ACCESSION NR: AP4027966

radioprotective action of tryptamine derivatives, but does not affect
their capacity to constrict vessels and to develop hypoxia. The
radioprotective action mechanisms of cystamine and the investigated
indolylalkylamines differ. Orig. art. has: 4 figures, 2 tables.

ASSOCIATION: None

SUBMITTED: 06Apr63   DATE ACQ: 28Apr64

SUB CODE: AM   NO REF SOV: 013   ENCL: 00

OTHER: 008

Card 3/3

L 3452-66   EWT(m)

ABSTRACT: The work attempts experimental verification of the hypothesis that the basic mechanism of these radioprotective effects is related to an increased level of free sulfhydryl groups in the tissues. White mice aged 8-12 weeks were irradiated with 900 r ($LD_{100/30}$) and were kept in glass containers to facilitate change of air. The following aminothiols were injected subcutaneously 15-30 minutes before irradiation or before sulfhydryl group determination: cystamine, cystamine, β-mercaptopropylamine, and serotonin. Radioprotection was determined according to survival beyond 30 days. A spleen homogenate was used for sulfhydryl determination with mercuric chloride under argon or air. It

Card 1/2

L 3452-66

ACCESSION NR: AP5024008

was found that all the agents which have a radioprotective effect caused considerable (10-35%) increase (compared to control levels) of the groups in spleen homogenate under argon. Some increase of sulfhydryl groups in air was seen only for cystamine. If the mice breathed oxygen immediately before and during irradiation, the aminothiol radioprotective effect decreased somewhat, as did the content in the sulfhydryl groups. This was shown to be unrelated to inactivation through oxidation of the protectant. It is concluded that the predominant mechanism of radioprotection is related to an increase of highly reactive endogenous sulfhydryl groups, due probably to lesser oxidation and spontaneous reduction of the S-S bonds. These appear to be highly mobile groups in low molecular compounds which are inactive products of radiolysis of the biomacromolecules. Orig. art. has: 3 tables

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR (Institute of Animal Morphology, Academy of Sciences SSSR)

SUBMITTED: 15Mar65   ENCL: 00   SUB CODE: LS

NR REF SOV: 007   OTHER: 009

BV

Card 2/2

L 1813-66

ACCESSION NR: AP5024221   UR/0020/65/164/003/0684/0685

AUTHOR: Grayevskiy, E. Ya.; Nekrasova, I. V.; Tarasenko, A. G.

TITLE: The antiradiation effectiveness of endogenic sulfhydryl compounds

SOURCE: AN SSSR. Doklady, v. 164, no. 3, 1965, 684-685

TOPIC TAGS: sulfhydryl group, radioprotective agent, cystamine, mercamine, x ray

ABSTRACT: It has been recently established that when various radioprotective agents moderate the radiation injury to biological objects, there is an increase in the content of highly reactive, endogenic, sulfhydryl compounds. The purpose of this study was to demonstrate that radioprotective agents do not in themselves exert a radioprotective effect, but rather induce the production of active sulfhydryl compounds which in turn have a radioprotective effect. The source of these compounds was spleens taken from mice 1 min after killing. The spleen of a live animal was used as a control. Due to the high lability of sulfhydryls, spleens were placed in argon immediately after splenectomy and homogenized (oxygen content < 0.003%, 0.3 ml of solution to 200 mg of tissue). After this, the homogenate was drawn into a 5-ml syringe containing 2 ml of Erlich ascites taken from the abdomen of animals 15 min after killing. A hyperdiploid Erlich carcinoma strain (4% polyploidal cells)

Card 1/4

L 1813-66

ACCESSION NR: AP5024221   /

was used. The original ascites was taken from mice on the 7th day of incubation, diluted with Ringer's solution 3:1, and injected (4 ml) into the abdomens of normal mice. These animals were then killed and 2 ml of the ascites was drawn off with an argon blown syringe without exposing the abdomen to outside air. The ascites was mixed for 1 min with the aforementioned homogenate and injected into normal animals. After 15 min, these animals were irradiated by x-rays (700 r, 50 r/min). The radio-protective activity of endogenic groups was compared with cystamine and mercamine mixed with ascites, which were intraperitoneally injected into mice irradiated in the same manner. Table 1 of the Enclosure presents the results of the experiment. The table shows that spleen homogenate from dead animals noticeably reduced cell injuries but that this protective effect was less significant than that of cystamine and mercamine. Thus, the material indicates that free sulfhydryl groups possessing significant radioprotective activity (capable of reducing injury to ascites cells) are found in the spleens of animals under oxygen-free conditions. It is possible that the radiosensitivity of various cells and tissues at various stages of their development may be associated with differences in the levels of these particular types of highly reactive, endogenic,sulfhydryl compounds. Orig. art. has: 1 table.
                                                                                        [CD]

ASSOCIATION: Institut morfologii zhivotnykh imeni A. N. Severtsova Akademii nauk. SSSR (Institute of Animal Morphology, Academy of Sciences,SSSR)

Card   2/4

L 1813-66
ACCESSION NR: AP5024221

SUBMITTED: 19Mar65   ENCL: 01   SUB CODE: LS

NO REF SOV: 002   OTHER: 001   ATD PRESS: 4/111

Card 3/4

L 1813-66
ACCESSION NR: AP5024221

ENCLOSURE: 01

Table 1. Percent of cancer ascites cells with chromosomal aberrations (late anaphase—early telophase) after irradiation (700 r) in the abdomens of mice

No. Variants	Cell with rearrangements		P
	(M ± m)	n	
1. Unirradiated	14.0 ± 0.94	6	
2. Irradiated	77.0 ± 2.64	10	
3. I control (air)	77.6 ± 0.8	6	
4. II control (argon) Homogenate of live mouse spleen (argon)	79.2 ± 1.36	19	
5. Homogenate of dead mouse spleen (argon)	71.4 ± 1.33	27	$P_{4/5}$ = 0.001
6. Cystamine (5 mg/mouse)	66.0 ± 1.92	20	$P_{3/5}$ = 0.01
7. Mercamine (3 mg/mouse)	54.5 ± 2.49	15	$P_{5/7}$ = 0.001

Card 4/4

L 28883-66   EWT(m)

ACC NR: AP6015413   SOURCE CODE: UR/0216/66/000/003/0376/0382

AUTHOR: Grayevskiy, E. Ya.

ORG: Institute of Animal Morphology im. A. N. Severtsova (Institut morfologii zhivotnykh)

TITLE: Some results and problems of studying radioprotective mechanisms

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 3, 1966, 376-382

TOPIC TAGS: mouse,   antiradiation drug, radiation injury, sulfhydryl group, hypoxia, radiation protection

ABSTRACT: The author attempts to show that basically the action mechanism of various radioprotectors is the same; the radioprotectors do not act directly on an organism, but exert their radioprotective action by increasing the SH group levels. In a series of in vivo and in vitro experiments the effects of radioprotectors (anoxia, cystamine, mercamine, serotonin and AET) on SH group levels were investigated in spleen tissues of mice and Ehrlich ascitic carcinoma cells irradiated with a 600 or 700 r dose. SH group levels and chromosome aberrations served as

Card 1/2   UDC: 577.391

L 28883-66

ACC NR: AP6015413   0

indexes.   The data show that the radioprotectors increase SH group
levels of spleen tissues and Ehrlich ascitic carcinoma cells by 10% to
35%. During irradiation, the contact of Ehrlich ascitic carcinoma cells
with anoxia-protected spleen homogenates reduced radiation injuries of
the carcinoma cells. Different ways of increasing SH group levels of
an organism are discussed. Possibly, natural radiosensitivity differ-
ences of organisms are determined by their endogenous SH group levels.
Orig. art. has: 6 tables.   [06]

SUB CODE: 06/ SUBM DATE: 24Dec65/ ORIG REF: 011/ OTH REF: 019/
ATD PRESS: 5665

Card 2/2

L 27819-66   EWT(m)

ACC NR: AP6008058   SOURCE CODE: UR/0020/66/166/004/0974/0977

AUTHOR: Grayevskiy, E. Ya.; Nekrasova, I. V.; Tarasenko, A. G.

ORG: Institute of Morphology of Animals im. A. N. Severtsov, Academy of Sciences SSSR (Institut morfologii zhivotnykh Akademii nauk SSSR)

TITLE: Effect of radiation protection agents (anoxia, cysteamine and cystamine) on the level of sulfhydryl groups in ascitic Ehrlich carcinoma cells

SOURCE: AN SSSR. Doklady, v. 166, no. 4, 1966, 974-977

TOPIC TAGS: carcinoma, cancer drug, radiation protection, sulfhydryl group

ABSTRACT: Having previously discovered that the level of endogenous sulfhydryl groups increases in live organisms under the influence of anoxia and aminothiols, the authors checked the hypothesis that radiation protection occurs not so much as a result of the presence of these agents in the body, as of the general increase in the level of SH groups. To prove this point, they attempted to show such an increase not only in the total living organism but in isolated cells as well. The experiments were performed on ascitic Ehrlich carcinoma cells after 7-8 days' cultivation. The sulfhydryl groups were determined in malignant cells and in the ascitic fluid of normal animals, in animals destroyed 10-15 min following anoxia, and in animals which were injected intraperitoneally with 5 g of cystamine 15 min prior to taking the ascites sample. In

UDC: 577.3-539.1.047

Card 1/2

L 27819-66

ACC NR: AP6008058

addition, sulfhydryl groups were determined in cells to which 0.6 mg/ml of cystamine and 0.4 mg/ml of cysteamine were added *in vitro* and incubated for 15 min at 37C. It was found that under anoxia the thiol group content increases by 8% in air and by 18% in argon, while the content of the nonprotein sulfhydryl groups does not change. Cystamine causes a 12% increase of the SH groups in the malignant cells *in vivo*, and is completely ineffective *in vitro*. Cysteamine, added to the carcinoma cells *in vitro*, causes a 36% increase in SH groups, while the nonprotein SH group level increases sixfold. It is concluded that the protective effect obtains only in the case of an increase in the level of the protein sulfhydryl groups. This is explained by the inactivation of organic radicals formed during irradiation through interaction with the thiol groups. However, the possibility that the protection depends on the absolute content of SH groups and not on their reactivity is not excluded. Orig. art. has 2 figures and 3 tables. [14]

SUB CODE: 06/   SUBM DATE: 04Sep65/   ORIG REF: 003/   ATD PRESS: 5003

Card 2/2

L 35889-66
ACC NR: AP6010870   SOURCE CODE: UR/0115/66/000/002/0034/0036

AUTHOR: Grayevskiy, M. M.

