alloy

ABSTRACT: This is a continuation of earlier work by one of the authors (Ivanov, FMM v. 16, 848, 1963 and earlier), where it was shown that, at certain concentrations, ternary alloys of bismuth with Sn and Te have the same properties as pure bismuth, meaning that the Sn and Te cancel each other out. The present study reports measurements of the angular dependence of the magnetoresistance and the Hall coefficient at room temperature, in a magnetic field of 18 kOe, for two such compensated cylindrical samples with different crystallographic orientations. The results showed that when the axis of the sample was parallel to the C_3

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L 28560-66

ACC NR: AP6012511

axis of the crystal the sample had galvanomagnetic properties similar to
that of pure bismuth. When the sample axis was parallel to the crystal-
lographic C_2 axis the magnetoresistance of the 'compensated' sample ex-
ceeded that of a binary alloy with either Sn or Te. In the case of
sample A, the diagram remains symmetrical regardless of the nature of
the additive, and the magnetoresistance was lower than that of the alloy
with tin, and much higher than that of the alloy with tellurium. The
Hall coefficient of the compensated samples was larger in absolute mag-
nitude than in pure bismuth. It is concluded that although the influ-
ence of the impurities on the anisotropy of the galvanomagnetic proper-
ties of bismuth has a rather complicated character, it can be explained
qualitatively within the framework of the existing theories. Orig.
art. has: 2 figures, 3 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 10Nov65/ ORIG REF: 004/ OTH REF: 001

Card   2/2

GITTERMAN, L. A

Experimental laboratory testing of ammonia-silver. L. A. Gitterman. Sovet. Rachebnyi Zhur. 41, 1014-23(1937); Chem. Zentr. 1938, I, 3070-7.—The disinfecting action of an ammoniacal Ag prepn. in distd. water, physiol. salt soln., and in media contg. blood was investigated. The effect did not differ from that of other Ag compds. of the same degree of dissocn. The disinfecting action was not increased by excess NH₃. The prepn. had little effect on experimentally produced purulent infections in rabbits and white mice and showed no advantage over the previously used AgNO₃.   M. G. Moore

GITTERMAN, L.A.; KOVZINA, E.A.; STRAKHOV, Ye.F.; POPTSOVA, M.D.

Material on sporadic cases of Breslau infection in Molotov. Zhur.
mikrobiol.epid. i immun.,supplement for 1956:53-54 '57 (MIRA 11:3)

1. Iz Molotovskogo instituta vaktsin i syvorotok i Gorodskoy bol'nitsy.
   (SALMONELLA TYPHIMURIUM)

GITTERMAN, L.A.

    Activity of the Perm branch of the I.I. Mechnikov All-Union
Society of Microbiologists, Epidemiologists and Infectious
Disease Specialists. Zhur. mikrobiol., epid. i immun.
33 no.2:158 F '62.   (MIRA 15:3)
               (MICROBIOLOGICAL SOCIETIES)

GITTERMAN, L.A.

Case of isolation of S.Heidelberg from a frog's intestine. Zhur.
mikrobiol., epid.i immun. 33 no.8:125-126 Ag '62. (MIRA 15:10)

1. Iz Permskogo instituta vaktsin i syvorotok.
           (FROGS--DISEASES AND PESTS)(SALMONELLA)

MIRSKOVA, V.N.; GITTERMAN, L.A.; KHRUSTALEVA, L.A.; KALUGINA, L.V.

Bacterial pollution and pyrogenicity of diaferm-3 sera. Nauch. osn.
proizv. bakt. prep. 10:206-212 '61.   (MIRA 18:7)

1. Permskiy institut vaktsin i syvorotok.

GITTERMAN, L. I.

Jun 53

USSR/Medicine - Typhoid

"Attempt at Phage Typing of Typhoid Bacteria in Epidemiological Practice,"

L. I. Gitterman, Molotov Inst of Vaccines and Sera

Zhur Mikro, Epid, i Immun, No 6, p 88

In phage typing for epidemiological analysis, author found that the predominant phage types were F, C, and A. Modification of phage types could be differentiated acc to individual cultures: F_1 changed into A, cultures that could not be typed changed into C, type 91/858 changed into C. Author proved in 4 cases that infection was due to contaminated water, and in one case to spreading of bacilli by carrier.

267T31