

LANGE, O.K.

Landslides. Uch.zap.Mosk.un. no.176:123-133 '56.  
(Landslides)

(MLBA 9:12)

IVANOV, Aleksandr Timofeyevich; ~~LANGE, O.K.~~ doktor geol.-min.nauk, otv.red.;  
SUNTSOV, M.A., kand.geol.-min.nauk, otv.red.; RODIONOV, N.V., red.  
izd-va; GUSKVA, I.N., tekhn.red.

[Underground waters in the Mongolian People's Republic] Pod-  
zemnye vody Mongol'skoi Respubliki. Moskva, Izd-vo Akad.nauk  
SSSR, 1958. 133 p. (Akademiia nauk SSSR, Laboratoriia gidro-  
geologicheskikh problem. Trudy, vol. 19) (MIRA 11:10)  
(Mongolia--Water, Underground)

GARMONOV, Ivan Vladimirovich; LANGE, O.K., prof., doktor geol.-mineral.  
nauk, otv.red.; MAKHAYEV, A.A., red.izd-va; KUZ'MIN, I.F., tekhn.  
red.

[Ground waters of steppe and forest-steppe regions in the European  
part of the U.S.S.R. and their hydrochemical zonality] Gruntovye  
vody stepnykh i lesostepnykh raionov Evropeiskoi chasti SSSR i ikh  
gidrokhimicheskaya zonal'nost'. Moskva, Izd-vo Akad. nauk SSSR,  
1958. 230 p. (Akademiia nauk SSSR. Laboratoriia gidrogeologicheskikh  
problem. Trudy, vol. 17) (MIRA 12:3)  
(Water, Underground)

3(5)

PHASE I BOOK EXPLOITATION

SOV/2180

Lange, Oktariy Konstantinvich

Obshchaya geologiya (General Geology) Moscow, Gosgeoltekhizdat, 1956.  
250 p. Errata slip inserted. 10,000 copies printed.

Ed.: M.M. Zhukov; Ed. of Publishing House: N.E. Krasnova; Tech.  
Ed.: K.V. Krynochkina.

PURPOSE: This textbook on geology is intended for students at  
geologic-exploration tekhnikums.

COVERAGE: This is a general textbook on physical geology. The author  
discusses the processes which take place in the interior of the  
earth as well as those in the crust. The work of wind, surface and  
underground waters, and man as geologic agents is explained. The  
author notes the importance of seismic, gravimetric, and magneto-  
metric techniques to geologic research. No personalities are  
mentioned. No references are given.

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General Geology

SOV/2180

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AVAILABLE: Library of Congress (QE26.L267)

Card 4/4

MM/ad  
8-13-59

LANGE, O.K., prof.; SHILOVA, K.A., red.; YERMAKOV, M.S., tekhn. red.

[Principles of hydrogeology] Osnovy gidrogeologii. Izd.2. [Moskva]  
Izd-vo Mosk. univ., 1958. 254 p. (MIRA 11:8)  
(Water, Underground)



AUTHORS: Kovaleva, I.V., Lange, O.K.

SOV-5-58-2-11/43

TITLE: Aleksandr Nikolsyevich Semikhatov

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody -  
Otdel geologicheskiiy, 1958, Nr 2, pp 120-124 (USSR)

ABSTRACT: This is an obituary on Professor A.N. Semikhatov, Director of  
the chair of hydro-geology of the Moscow Institute of Hydraulic  
Engineering imeni V.R. Vil'yams, honored scientist and engineer  
of RSFSR, Doctor of Geological-Mineralogical Sciences.  
There is 1 photograph and 40 Soviet references.

1. Scientific personnel--USSR

Card 1/1

LANGE, O.K.

Regional features of ground water formation. Trudy Lab.gidrogeol.  
probl. 16:187-193 '58. (MIRA 12:2)

1. Moskovskiy gosudarstvennyy universitet.  
(Water, Underground)

ROGOVSKAYA, N.V.; MOROZOV, A.T., nauchnyy red.; LANGE, O.K., retsenzent;  
BINDEMAN, N.M., retsenzent; DUNIN-BARKOVSKIY, L.V., retsenzent;  
FILIPPOVA, B.S., red. izd-va; BYKOVA, V.V., tekhn. red.

[The technique of establishing hydrogeological regions for land  
reclamation purposes; hydrogeological land reclamation regions]  
Metodika gidrogeologicheskogo raionirovaniia dlia obosnovaniia  
melioratsii; gidrogeologo-meliorativnoe raionirovanie. Moskva,  
Gos. nauchno-tekhn. izd-vo lit-ry po geol. i okhrane nedr, 1959.  
174 p. (MIRA 14:6)

(Murgab Valley--Irrigation research)  
(Kura-Aras Valley--Irrigation research)

LANGE, Oktaviy Konstantinovich; GORDNYEV, D.I., red.; PETROVA, K.A.,  
red.; YERMAKOV, N.S., tekhn.red.

[Underground waters of the U.S.S.R.] Podzemnye vody SSSR. Pod  
red.D.I.Gordeeva. Moskva, Izd-vo Mosk.univ. Pt.1. [Underground  
waters in the European part of the U.S.S.R.] Podzemnye vody  
Evropeiskoi chast1 SSSR, 1959. 268 p. (MIRA 12:12)  
(Water, Underground)

LANGE, O.K., otv.red.; BOGOMOLOV, G.V., zamestitel' red.; SOKOLOV, D.S., red.; KAMENSKIY, G.N., red. [deceased]; MAKARENKO, F.A., red.; OVCHINNIKOV, A.M., red.; TOLSTIKHIN, N.I., red.; BOGORODITSKIY, K.F., red.; FILIPPOVA, B.S., red.izd-va; GUROVA, O.A., tekhn.red.