ORG: none

TITLE: Dynamic calibration of semiconductor thermistors

SOURCE: Izmeritel'naya tekhnika, no. 2, 1966, 34-36

TOPIC TAGS: thermistor, semiconductor thermistor

ABSTRACT: A time-saving method for calibrating semiconductor thermistors is suggested. A thermocouple or resistance thermometer is used as a reference instrument in a bridge circuit; the calibrating curves are recorded by a two-coordinate recorder. As both reference and test thermal sensors differ in their thermal inertia, an error of measurement arises: this error can be excluded by drawing a mid-curve between two heating and cooling curves. An experimental

UDC: 621.316.825.032.089.6

L 35889-66
ACC NR: AP6010870

verification showed a difference of 1—2C between the calibration curve obtained by
the above method and the "control points," which is within the error range of a
0—250C mercury thermometer used in the tests as a reference instrument. Orig.
art. has: 3 figures and 1 formula.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 010

Card 2/2

L 9458-66

ACC NR: AP5025068   SOURCE CODE: UR/0286/65/000/016/0122/0122

AUTHORS: Zhuchenko, A. N.; Zimin, A. I.; Grayfer, A. Kh.

ORG: none

TITLE: High speed pneumatic hammer. Class 49, No. 174056

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 122

TOPIC TAGS: forging hammer, pneumatic hammer, forging press, metalworking, PNEUMATIC DEVICE, FORGING MACHINERY

ABSTRACT: This Author Certificate presents a high speed pneumatic hammer which operates at high pressures with a cylinder open at the bottom and with the hammer acting as the piston (see Fig. 1). To provide reliable holding of the hammer at the cylinder top and to provide fast automatic release when high pressure air is introduced, the upper part of the piston-hammer and the lid of the cylinder form mating circular surfaces, the lid part of which deforms elastically in the radial direction when pressurized air is introduced. To simplify hammer construction and to eliminate loss of compressed air during the return stroke, a second feature is provided by the use of a vacuum pump which reduces the pressure above the piston during the return stroke.

Card 1/2   UDC: 621.733.544-185.4
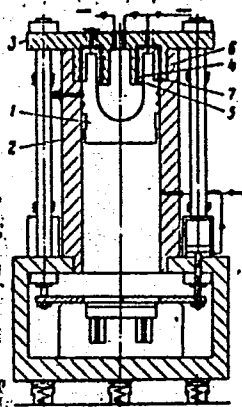
L 9458–66
ACC NR: AP5025068

0

Fig. 1. 1 – Piston-hammer; 2 – cylinder;
3 – lid; 4 to 7 – circular mating surfaces.

Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 04Jul62

Card 2/2

GRAYFER, YE. F.   137-58-5-10745

AUTHORS: Grayfer, Ye. F., Imshenetskiy, V. I., Nikitenko, V. D.

TITLE: Improving the Chemical Properties of Kh25 and Kh28 High-chromium Steels (Povysheniye khimicheskikh svoystv vysoko-khromistykh staley Kh25, Kh28)

ABSTRACT: Kh25 (EI 181) and Kh28 (EI 349, EZh 27) steels are distinguished by an undesirable tendency toward grain growth when heated >900°C, such coarse granular structure not being susceptible to correction by subsequent heat treatment. The only method of correcting the structure of such steels is by a high degree of deformation ending at low temperature and not accompanied by any significant degree of recrystallization. Experimental work under various conditions was undertaken at the Dneprospetsstal' plant with the object of finding optimal conditions for heating and forging that would guarantee the mechanical properties of these steels in accordance with GOST (All-Union State Standard) 5949-51. The optimum technology

Card 1/2

137-58-5-10745

Improving the Chemical (cont.)

proved to be one in which forging terminated at not over 800°, and the work hardening thus produced was removed by high-temperature tempering at 700° for 8 to 10 hours.

I. G.

1. Steel--Chemical properties   2. Chromium--Chemical effects

Card 2/2

L 10453-67   EWT(m)/EWP(t)/ETI   IJP(c)   JD

ACC NR: AP6022506   SOURCE CODE: UR/0133/66/000/004/0323/0326

AUTHORS: Moshkevich, Ye. I. (Candidate of technical sciences); Gabuyev, G. Kh.;
Smolyakov, V. F.; Frantsov, V. P.; Grayfer, Ye. Z.; Spektor, Ya. I.; Lavrent'yev,
M. I. (Engineers); Yelinson, G. L. (Engineer)

ORG: none

TITLE: Manufacture of high-alloy steels with normalized phase composition

SOURCE: Stal', no. 4, 1966, 323-326

TOPIC TAGS: alloy steel, chromium steel alloy, high alloy steel / Kh16N9M2 alloy
steel, OKh18N10 alloy steel, Kh18N9 alloy steel, O4Kh17N10M2 alloy steel /

ABSTRACT: The possibility of obtaining stainless steels and intermediate type
steels having a normalized phase composition (1 - 5% ferrite) under industrial con-
ditions was studied. The experiments were carried out in electrical furnaces of
5—50 tons capacity, on charges consisting of fresh steel and scrap metal respec-
tively. The α-phase content in the steels was maintained by chromium, nickel,
and carbon additions. The phase composition was determined after the method of S.
A. Iodkovskiy and N. N. Sashchin (Trudy TsNIITMASha No. 13 (Vyplavka stali i
proizvodstvo stal'nykh otlivok), ONTI TsNIITMASh, 1960). The experimental results
are presented in graphs and tables (see Fig. 1). It was found that alloying with

Card 1/3   UDC: 669.187.2

L 10453-67

ACC NR: AP6022506

Fig. 1. Distribution of ferrite (9·) in 2.8-ton ingots a and b of steel OKh16N9M2. Initial composition of ingot (a) and (b) respectively: C - 0.06, 0.07%; Mn - 1.0, 1.24%; Si - 0.40, 0.18%; Cr - 15.46, 15.60%; Ni - 9.0, 9.04%
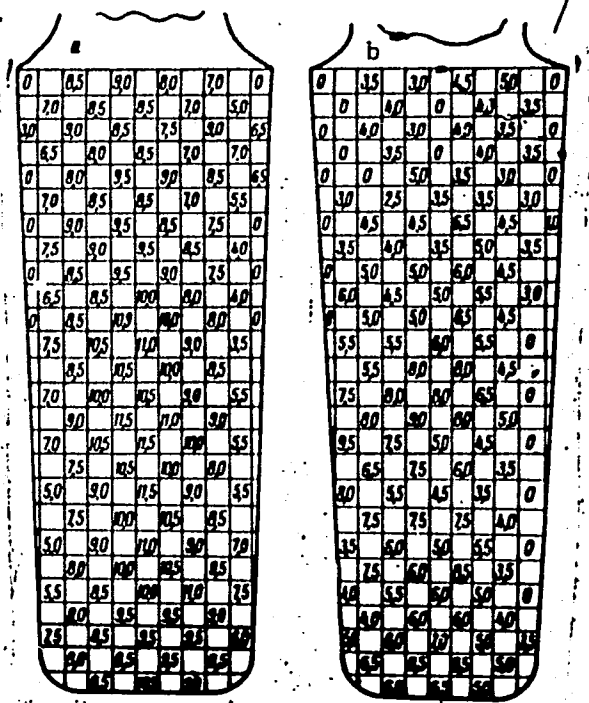
Card 2/3

L 10453-67

ACC NR: AP6022506

6

Al-Ni as recommended by P. I. Melikhov, A. N. Boyarinova, 1 dr. (Stal', 1964, No. 4) was unnecessary. All specimens smelted had satisfactory mechanical and technological properties. N. N. Sashchin, V. S. Dub, P. M. Grashchenkov, I. A. Barmotin, and others took part in the experiments. Orig. art. has: 2 tables and 1 graph.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 004

Card 3/3

BONDAREV, Yakov Leont'yevich; GRAYFER, Arnol'd Grigor'yevich;
PERFILOV, I.F., inzh., red.

[Preparing large reinforced concrete pipes and silo rings
with immediate removal of forms; practices of the No.23
Plant for Reinforced Concrete Products of the Main Admin-
istration of the Building Materials Industry of Moscow]
Izgotovlenie krupnorazmernykh zhelezobetonnykh trub i si-
losnykh kolets s nemedlennoi raspalubkoi; opyt zavoda zhe-
lez~hetonnykh izdelii No.23 Glavmospromstroimaterialov.
Moskva, Gosstroiizdat, 1963.   44 p.   (MIRA 17:12)

1. Moscow. Nauchno-issledovatel'skiy institut organizatsii,
mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu.
2. Direktor zavoda zhelezobetonnykh izdeliy No.23 Glavnogo
upravleniya promyshlennosti stroitel'nykh materialov i
stroitel'nykh detaley (for Bondarev). 3. Nachal'nik pro-
izvodstvenno-tekhnicheskogo otdela zavoda zhelezobetonnykh
izdeliy No.23 Glavnogo upravleniya promyshlennosti stroitel'-
nykh materialov i stroitel'nykh detaley (for Grayfer).

GRAYFER, Ye.Z.

Graphite Formation on Steel Surfaces during Vacuum Heat-treatment. E. Z. Grayfer and I. V. Balli. (Doklady Akad. Nauk S.S.S.R., 1954, 97, (4), 663-665). An account of experiments on the effects of cooling rate and silicon content is given.

Dnepropetrovsk State Univ.

RAKOV, P.P.; SHTERENBERG, A.I.; GRAYFER, V.I., red.; LIPKOVICH, R.I.,
        red.; ZAYNULLIN, I.Kh., tekhn. red.

   [Preparation of crude for refining] Podgotovka nefti k pere-
   rabotke. Pod red. V.I.Graifera. Kazan', TSentr. biuro tekhn.
   informatsii, 1960. 73 p.   (MIRA 15:3)
        (Oil fields—Production methods) (Automatic control)

GRAYFER, Yu. M., inzhener.

Use of high-pressure pumps for feeding fatty acids. Masl.-zhir.
prom. 23 no.5:40 '57.   (MIRA 10:5)

1. Saratovskiy zhirkombinat.
          (Acids, Fatty) (Pumping machinery)

GRAYFER, Yu.M., inzhener; POGULYAYKO, A.D., inzhener.

For over-all mechanisation of labor-consuming work. Masl.-zhir.prom. 23 no.7:38-40 '57.   (MLRA 10:8)

1.Saratovskiy zhirkombinat.
                        (Oleomargarine) (Materials handling)

Gr.Y..., Yu...

Role of nurses in conducting conditioned-response therapy.
B.S. Brusilovskii, E.M. Graina. Med. sestra no. 4:18-20 '53.

GRAYNER, T.I.; PASTERNAK, Ye.B.

Study of a time-optimal servo system. Trudy MEI no.50:93-124 '63.

(MIRA 17:12)

GRAYPEL', S.; YAKUSHEV, A.

     This is the way the detachment operated. Voen. znan. 40 no.8:
     25-26 Ag '64.   (MIRA 17:11)

UTKIN, N.I.; FURHOV, S.S.; KRAMER, R.M.; EMALYANSKIY, P.Ya.; BUSHKANETS, A.S.; DOLENKO, V.N.; LUK'YANOV, S.M.

Results of plant tests on the deep removal of impurities from sodium silicate slags. TSvet. met. 28 no.4:15-18 Ap '57.   (MIRA 18:5)

VEDERNIKOV, A., starshiy inzhener (Irkutsk); CHERNIKOV, V., aviatekhnik (Irkutsk); GRAYVORONTSEV, I., aviatekhnik (Irkutsk)

Ground workers had to catch up. Grazhd.av. 18 no.11:11 N '61.

(MIRA 15:2)

(Irkutsk--Airports) (Irkutsk--Airplanes--Maintenance and repair)

VORONOVA, N.A.; MOGILEVTSEV, O.A.; GRAYFER, M.Z.

Effect of the material of the crucible (ladle) on the residual content
of cerium in cast iron being held under a reducing layer. Lit.proizv.
no.4:20-21 Ap '63.
(MIRA 16:4)
(Cast iron—Metallurgy)   (Crucibles)

SAVEL'YEV, Konstantin Mikhaylovich; MOLOSTOV, V.S., inzh., retsenzent;
GRAYFER, V.I., inzh., retsenzent; LATUKHINA, Ye.I., ved. red.;
VORONOVA, V.V., tekhn. red.

[Oil-field industry] Neftepromyslovoe khoziaistvo. Moskva,
Gostoptekhizdat, 1963. 207 p. (MIRA 16:8)

1. Prepodavatel' Groznenskogo neftyanogo tekhnikuma (for
Molostov).
(Petroleum production)

GRAYZER, M.I.

USSR/ Geology

Card   1/1   Pub. 22 - 34/47

Authors   : Grayzer, M. I.; Obruchev, D. V.; and Sokol'skaya, A. N.

Title   : New data about the growth of transient strata of the lower boundary of the Minusinsk syncline

Periodical : Dok. AN SSSR 98/5, 825-828, Oct 11, 1954

Abstract   : New geological data regarding the growth of transient strata of the lower boundary of the Minusinsk basin are presented. Three USSR references (1936-1954).

Institution : ...

Presented by : Academician V. A. Obruchev, July 2, 1954

GRAYZER, M.I.

Structural features of Devonian and Carboniferous deposits of the southern wing of the Moscow Basin. Izv. AN SSSR. Ser.geol. 21 no.6:20-30 Je '56. (MLRA 9:10)

1. Ministerstvo neftyanoy promyshlennosti SSSR, Trest "Soyuznefte-rasvedka," Soyuznaya geologo-poiskovaya kontora, Moskva.
(Moscow Basin--Geology)

GRAYZER, M.I.

Some geomorphological characteristics of the southern wing
of the Moscow Basin. Izv.AN SSSR. Ser.geol. 21 no.9:74-83
S '56.   (MLRA 9:11)

1. Soyuznaya geologo-poiskovaya kontora Ministerstva neftyanoy
promyshlennosti SSR, Moskva.
        (Moscow Basin--Physical geography)

GRAYZER, M.I

20-5-47/60

AUTHOR   GRAYZER, M.I. (GRAIZER)
TITLE   The Stratigraphic Subdivision of the Lower Carboniferous Deposits of
                the Minusinsk Depression
                (Stratigraficheskoye raschleneniye nizhnekamennougol'nykh otlozheniy
                Minusinskikh vpadin. Russian)
PERIODICAL   Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 5, pp 1087-1090(U.S.S.R.)

ABSTRACT   The Lower Carboniferous deposits remained almost uninvestigated for a
                long time. It was not before the fourties of this century that they
                were subdivided. By the present work the existing system was considerably
                corrected and details added. The Pre-Carboniferous Lower Carbonic depo-
                sits are represented by pyroclastic rocks: tuffs, tuffites, tuff-sand-
                -stones which normally alternated with sedimentary formations, chiefly
                sand- and lime-stone. The ash structure of the tuffaceous formations is
                changed more or less by secondary processes: chloritization, flint-for-
                mation, albitization and quartz-formation. Among the paleontological
                remainders the fossil Flora is best represented. The complexes of the
                Bystryansk-Trans-Altay-suite on the one hand and of the Samokhval and
                higher located suites on the other hand differ widely with regard to
                their composition. While the lower complex contains typically Devonian
                forms beside the undoubtedly Carboniferous ones and characterised the
                Tourné-stage, the upper complex consists almost entirely of the Carbo-
Card 1/3   niferous, predominantly of Visé-forms. In the Minusinsk Lower Carboni-

20-5-47/60

The Stratigraphic Subdivision of the Lower Carboniferous Deposits of
the Minusinsk Depression

ferous a Fauna is known too. Farthest and most frequently occur fish
fossils, further brachiopods and ostrakods, of the Bystryansk and Trans-
Altay suites. In the former there occur in addition to that pelecypods
and phyllipods. The Fauna makes it possible to determine the boundary
between Devon and Carboniferous in a more reliable manner. Flora and
Fauna as well as a comparison of the Lower Carboniferous with the Kuz-
netsk basin made it possible to determine the Tourné and Visé stages
in the Minusinsk depression. The boundary between them is drawn on the
bottom of the Samokhval·suite. The suites are described as follows:
Bystraya (stratotype on the right bank of the Yenisey, near the village
Bystraya), Altay (stratotype on the left bank of the Yenisey near the
village Altay), Trans-Altay(stratotype in the same region, between the
villages Karaul'naya and Borki), Samokhval (stratotype: right bank of
the river Abakan, about 5 km above the village Izykhskiye Kopi), Kri-
vinskoye (stratotype' right Yenisey-bank, 4 km below the village of Kri-
vinskoye), Solomenskaya-newly determined here (stratotype: right bank of
the Abakan, small river Beya, 3 km below the village Solemennyy Stan),
Komarkovo (stratotype: right bank of the Yenisey, beside the village
Komarkovo), Sogra (Strato-type: isle of Tagarskiy on the Yenisey,

Card 2/3

20-5-47/6ʋ

The Stratigraphic Subdivision of the Lower Carboniferous Deposits of the Minusinsk Depression

between Minusinsk And the village Podsinyaya), Baynovskaya (stratotype same place), Podsinyaya (stratotype: same as Samonivalsk).
(2 figures, 3 Slavic references).

ASSCCIATION   Allunion Geological Research Center of the Department for Petroleum
                   Industry of the U.S.S.R.
                   (Soyuznava geologopoiskovaya kontora Ministerstva neftyanoy promyshlenn-
                   osti SSSR)
PRESENTED BY   MIRONOV, S.I., Member of the Academy
SUBMITTED   21.12.1956
AVAILABLE   Library of Congress

Card 3/3

20-6-29/42

Flora of Devonian and Carboniferous Boundary Layers
of the Minusinsk Trough.

ly would be called "Sublepidodendron-flora". 2) An uninterrupted
sequence of the fauna relief stands out against the Devon-Carboni-
ferous boundary. from the Archaeopteris-flora (upper part of the
Tubinsk-suite, respectively, the Famenian stage) over the zone of
Acanthodes lopatini-Cyclostigma kiltorkense (lower part of the
Bystryansk-suite, respectively the lowest part of the Tourné stage),
in which the typical Upper-Devonian appearance is preserved, - to
the Sublepidodendron-flora of the upper part of the Bystryansk-suite
(zone of Strepsodes siberiacus-Sublepidodendron igirachense spec. nov.)
This latter one contains a mixed Devonian-Carboniferous-Flora. It is
still going on to a typical Kulm-Lepidodendron-flora of the Samokhval-
suite, which is ranged to the basis of the Visé stage. 3) The lower
part of the Bystryansk-suite (see above) stratigraphically corresponds
to the Tann-graywacke-slate mass and to the quartzite horizon of the
Acker-Bruchberg series of the Hartz Mountains, which obtain to the
Lower-Tourne. The Sublepidodendron-flora of the upper sandstone-tu-
faceous packet (see above) according to its development standard,
may be compared to the early Lower-Carboniferous-flora: Lepidoden-
dropsis-Rhacopteris-Triphyllopteris of Central-Europe (Geigen, near
Hof in Bavaria), Egypte, North America, China, a. o.

Card 2/3   There are 2 figures and 10 references, 3 of which are Slavic.

CHOCHIA, N.G.; BELYAKOVA, Ye.Ye.; BOROVSKAYA, I.S.; VOLKOV, A.M.; GRAYZER, M.I.;
     IL'INA, Ye.V.; KAZAKOV, I.N.; KIRKINSKAYA, V.N.; KISLYAKOV, V.N.;
     KRASIL'NIKOV, B.N.; MATMINA, L.G.; OSIPOVA, N.A.; RADYUKEVICH, L.V.;
     ROMANOV, F.I.; KULIKOV, M.V.,red.; DOLMATOV, P.S.,vedushchiy red.;
     YASHCHURZHINSKAYA, A.B.,tekhn.red.

[Geology, and oil and gas potentials of the Minusinsk Lowland]
Geologicheskoe stroenie Minusinskikh mezhgornykh vpadin i
perspektivy ikh nefte-gazonosnosti. Leningrad, Gos.nauchn.
tekhn.izd-vo neft. i gorno-toplivnoi lit-ry Leningr. otd-nie,
1958. 288 p. (Leningrad. Vsesoiuznyi neftianoi nauchno-issledo-
vatel'skii geologorazvedochnyi institut. Trudy, no.120)
                                                    (MIRA 12:5)
          (Minusinsk Lowland--Petroleum geology)
          (Minusinsk Lowland--Gas, Natural--Geology)

3(5)   SOV/11-59-9-6/18

AUTHOR: Grayzer, M.I.

TITLE: New Data on Stratigraphy and Lithology of Lower
                 Carboniferous Formations of Tuva

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya geologi-
                 cheskaya, 1959, Nr 9, pp 54-65 (USSR)

ABSTRACT: The unified stratigraphic chart of Lower Car-
                 boniferous formations of Tuva, approved by the
                 Interdepartmental   Conference in 1956, was elabo-
                 rated from materials gathered by geologists of
                 the VSEGEI (Ya.S. Zubrilin, A.M. Danilevich,
                 N.N. Predtetchenskiy, V.V. Volkov and G.P. Tol-
                 machev) and by I.V. Kuznetsov and N.G. Popov of
                 the Soyuznaya geologo-poiskovaya kontora (Union
                 Geological Exploring Office). Before that, the
                 region was studied by Z.A. Lebedeva and M.F. Ney-
                 burg, and a geological map was published with an
                 explanatory notice by A.L. Dolin and G.A. Kudryavt-
                 sev. According to this chart, the rock formations
Card 1/3   of the Lower Carboniferous period were divided

SOV/11-59-9-6/18

New Data on Stratigraphy and Lithology of Lower Carboniferous
Formations of Tuva

into seven suites, bearing local names: the
Suglug-Khem, the Kyzyl-Chirin, the Kherbes, the
Bay-Tag, the Ekki-Ottug, the Ak-Tal, and the
Mooldy-Khem suites. The author, who studied the
Tuva region together with I.S. Borovskaya, does
not bring anything new in the existing chart,
but gives a more precise division of suites and
proposes the subdivision of some of above men-
tioned suites according to the rhythmic alter-
nation of sedimentation cycles found in some of
suites (see table 1 on page 56). The fauna re-
mains found in some of the suites and identified
by A.R. Anan'yev, Yu.V. Mikhaylov, and A.V. Mat-
veyeva of the Paleontologicheskiy institut AN SSSR
(Paleontologic Institute of the AS USSR) were
also used for the division of suites. A detailed
division of all suites and sub-suites is given.
Card 2/3   The author also finds that the Mooldy-Khem suite

SOV/11-59-9-6/18

New Data on Stratigraphy and Lithology of Lower Carboniferous
Formations of Tuva

figuring in the unified chart is either the
upper part of the Bay-Tag suite or the lower
part of the Ekki-Ottug suite. There is 1 table,
1 set of diagrams, 1 profile, and 6 Soviet re-
ferences.

ASSOCIATION: Soyuznaya geologopoiskovaya kontora Glavnogo
upravleniya gazovoy promyshlennosti pri Sovete
Ministrov SSSR/Moskva (The Union Geological Ex-
ploring Office of the Main Directorate of the
Gas Industry at the Council of Ministers of the
USSR/Moscow).

SUBMITTED: 6 June 1958

Card 3/3

GRAYZER, M.I.

Carboniferous sediments in Minusinsk Lowlands. Trudy SNIIGGIMS
no.21:45-52 '62.   (MIRA 16:12)

GRAYZER, M.I.

Lower Carboniferous volcanism in the southern part of Siberia
and the Mongolian People's Republic. Dokl. AN SSSR 152 no.6:
1424-1427 0 '63.   (MIRA 16:11)

1. Laboratoriya osadochnykh poleznykh iskopayemykh Ministerstva
geologii i okhrany nedr SSSR. Predstavleno akademikom A.L.
Yanshinym.

BROVKOV, G.N.; GRAYZER, M.I.; MOGILEV, A.Ye.

Conditions governing the accumulation of Lower Carboniferrous
sediments in the eastern part of the Sayan-Altai area. Geol.
i geofiz. no.1:106-123 '65.   (MIRA 18:6)

1. Krasnoyarskaya kompleksnaya laboratoriya Instituta geologii i
geofiziki Sibirskogo otdeleniya AN SSSR.

GRAYZER, M.I.

Lack of discontinuity in the base of the Ostrog series in the Kuznetsk Basin. Geol. i geofiz. no.2:141-146 '65.   (MIRA 18:9)

1. Laboratoriya osadochnykh poleznykh iskopayemykh Gosudarstvennogo geologicheskogo komiteta SSSR, Moskva.

LEVCHENKO, S.V., otv. red.; GRAYZER, M.I., red.; MOZESON, D.L., red.

[Metallogeniia devona i nizhnego karbona mezhgornykh vpadin Altae-Saianskoi skladchatoi oblasti. Moskva, Nauka, 1965.   209 p.   (MIRA 18:11)

1. Akademiya nauk SSSR. Laboratoriya osadochnykh poleznykh iskopayemykh.

BROVKOV, G.N.; GRAYZER, M.I.; MOGILEV, A.Ye.

New data on the Lower Carboniferous paleogeography of the
Altai-Sayan region. Izv. AN SSSR. Ser.geol. 30 no.11:93-97
N '65.   (MIRA 18:12)

1. Laboratoriya osadochnykh poleznykh iskopayemykh Gosudarstven-
nogo geologicheskogo komiteta SSSR, Moskva i Krasnoyarskoye
otdeleniye Sibirskogo nauchno-issledovatel'skogo instituta
geologii, geofiziki i mineral'nogo syr'ya, Novosibirsk. Submitted
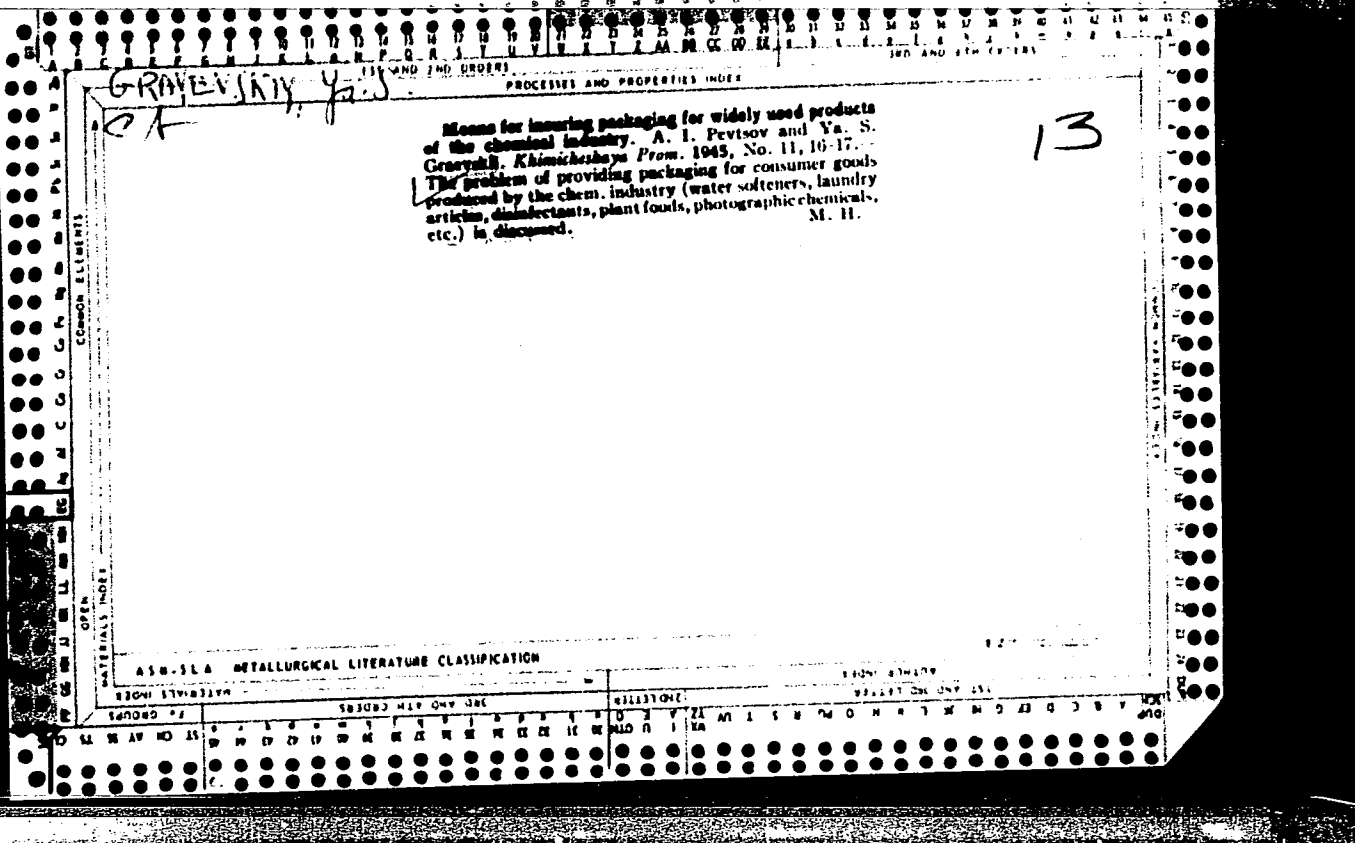November 19, 1964.

GRAYEVSKIY K. M

Precision x-ray investigation of Fe, Cu, and Ni tarnish.
I. V. I. Arkharov and K. M. Graevskii. *J. Tech. Phys.*
(U. S. S. R.) 14, 132–45(1944). The film of FeO pro-
duced on "vacuum Fe" by heating in air for 17 hrs. at
1150° can be mechanically split into 2 layers, the 4 faces
of which are examd. in a Sachs chamber. The spacing in-
creases from 4.2774 A. at the outer face (boundary with the
Fe_3O_4 layer covering the FeO film) to 4.3108 A. at the
inner face (boundary with Fe). It is concluded that the
no. of holes in the FeO lattice increases with the distance
from Fe. The rate of oxidation of Fe is raised by the FeO
film as it substitutes 2 low energy barriers for the high one

at the boundary $Fe-Fe_3O_4$. The spacing of NiO films pro-
duced by heating electrolytic Ni for 8 hrs. at 1250° is
larger (4.1090 A.) for the external than for the internal
faces (4.1081 A.); the reflection is sharp from the external
and diffuse from the internal faces. This indicates that
the film grows at the NiO-Ni boundary because of the
diffusion of O; Ni ions can hardly diffuse at all, as the film
contains almost no holes. CoO film obtained at 1175°
in 4 hrs. can be split; the spacing increases from 4.2548 A.
at the boundary with Co to 4.2548 A. at the air boundary,
and the grain size increases with the spacing. CoO also
grows mainly because of the diffusion of O inwards; the
rate of tarnishing of Co is larger than for Ni, as the gradi-
ent of the spacing across the film is larger.   I. I. B.

ASM-SLA   METALLURGICAL LITERATURE CLASSIFICATION

GRAVEVSKIY, Ya. S.

13

Means for insuring packaging for widely used products of the chemical industry. A. I. Pevtsov and Ya. S. Gravskii. *Khimicheskaya Prom.* 1945, No. 11, 16-17. The problem of providing packaging for consumer goods produced by the chem. industry (water softeners, laundry articles, disinfectants, plant foods, photographic chemicals, etc.) is discussed.   M. H.

GRAYEVSKIY, Ye.Ya.; KONSTANTIMOVA, M.M.

Studying the mechanism of radiation protection afforded by
some sulfur-bearing substances. Dokl.AN SSSR 133 no.4:
969-972 Ag '60.   (MIRA 13:7)

1. Institut morfologii zhivotnykh imeni A.N.Severtsova
Akademii nauk SSSR. Predstavleno akademikom A.I.Oparinym.
          (Radiation protection)
          (Sulfur organic compounds)

1. GRAYFER, B. I.

2. USSR (600)

4. Molotov Province - Geology

7. Report of the Molotov geological-surveying party No.5.   (Abstract) Izv.Glav.upr.
    geol.fon.   No. 3 - 1947.

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

GRAYFER, G. R.

REZNIKOV, S. M., and G. R. GRAYFER.

Zdorov's parashiutista.   Moskva, 1937.   74 p., illus.
Title tr.: Health of the parachutist.

NCF

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

GRAYFER, G. R.

Grayfer, G. R. "On the use of individual evaluation in applying medical-aviation experts' opinions," Voyen.-med. zhurn., 1948, No. 12, p. 30-36

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

GRAYZER, S.

Peeled potatoes delivered to eating establishments. Obshchestv. pit.
no.1:34 '57.   (MIRA 11:4)

1. Direktor fabriki-kukhni No.13 tresta stolovykh Zheleznodorozhnogo
rayona Moskvy.
            (Potatoes) (Moscow--Restaurants, lunchrooms, etc.)

STARIK, I.Ye.; SOBOTOVICH, E.V.; SHATS, M.M.; GRAZHCHENKO, S.M.

Problem of the origin of tektites. Meteoritika no.22:97-103
'62.   (MIRA 15:8)
                          (Tektite)

I. 1210

28538

S/123/61/000/018/008/015
A004/A101

AUTHOR: Grazdil, F.

TITLE: High-speed forming

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 18, 1961, 9, abstract
             18V50 ("Chekhosl. tyazhelaya prom-st'", 1960, no. 9, 5-13)

TEXT: The contradictions in the problem of the effect of the deformation
rate on the force necessary to carry out one or the other technological process
can be explained by the different conditions under which these processes are
taking place. For instance, during the extrusion of steel with 0.1% C and Al
99.5 under equal conditions with a deformation degree of 15.35 and 50% respec-
tively, at a velocity of 0.1 - 250 - 5,000 mm/sec, it was found that the steel
deformation force at a velocity of 5,000 mm/sec begins to decrease, and that
the more so the higher the degree of deformation. For Al at the same velocity
and a deformation degree of 15% an increase in the stresses can be observed, at
35% the stress remains about constant, while from 50% on it starts to decrease.
This phenomenon can be explained by the different effect of the heat being
generated owing to the different heat capacity, heat conductivity and temperature

Card 1/4

High-speed forming

dependence of ductility. To understand the phenomena occurring in explosive forming it is necessary to know the magnitude of critical impact velocity v_{cr} and the magnitude of stress ε_{cr} corresponding to it. When v_{cr} is attained the material begins to break at stress $\sigma = \rho \cdot c \cdot v$, where ρ – density, c – propagation velocity of the shock wave, v – deformation rate.

$$v_{cr} = \int_0^{\varepsilon_{cr}} \sqrt{\left(\frac{d\sigma}{d\varepsilon}\right) \cdot \frac{1}{\rho}} \cdot d\varepsilon$$

(ε – elongation per unit length). The author presents a method of transforming these expressions with the aid of the value of the specific energy. The calculated values of v_{cr} and σ_{cr} for the steel grades 1010 and 4130, Cu and Al alloys are equal to 27.2; 69.6; 87.69 m/sec; 11,200; 30,860; 28,700; 9,800 kg/mm^2 respectively. The rated values of v_{cr} agree with the Pearson test data. v_{cr} was measured by tests on the tensile machine at $v = 0.1$ mm/sec and on the Sharpi ram impact machine at $v = 5,000$ mm/sec. Graphs of $\sigma = f(\varepsilon)$ were taken during the tests, based on which the functions $\sqrt{\frac{d\sigma}{d\varepsilon}}$ depending on ε were determined. By integration of the area under the obtained curve and division by ρ, the value of v_{cr} was obtained. The values of v_{cr} in static and dynamic tests of stainless steel (CSN 17 242) proved practically the same, viz. 176.5 and 173.3 m/sec. For steel with 0.1% C (CSN 12020) their values differ somewhat (87.5

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High-speed forming

and 97.5 m/sec). An even greater difference was obtained for the Al alloy
(CSN 424205) - 111.1 and 94.0 m/sec. It is assumed that the divergence arises
because of the greater micro-roughness of the softer metals. In experimental
checks it was found that a specimen from CSN 12020 grade steel 15 mm in diameter
and 20 mm high, did not show any traces of destruction after an impact on a hard
disk at a velocity of 200-240 m/sec. This led to the conclusion that the found
values of v_{cr} reflect only phenomena in uniaxial stresses. In the majority of
cases of explosive working a biaxial or volumetric stressed state is taking place.
Further investigations were based on a test series with specimens of the same
steel 15 mm in diameter and 25 mm high, which were shot from a distance of 2,000
mm into a solid hard target. The velocity was regulated by the magnitude of the
charge in the range of 150-350 m/sec. The first noticeable signs of destruction
were observed at a velocity of 250 mm/sec. By high-speed photographing (40,000
frames per second) the time-dependence of the shift of the specimen center of
gravity was determined. The first derivative of this dependence yielded the
motion velocity of the specimen center of gravity, the second derivative yielded
the acceleration. The increment in periphery of the hitting face end during its
upsetting was subjected to an analogous investigation, the velocity and accelera-
tion curves being plotted. To determine the force at the initial contact point,

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High-speed forming

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A004/A101

the author proceeded from the expression $P = a \cdot m$, where a - acceleration taken from the curve; m - specimen mass. Assuming that the forces are distributed uniformly the stress is determined. The author presents the method and examples of calculating the stresses in different moments of impact. Based on these calculations he plots a space diagram which makes it possible to determine the specific deformation energy (per volume unit) depending on the instant of impact and the specimen diameter. The determination of the specific work makes it possible to calculate theoretically the necessary charge weight. The tests showed that in a number of cases the calculation yields results which are close to the test data. In some cases, forming by direct explosion of the charge in any transmission medium does not yield positive results and causes destruction even with small charges. In such cases the explosion should be effected in an adjacent chamber, thus reducing the critical velocity but maintaining a sufficient specific energy. It is pointed out that the accumulated experience makes it possible to introduce the explosive forming technology in production. There are 17 figures and 8 references.

A. Freydlin

[Abstracter's note: Complete translation]

Card 4/4

GHAZHDAN, F. D.

"Norms of Mineralization of Water-Channel Waters of the Desert Regions of Turkmenistan,"
Iz Turk Fil Akad Nauk SSSR, No 1, 1946 (23-28).
(Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

GRAZHDAN, P.Ye.

Mineralogical characteristics of soils in Kopet-Dag.   Izv.AN Turk.
SSR no.2:28-33 '55.   (MLRA 9:5)

1. Institut geologii AN Turkmenskoy SSR.
                (Kopet-Dag--Minerals in soil)

14-57-7-14977

A Study of the Accessory Elements in the Soils (Cont.)

Co, Ni, and others. In terms of their accessory elements these soils differ from the non-eroded rocks on which they were formed. It should be assumed that the vegetation growing on these soils is well provided with the above accessory elements /(In-t geol. AN TurkmSSR) (Geological Institute of the AS TurkmenSSR)/.
Card 2/2   G. K.

GRAZHDAN, P.Ye.

Trace elements in Takyrs of the Tedzhen Delta. Izv. AN Turk.
SSR. no.1:58-66 '59.   (MIRA 12:5)

1. Turkmenskiy sel'skokhozyaystvennyy institut im. M.I. Kalinina.
         (Tedzhen Delta--Trace elements)
         (Tedzhen Delta--Takyr)

L 23367-65   EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b)   MJW/JD

ACCESSION NR: AR5000738   S/0277/64/000/009/0016/0016

SOURCE: Ref. zh. Mashinostroitel'ny*ye materialy*, konstruktsii i raschet detaley mashin. Gidroprivod. Otd. vy*p., Abs. 9.48.99

AUTHOR: Grazhdankin, S. N.; Kalinina, Z. M.

TITLE: Impact strength of alloy EI437B at high temperatures

CITED SOURCE: Sb. Teoriya i praktika metallurgii. Vy*p. 6. Chelyabinsk, 1963, 162-166

TOPIC TAGS: metal impact strength, high temperature effect, metal ductility, metal failure, metal grain boundary/ alloy EI437B

TRANSLATION: The impact strength at temperatures $1000-1250°$ (holding time from 10 to 360 min) of cast and worked metal of different ductility was studied. With an increase in temperature above $1000°$, impact strength decreases; metal from ductile ingots has a higher impact strength than that from ingots with low ductility. An increase in holding time at the forging temperature of the ingots, by equalizing the chemical and physical inhomogeneity of the metal, increases the impact strength of ductile metal ($a_k=4$ and 32 kg/mm^2

Card 1/2

GRAZHDANKINA, N. P.

USSR/Physics   Nov 48
     Alloys
     Conductivity

"Electroconductivity of Chromium Sulfides," I. G. Fakidov, N. P. Grazhdankina, Lab of
Elec Phenomena, Inst Phys of Metals, Ural Affiliate, Acad Sci USSR, 2 pp

"Dok Ak Nauk SSSR" Vol IXLLL, No 1.

Measurements in the temperature range - 185- 100° C show that: Alloys up to 50 atomic
percent of S have a purely metallic conductivity. Alloys of 50-53 are semiconductors with
negative temperature coefficients of resistance. Alloys of 53 on have a typical metallic
conductivity. Others have metallic resistance, or are semiconductors under certain
conditions. Submitted by Acad S. I. Vavilov 8 Sep 48.

PA 61/49T81

$\mathcal{M}a$

"The Influence of a Magnetic Field on the Electrical Resistance of a Ferromagnetic Manganese-Antimony Alloy. I. G. Fakidov and N. P. Grazhdankina (Doklady Akad. Nauk S.S.S.R., 1949, 66, (3), 847-849).—[In Russian]. Alloys contg. 50 and 54 at.-% Sb were studied; they were prepared by melting in evacuated silica tubes followed by slow cooling. Specimens of dimensions 0·5 × 2 × 30 mm. were made by grinding. Cu leads were attached to the Cu-plated ends of the specimen, which was mounted horizontally on an ebonite holder mounted coaxially with the electromagnet. The relative positions of the specimen and the electromagnet should be determined to within a fraction of a degree. At room temp. the alloy with 54 at.-% Sb has $\Delta R_\perp/R$ positive and $\Delta R_\parallel/R$ negative up to 5000 Oe., above which it is positive. Similar results were obtained for the alloy containing 50 at.-% Sb. The results were, however, at variance with those of other workers on other materials. Therefore, as a check, experiments on a Ni specimen were carried out. The results were the same as those obtained by other authors. Since Akulov's theory ("Ferromagnetism", 1989 : Moscow) does not explain the results on Mn-Sb alloy satisfactorily, some other explanation is required.
—Z. S. B.

GRAZHDANKINA, N. P.

USSR/Physics – Ferromagnetics   21 Sep 49
                    Electroconductivity

"Electroconductivity of the Ferromagnetic Alloy Chromium-Tellurium," I. G. Fakidov, N. P. Grazhdankina, A. K. Kikoin, Inst Phys of Metals, Ural Affiliate, Acad Sci USSR, 2 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 3 -pp. 491-2

Extensively studied electrical, thermal, and magnetic properties of chromium-tellurium alloys Studied temperature dependence of specific resistance for a Cr-Te alloy close to stoichiometric composition (48.5 atomic% Te and 51.5 atomic % Cr) and influence of magnetic field upon resistance of this alloy. Sharp change in curve formed by plotting specific resistance at room temperature was 5×10^{-4} ohm/cm, which is 25 times greater than that of pure chrome (2×10^{-5} ohm/cm).

Submitted by Acad S. I. Vavilov 13 Jul 49

PA 149T84

GRAZHDANKINA, N. P.

USSR/Physics - Ferromagnetics,
Heat Capacity   1 Nov 50

"Investigation of the Heat Capacity of Ferro-
magnetic Chromium Sulfide," I. G. Fakidov, N. P.
Grazhdankina, Inst Phys of Metals, Ural Affil-
liate, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXV, No 1, pp 19, 20

Study peculiar dependence of sp heat capacity
C_p of ferromagnetic chromium sulfide (varies
0.134 kal/g deg to 0.165 and backto 0.145) upon
temp theta (varying 0 to 80°C); also magnetic
susceptibility (4/1,000 to 0 units) vs temp

USSR/Physics - Ferromagnetics (Contd)   1 Nov 50

(15°C to 110°C) for various fld (112, 172, 220
oersteds). Submitted 11 Jul 50 by Acad I. P.
Bardin.

178T93

GRAZHDANKINA, N.P.

June 1954
Materials and Subsidiary Techniques

Electrical and Galvanomagnetic Properties of Sulphides of Chromium.—N. P. Grazhdankina & L. G. Fakidov. (C. R. Acad. Sci. U.R.S.S., 21st Nov. 1953, Vol. 93, No. 3, pp. 429–430. In Russian.) Classification according to resistivity places these sulphides intermediate between metals and semiconductors. Measurements were made of (a) the resistance at very low temperatures, (b) the Hall effect, and (c) the magnetoresistance effect. The results of (a) and (c) are shown graphically.

GRAZHDANKINA, N. P.

6

TRUDY INSTITUTA FIZIKI METALLOV, AKAD. NAUK. URALSKII FILIAL, 1954, NO. 15

Specific heat of ferromagnetic chromium sulphide in the region of the upper Curie point by I. G. Fakidov and N. P. Grazhdankina (p. 60-64) - Measurements in a special calorimeter on Cr $S_{1.17}$ (54% at.S) show a sharp peak in specific heat at 28°C. Resistivity and permeability measurements confirm that this is the upper Curie point. No measurements were made around the lower Curie point (about -110°C).

(1)

Grazhdankina N. P.

5

TRUDY INSTITUTA FIZIKI METALLOV, AKAD. NAUK. URALSKII FILIAL, 1954, NO. 15

Electrical properties of chromium sulphides by I. G. Fakidov and N. P. Grazhdankina, (p. 65-69) — Resistivity measurements are reported on Cr-S alloys (50 - 59% S) in the temperature range 1.8° - 400°K. Their semi-conducting properties in the range 50 - 57% S, in which they also exhibit ferromagnetic properties, are discussed.

(1)

GRAZHDANKINA, N. P. and FAKIDOV, I. G.

"The relation of exposing the defects to the defects to the blackening density when X-raying steel with gamma rays of cobalt-60", p 54,

"Exposure graphs for X-raying steel with gamma rays of cobalt-60, calculating the dispersed rays", p 61,

Both appearing in the "Detection of Defects in Metals by Gamma — Collection of Papers", (Gamma Defektoskopiya Metallov — Sbornik Statei), published by the Academy of Sciences USSR, 1955.

GRAZHDANKINA, N.P.

GRAZHDANKINA, N. P.

"Study of Electrical Properties of Chromium Sulfides."
Min Higher Education RSSR, Ural State U imeni A.M. Gor'kiy, Sverdlovsk,
1955. (Dissertation for the Degree of Candidate in Physical and
Mathematical Sciences)

SO: M-955, 16 Feb 56

GRAZHDANKINA, N. P.

USSR/ Chemistry - Physics of metals

Card 1/2   Pub. 22 - 28/54

Authors   : Grazhdankina, N. P., and Fakidov, I. G.

Title   : Natural conductivity of chromium sulfide

Periodical   : Dok. AN SSSR 102/5, 957-960, Jun 11, 1955

Abstract   : The electrical properties of chromium sulfides, classed as belonging to the
group of substances, the electric conductivity of which is due to additive
combination of the emi-conductive conductivity mechanism with the metallic
mechanism, were investigated at high temperatures. It was found that these
sulfides dissociate at high temperatures and this results a change in the
composition of the compound which in turn causes a change in the concen-
tration of conductivity electrons and in the Hall effect. The effect of

Institution : Acad. of Sc., USSR, Ural Branch, Inst. of the Phys. of Metals

Presented by : Academician I. P. Bardin, December 3, 1954

Card 2/2   Pub. 22 - 28/54

Periodical : Dok. AN SSSR 102/5, 957-960, Jun 11, 1955

Abstract   : partial vapor pressure and temperature fluctuations on the conductivity
of chromium sulfides is explained. Six references: 3 USSR, 2 English
and 1 German (1937-1953). Graphs.

—————————, N. P., and FAKIDOV, I. G., (Sverdlovsk)

""Connection of the Magnetic and Electrical Properties of Chrome Sulphides,"
a paper submitted at the International Conference on Physics of Magnetic Phenomena,
Sverdlovsk, 23-31 May 56.

FAKIDOV, I.G.;GRAZHDANKINA, N.P.;NOVOGRUDSKIY, V.N.

Electric properties of manganese-germanium alloys. Izv. AN SSSR. Ser.
fiz. 20 no.12:1509-1518 D '56.
                                                    (MLRA 10:3)

1. Institut fiziki metallov Ural'skogo filiala AN SSSR.
        (Manganese-Geranium alloys--Electric properties)

GRAZHDANKINA, N. P.

PHASE I BOOK EXPLOITATION   SOV/1781

21(8)

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke, Moscow, 1957.

Trudy... Mashinostroyeniye i priborostroyeniye (Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science; Machine and Instrument Manufacturing) Moscow, Izd-vo AN SSSR, 1958. 358 p. 4,500 copies printed.

Sponsoring Agencies: USSR. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii, and Akademiya nauk SSSR.

Editorial Board of Set: V.I. Dikushin, Academician (Resp. Ed.), N.N. Shumilovskiy (Deputy Resp. Ed.), Yu. S. Zaslavskiy (Deputy Resp. Ed.), L.K. Tatochenko, B.I. Verkhovskiy, M.T. Mazarov, L.I. Potresova and N.G. Zelevinskaya (Secretary).

Ed. of Publishing House: P.M. Belyanin; Tech. Ed.: T.P. Polenova.

PURPOSE: This book is intended for specialists in the field of machine and instrument manufacture who use radioactive isotopes in the study of materials and processes.

COVERAGE: This collection of papers covers a very wide field of the utilization of tracer methods in industrial research and control techniques. The topic of this volume is the use of radioisotopes in the machine-and instrument-manufacturing industry. The individual papers discuss the applications of radioisotope techniques in the study of metals and alloys, problems of friction and lubrication, metal cutting, engine performance, and defects in metals. Several papers are devoted to the use of radioisotopes in the automation of industrial processes, recording and measuring devices, quality control, flowmeters, level gauges, safety devices, radiation counters, etc. These papers represent contributions of various Soviet institutes and laboratories. They were published in Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, April 4-12, 1957. No personalities are mentioned. References are given at the end of most of the papers.

Pakidov, I.Q. and A.Ye. Burmyov (Institut fizikt metallov filiala AN SSSR — Institute of Physics, Ural Branch, Academy of Sciences, USSR). Defectoscopy of Very Thick Steel Products   334

Grigor'yev, I.M. and I.G. Pakidov (Ural'skogo filiala Akademii nauk SSSR — Urals gonzavod i Institut fizikt metallov Ural'skogo filiala Akademii nauk SSSR — Urals Academy of Sciences, Ural Branch, Institute of the Physics of Metals, Academy of Sciences, USSR). Characteristics of Gamma Control and Radioscopic Technique for Complex Weldments   339

Grazhdankina, N.P. and I. G. Pakidov (Institut fizikt metallov Ural'skogo filiala AN SSSR — Institute of the Physics of Metals, Ural Branch, Academy of Sciences, USSR). Study of the Blurring of Images of Defects During the Co60 Gamma Radioscopy of Steel   342

Zhukov, O.M. (Ministerstvo sudostroitel'noy promyshlennosti SSSR — Ministry of the Shipbuilding Industry, USSR). Use of Soft-radiation Isotopes for the Control of Welding in Ship-building   348

Birshtein, V.G. (Rizhskiy sudoremontnyy zavod — Riga Repair Docks). Use of the Iridium Isotope at the Riga Repair Docks   352

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GRAZHDANKINA N.P.

AUTHORS: Grazhdankina, N. P., Fakidov, I. G.   48-8-11/25

TITLE: The Connection Between the Magnetic and Electrical Properties
                of Chromium Sulphides (Svyaz' magnitnykh i elektricheskikh svoystv
                sul'fidov khroma)

PERIODICAL: Izvestiya AN SSSR,Ser.Fiz.,1957, Vol. 21, Nr 8,pp. 1116-1122
                (USSR)

ABSTRACT: The following problems are dealt with by this paper: a) The elect-
                ric conductivity of chromium sulphides of different compositions,
                b) the dependence of electric conductivity on temperature in a
                wide temperature interval (1.8 - 1000°K). c) The Hall effect and
                measuring the resistance in the magnetic field, and d) the ther-
                moelectromotoric force of chromium sulphides of different compo-
                sitions. Initially, the compound chromium-sulphur was taken as
                an example. Measurements were carried out according to the po-
                tentiometer method with application of compensators and a galvano-
                meter. The measuring of galvanometric effects were carried out
                under adiabatic and isothermal conditions. In view of the strong
                phenomena of dissociation occurring at high temperature in the
                case of chromium sulphides, special pyrex glass coverings were
                used for the samples. The following results were obtained: 1) Ac-
                cording to the absolute value of the specific electric resistance
Card 1/3 $10^{-4} \div 10^{-2} \Omega$ .cm) the substances to be investigated ranged bet-

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of Chromium Sulphides.

ween metals and semiconductors. 2. Temperature measurements
showed that within the range of 5o - 54% S content at temperat-
ures of 1.8 to 21o-3oo°K chromium sulphides have the property
of "spontaneous polarization", i.e. they have a constant number
of electric current carriers, the energy of which is within the
range of conductivity. 3. The investigation of electric conduct-
ivity within the range of high temperature led to a new discovery,
namely to the determination of the investigated substances own
semiconductor conductivity at temperatures of 42o.62o°K. 4. On
the basis of the thorough investigation of electric conductivity,
of the Hall effect, and of the results obtained when measuring
the electric resistance of the magnetic field it can be conclud-
ed that, in the case of chromium sulphides, the current carriers
have an extremely low degree of mobility ($1 cm^2 V^{-1} sec^{-1}$). The
concentration of the latter is high = $5.1o^{10} \div 1o^{22} cm^{-3}$. 5. In-
vestigation of the electrical properties of magnetic and antiferro-
magnetic chromium-sulphur compounds made it possible to state
that the moment of the occurrence of ferromagnetism here depends
upon the state of the metal. The experimental results obtained
confirm the statement made by Heikers concerning theoretical con-
ceptions of the connection between ferromagnetism and the metal
state of the substances in the compounds of the metal transitions
Card 2/3   with the elements of V and VIB subgroups of periodic systems.

The Connection Between the Magnetic and Electrical Properties   48-8-11/25
of Chromium Sulphides.

There are 7 figures and 12 references, 2 of which are Slavic.

ASSOCIATION: Institute for Metal Physics of the Ural Branch AN USSR (Instit-
ut fiziki metallov Ural'skogo filiala AN SSSR)

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GRAZHDANKINA, N.P.

AUTHOR: Grazhdankina, N.P.

TITLE: 56-6-39/47

The Change of the Temperature of the Antiferromagnetic Transformation of Manganese Telluride Under the Influence of Pressure (Izmeneniye temperatury antiferromagnitnogo prevrashcheniya tellurida margantsa pod vliyaniyem davleniya)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1957, Vol. 33, Nr 6(12), pp. 1524-1525 (USSR)

ABSTRACT: The shifting of the Curie point of ferromagnetica under the influence of compression from all sides has already repeatedly been investigated. The authoress investigated the influence exercised by a compression from all sides upon the change mentioned in the title by measuring the temperature coefficient and the baric coefficient of the electric resistance of manganese telluride. All-side hydrostatic compression of the sample was carried out in a high pressure chamber filled with transformer oil. The electric resistance was measured by means of probes by the compensation method, and a thin constantan wire served as a probe. The cold soldered joint was subjected to atmospheric pressure at $0°$ C. Measurements were carried out at temperatures of from 279-363° K and at pressures of from 1 - 5200 kg/cm². Compression from all sides

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The Change of the Temperature of the Antiferromagnetic   56-6-39/47
Transformation of Manganese Telluride Under the Influence of Pressure

diminishes the all-side resistance of manganese telluride. The amount
of the baric coefficient $R_r^{-1} dR/dP$ changed according to temperature
within the limits of from -3.5 to -0.73. At temperatures far from Neyel
point the electric resistance depends linearly on pressure, but within
the temperature range of magnetic transformation the character of the
curves $R(p)$ changes noticeably: The curves warp convexly downward below
T_N and convexly upward above T_N. Such a curve is shown in a diagram.
All-side compression increases the temperature of the ferromagnetic
transformation of the manganese telluride by $dT_N/dP = (2.0 \pm 0.4)10^{-3}$
degrees/kg/cm^2. This result was confirmed also by direct measurements
carried out at a pressure of 4400 kg/cm^2. There are 1 figure and
3 non-Slavic references.

ASSOCIATION: Institute of the Physics of Metals of the Ural Branch AN USSR
              (Institut fiziki metallov Ural'skogo filiala Akademii nauk SSSR)

SUBMITTED: August 12, 1957

AVAILABLE: Library of Congress

Card 2/2

AUTHORS: Fakidov, I. G. and Grazhdankina, N. P. $^{SOV/126-6-1-8/33}$

TITLE: The Physical Properties of Cr-Ge Alloys. I.
             (Issledovaniye fizicheskikh svoystv splavov khrom-
             germaniy. 1)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 1,
             pp 67-73 (USSR)

ABSTRACT: This experimental paper deals with the electrical
             resistance (variation with temperature and magnetic
             field) at compositions of from 50 to 98 at.% Ge. The
             observed ferromagnetism is concluded to be due to $CrGe_3$
             only. The first section of the paper is a general
             survey of ferromagnetism in alloys and related topics.
             Table 1 gives the properties in tabular form, for 273^6K;
             Figs. 1-5 give more extensive data of the same general
             type. The results are discussed in relation to possible
             phases that may exist in the system; at 5.0 - 75 at.%
             Ge the phases are CrGe and $CrGe_3$, at 75-98 at.% Ge they
             are $CrGe_3$ + a solid solution of $CrGe_3$ in Ge. Fig.6,
             a, b, and c, represents etch figures (HNO_3; 1:1) for

Card 1/2   alloys containing 60, 66 and 90 at.% Ge. The figures

The Physical Properties of Cr-Ge Alloys. 1.   SOV/126-6-1-8/33
    agree in a general way with the deduction to be made
    from Fig.1.
    There are 6 figures, 1 table and 8 references, 1
    of which is Soviet, 4 English, 3 German.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala AN SSSR
    (Institute of Metal Physics, Ural Branch of the Ac.Sc.,
    USSR)

SUBMITTED: June 19, 1957

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1. Chromium-germanium alloys--Physical properties
2. Chromium-germanium alloys---Electrical properties
3. Chromium-germanium alloys----Magnetic properties
4. Chromium-germanium alloys----Temperature factors

24(3).

AUTHORS: Grazhdankina, N. P., Gurfel', D. I.   SOV/56-35-4-11/52

TITLE: Radiographic Investigation of the Thermal Expansion of the
Antiferromagnetic Compound MnTe (Rentgenograficheskoye
issledovaniye teplovogo rasshireniya antiferromagnitnogo
soyedineniya MnTe)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
Vol 35, Nr 4, pp 907-910 (USSR)

ABSTRACT: The investigation of the anomalous expansion or contraction
in the temperature range of Neel point (T_N, transition from the
paramagnetic to the antiferromagnetic state) makes it possible
to draw conclusions as to the magnetic structure of the
antiferromagnetic. Such investigations have already been carried
out, viz. for cubic antiferromagnetic crystals (MnO, FeO, NiO)
(Refs 1-3) as well as for hexagonal ones CrSb (Refs 5, 6) and
MnTe (Greenwald)(Grinval'd)(Ref 7). The results obtained by
this work (especially reference 7, comparison) are discussed in
short. In the following the production and exact composition of
the preparation investigated are given (Mn-99.8%, Te >99.999%);
manganese contained S, C and P impurities (some tenth of a 1/000),

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Radiographic Investigation of the Thermal Expansion
of the Antiferromagnetic Compound MnTe   SOV/56-35-4-11/52

tellurium had impurities of Cu, Ag, Bi, Sb and As ($\sim$0.0001%).
The samples had the shape of disks of 1 mm thickness with a diameter of 9 mm. The thermal expansion coefficient was determined by
the radiographic method developed by Kosolapov and Trapeznikov
(Ref 9)(initial values: Lattice constant $a=4.040\text{Å}$ (20°C), linear
expansion coefficient $\alpha=25.5 \cdot 10^{-6}$/degree; calculation of the
lattice parameters according to the lines (135)α_1, (306)α_1 and
(135)α_2, (306)α_2; photographic camera type: KPOC-1; tube with
Cu anticathode, $\lambda K\alpha_1 =1.537$, $\lambda K\alpha_2 =1.541$ Å). Investigations
were carried out in the temperature interval of 250 - 370°K
at $T_N = 310°K$. The results obtained are shown by a table
(9 temperature values). Figure 2 shows the temperature
dependence of the lattice parameter α_c. The exponential rise up
to the peak (T_N) is clearly marked; the following dip of the
curve (at $T > 310°K$) results in $\Delta\alpha_c$ of $12 \cdot 10^{-5}$, which deviates
considerably from the Neel value ($6 \cdot 10^{-5}$)(Greenwald, $T_N=329°K$).

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Radiographic Investigation of the Thermal Expansion   SOV/56-35-4-11/52
of the Antiferromagnetic Compound MnTe

Finally, the dependence of T_N on a homogeneous pressure from
all sides is investigated. Result:

$$dT_N/dp = 2.6 \cdot 10^{-3} \text{degree/kg} \cdot \text{cm}^{-2} \, .$$

The authors finally thank A. K. Barskaya for her help and
valuable advice. There are 2 figures, 1 table, and 13
references, 2 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR
(Institute for Metal Physics of the Academy of Sciences, USSR)

SUBMITTED: May 10, 1958

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9 (2), 28 (2)

AUTHORS:

SOV/115-59-10-8/29

Grazhdankina, N.P., Domanskaya, L.I. and Kikoin, A.K.

TITLE:

Measuring the High Pressure Chamber Temperature With a Thermal Resistor

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 10, pp 18-21 (USSR)

ABSTRACT:

The author studied the possibility of replacing the thermo-couples by thermal resistors to measure the temperature in high pressure chambers. As the use of thermocouples requires very extensive research to calculate the effect of very high pressures on their precision, the author tentatively investigated the possibility of using Soviet produced thermal resistors of the MMT-4 type (copper-manganese) (Fig 1). The investigation of the influence of high pressure on the precision of thermal resistors at 5,000 kg/sq cm and 8,000 kg/sq cm pressure was made in two high pressure chambers. In the first chamber the temperature was 15.6, 17.3, 18.5, 24.4, 33.2 and 35.2°C at a pressure up to 5,000 kg/sq cm; in the second chamber the temperature was 17.4°C

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Measuring the High Pressure Chamber Temperature With a Thermal
Resistor

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at a pressure of up to 8,000 kg/sq cm. The resistance
of the resistors was measured with a bridge having an
error possibility of up to 0.5 ohm. Graphs 2,3 and 4
show the results of these tests. A table showing the
corrections which must be introduced in the tempera-
ture indicated by a thermal resistor is given in the
article. The table shows that a resistor is no more
precise than a thermocouple. The high pressure cham-
bers were constructed according to the plans prepared
by M.I. Oleynik and V.A. Stepanov. There are 3 graphs,
1 diagram, 1 table and 5 references 1 of which is
Soviet, 2 French, 1 American and 1 Canadian.

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84385

24.7900 (1035,1144,1160)

S/056/60/039/004/003/048
B004/B070

AUTHORS: Gaydukov, L. G., Grazhdankina, N. P., Fakidov, I. G.

TITLE: Investigation of the Temperature Dependence of Spontaneous Magnetization of Chromium Telluride

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 4(10), pp. 917-922

TEXT: The aim of the authors was to find out whether chromium telluride is ferromagnetic or ferrimagnetic. For this purpose, the temperature dependence of the spontaneous magnetization σ_s was investigated in the neighborhood of the Curie point. The chromium telluride was prepared by melting together powders of chromium and tellurium. Fig. 1 shows the magnetocaloric effect ΔT as a function of σ^2. σ_s^2 was obtained by extrapolating to $T = 0$. Fig. 2 shows $H_i/\sigma = f(\sigma^2)$. $\sigma_s^2 = -\alpha/\beta$ was obtained from $\alpha\sigma + \beta\sigma^3 = H$ (1), and was found to be in good agreement with the experimental data. In the temperature range $|T - \theta_f| \leqslant 14.5°C$, α is a

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Investigation of the Temperature Dependence
of Spontaneous Magnetization of Chromium   S/056/60/039/004/003/048
Telluride   B004/B070

linear function of temperature: $d\alpha/dT = 40$, while β remains almost
constant and lies between 1 and 0.8. The Curie temperature determined
from the condition $\alpha = 0$ is 60°C; this is somewhat higher than that
determined from the magnetocaloric effect (55°C), from the temperature
dependence of the electrical resistance (57.5°C), and from the maximum
of the galvanomagnetic effect (58.0°C). σ_s obtained by the three methods
are compared in Fig. 3. The results agree well with each other in the
range $T < \theta_f$. The rate of change of the spontaneous polarization of CrTe
brought about by temperature was determined from equation (2):
$(\sigma_s/\sigma_0)^2 = \left\{ (1 - T/\theta_f) \cdot \right\}$ was found to be 2.40 - 2.46 (Fig. 4). In the
paramagnetic region, the magnetic susceptibility obeys the Curie - Weiss
law $\chi = c_M(T - \theta)$, where $c_M = 1.97$, and $\theta = 347°K$. The authors interpret
the results by means of the s - d exchange model of ferromagnetism.
Pending a final decision by means of a neutronographic investigation,
the authors come to the conclusion that CrTe is not ferrimagnetic but
ferromagnetic which is characterized by weak s - d exchange interaction.

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Investigation of the Temperature Dependence
of Spontaneous Magnetization of Chromium
Telluride

S/056/60/039/004/003/048
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Among others, the authors mention V. P. Krasovskiy, K. P. Belov, A. Z.
Men'shikov, S. A. Nemnonov, S. V. Vonsovskiy, A. K. Kikoin, and K. B.
Vlasov. There are 4 figures and 17 references: 8 Soviet, 2 US, 1 Canadian,
4 French, 1 German, and 1 Japanese.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of
the Physics of Metals, Academy of Sciences, USSR).
Sverdlovskiy gosudarstvennyy pedagogicheskiy institut
(Sverdlovsk State Pedagogical Institute)

SUBMITTED: April 27, 1960

Card 3/3

24.7600   1043, 1158, 1164 also 1413; 1045   20453
S/056/61/040/002/006/047
B113/B214

AUTHORS: Grazhdankina, N. P., Gaydukov, L. G., Rodionov, K. P.,
Oleynik, M. I., Shchipanov, V. A.

TITLE: Effect of pressure on the electrical resistance and the
galvanomagnetic effect in chromium telluride

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
no. 2, 1961, 433-440

TEXT: The temperature dependence of the electrical resistance and the
isothermal lines of the galvanomagnetic effect $r = \Delta R/R$ were measured in
the temperature range of magnetic transformation at a pressure of
4600 kg/cm^2. A high-pressure chamber of austenitic steel was used for
the measurement. The object to be observed was placed in the lower
part of the chamber which was situated between the poles of an electro-
magnet. There were five electric leads in the upper part of the chamber.
One of these was used for measuring the electrical resistance of a
Manganin manometer. The other four leads were used for the measurement
of the electrical resistance of the preparation and the measurement of

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S/056/61/040/002/006/047
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temperature. The hydrostatic pressure in the chamber was produced by means of a high-pressure compressor according to the system of L. F. Vereshchagin. Measurements showed that the electrical resistance of chromium telluride increased with the pressure; no hysteresis effect was observed. In the pressure range used $R_T^{-1} dR/dp$ was equal to $(1 \div 1.5)10^{-4} kg^{-1} cm^2$. On the basis of this, it was assumed that a compression on all sides must lead to a shift of the Curie point of chromium telluride toward lower temperatures. However, this effect must be sufficiently large. Direct measurements of the temperature dependence of the electrical resistance at atmospheric pressure and a pressure of 4600 kg/cm^2 gave for the Curie point the values 58°C and 31°C, respectively. The following formula holds for the change of the Curie point $d\theta_f/dp$ of chromium telluride caused by a change in the pressure on all sides: $d\theta_f/dp = (-5.9 \pm 0.3) \cdot 10^{-3} deg \cdot kg^{-1} cm^2$ (1). This was checked by a measurement of the galvanomagnetic effect $r = \Delta R/R$ at high pressure. In this case, $d\theta_f/dp$ was determined for a pressure of

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4600 kg/cm^2 and a field of 8000 oe from the shift of the maximum of the galvanomagnetic effect. It was found that $d\theta_f/dp = -6.2 \cdot 10^{-3}$ deg·kg^{-1}·cm^2. By means of the compressibility $\varkappa = (22 \pm 3) \cdot 10^{-7} cm^2 kg$, $d\theta_f/dV$ was determined to be $3.2 \cdot 10^{25}$ deg·cm^{-3}. The change of Curie temperature is related to the reduction in the inter-atomic distance on account of the substitution of tellurium atoms by selenium ($CrTe_{1-x}Se_x$). In order to obtain exact results on the temperature of magnetic transformation of the alloy $CrTe_{1-x}Se_x$, and on the dependence of its change on the volume of the unit cell, three different methods were used for the determination of θ_f. First, it was determined from the bend of the $R(T)$ curves; secondly, from the maximum of the galvanomagnetic effect; and thirdly, from the vanishing of spontaneous magnetization, determined by the method of "thermodynamic coefficients" ($T = \theta_f$ for $\alpha = 0$). Always the same value was obtained for $d\theta_f/dV$, which showed that the integral of volume interaction in the

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system Cr-Te is proportional to the decrease of the volume of the unit cell. The dimensions of the unit cell were determined by X-ray analysis. It was possible to obtain the law of the dependence of the galvano-magnetic effect on the magnetic field strength at the Curie point by using the theory of thermodynamics. It was found that for chromium telluride and $CrTe_{0.93}Se_{0.07}$, $r \sim H^{2/3}$; for $T > \theta_f$ the authors obtained $r \sim H^2$. The dependence of the galvanomagnetic effect on the temperature in CrTe and in $CrTe_{0.93}Se_{0.07}$ at atmospheric pressure as well as at a pressure of 4600 kg/cm^2 was studied. It was found that for $T < \theta_f$ the pressure leads to an increase in the absolute value of the galvano-magnetic effect in CrTe, but for $T > \theta_f$ (in the paramagnetic range) the $r(T/\theta_f)$ curves for atmospheric pressure and for p = 4600 kg/cm^2 coincide. This shows that the change in the galvanomagnetic effect caused by pressure is related to the change in magnetization. In the range of investigation, the curves for $CrTe_{0.93}Se_{0.07}$ lie lower than

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those for CrTe. If it is assumed that c in the equation $a = c\beta^{-2/3}\sigma_0^{8/3}$ (4), in which c is given by $c = r_s/\sigma_s^2$ (σ_s - spontaneous magnetization), is not affected by pressure, the change in the spontaneous magnetization of CrTe caused by pressure may be considered to be due only to the change in the exchange integral for a constant value of the magnetic moment at absolute saturation. It can then be said that the observed increase of the intensity of the para process under pressure is related to the decrease of the thermodynamic coefficient β in Eq. (4). I. G. Fakidov and S. D. Margolin are thanked for the magnetic measurements. Yu. A. Bazhin, N. S. Akulov, K. P. Belov, G. A. Zaytseva, Ye. I. Kondorskiy, and V. L. Sedov are mentioned. There are 6 figures, 2 tables, and 15 references: 7 Soviet-bloc and 8 non-Soviet-bloc.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of the Physics of Metals of the Academy of Sciences USSR)

SUBMITTED: July 30, 1960

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