[Problems of hydrogeology] Problemy gidrogeologii. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po geologii i okhrane nedr, 1960.  
366 p.  
(MIRA 13:11)

1. Natsional'nyy komitet geologov Sovetskogo Soyuz. Hidrogeologicheskaya sektsiya.  
(Water, Underground--Congresses)

BOGDANOV, A.; KRASHENINNIKOV, G.; LANGE, O.; SERGEYEV, Ye.; SMIRNOV, V.

In memory of Academician Nikolai Sergeevich Shatskii, 1895-1960.  
Vest. Mosk. un. Ser. 4: Geol. 15 no.6:73-75 H-D '60.

(Shatskii, Nikolai Sergeevich, 1895-1960) (MIRA 14:1)

SULEYMANOV, D.M., *otv.red.*; KULOSHVILI, I.S., *otv.red.*; POBEDONOSTSEV, N.M.,  
*otv.red.*; LANGE, O.K., *prof.glav.red.*; ABRAMOVICH, M.V., *red.*; AZIZBEKOV,  
Sh.A., *red.*; ALIYEV, A.G., *red.*; ALIZADE, A.A., *red.*; ALIZADE, K.A., *red.*;  
GORIN, V.A., *red.*; KASHKAY, M.A., *red.*; MEKHTIYEV, Sh.F., *red.*; SULTANOV,  
A.D., *red.*; DOLGOV, V., *red.izd-va*;

[Geology of Azerbaijan; hydrogeology] Geologiya Azerbaidzhana; gidro-  
geologiya. *Glav.red.* O.K.Lange. *Otv.red.* D.M.Suleimanov, I.S.Kuloshvili i  
N.M.Pobedonostsev. Baku, *Izd-vo Akad.nauk Azerb.SSR*, 1961. 357 p.

1. Akademiya nauk Azerbaidzhanskoy SSR, Baku. Institut geologii.  
(MIRA 14:12)  
(Azerbaijan--Water, Underground)

LANGE, Otkaviy Konstantinovich, prof.; IVANOVA, Melentina Fedorovna;  
DANIL'GHENKO O.P., red.; YERMAKOV, M.Ye., tekhn.red.

[General geology; a lecture course] Obshchaia geologia;  
kurs lektsii. Pod red. O.K.Lange. Moskva, Izd-vo Mosk.univ.  
No.1. 1961. 242 p. (MIRA 14:12)  
(Geology)



FILATOV, Konstantin Vasil'yevich; LANGE, O.K., otv. red.

[Features of the chemical composition of the underground waters of the Altai Territory and their relation to the surface waters] Osobennosti khimicheskogo sostava podzemnykh vod Altaiskogo kraia i ikh sviaz' s poverkhnostnymi vodami. Moskva, Izd-vo Akad. nauk SSSR, 1961. 48 p.  
(MIRA 14:5)

(Altay Territory--Water, Underground)

MAKAVEYEV, A.A., doktor geol.-mineral. nauk ; LANGE, O.K., prof., doktor  
geol.-mineral. nauk, red.; MARINOV, N.A., doktor geol.-mineral.nauk,  
red.; OVCHINNIKOV, A.M., red.; SOKOLOV, D.S., red.; TOLSTIKHIN, N.I.,  
BINDEMAN, N.N., kand.geol.-mineral.nauk, red.; BRODSKIY, A.A., kand.  
geol.-mineral.nauk, red.; YEMEL'YANOVA, Ye.P., red.; CHAPOVSKIY, Ye.G.,  
dots., red.; BEKMAN, Yu.K., vedushchiy red.; MUKHINA, E.A., tekhn. red.

[Dictionary of hydrogeology and engineering geology] Slovar' po gidro-  
geologii i inzhenernoi geologii. Moskva, Gos.nauchno-tekhn.izd-vo  
neft. i gorno-toplivnoi lit-ry, 1961. 186 p. (MIRA 14:6)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeolo-  
gii i inzhenernoy geologii.

(Engineering geology--Dictionaries)

GORDEYEV, Dem'yan Ignat'yevich; LANGE, O.K., prof., otv. red.; TATARINOVA,  
Ye.I., red.; YERMAKOV, M.S., tekhn. red.

[M.V.Lomonosov, founder of geology] M.V.Lomonosov osnovopolozhnik  
geologicheskoi nauki. Izd.2., ispr. i dop. Moskva, Izd-vo Mosk.  
univ., 1961. 203 p. (MIRA 14:10)  
(Lomonosov, Mikhail Vasil'yevich, 1711-1765)

KLIMENTOV, Petr Platonovich, LANGE, O.K., zasluzhennyy deyatel' nauki, prof.,  
retsenzent; CHAPOVSKIY, Ye.G., nauchnyy red.; SKVORTSOV, V.P., red.  
izd-va; IVANOVA, A.G., tekhn. red.

[Methodology of hydrogeological investigations] Metodika gidrogeolo-  
gicheskikh issledovaniy. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry  
po geol. i okhrane neдр, 1961. 389 p. (MIRA 14:6)  
(Water, Underground)

LANGE, C.K.

Aleksandr Nikolaevich Mazarovich, student and young scientist;  
obituary. *Biul. MOIP. Otd. geol.* 36 no.2:4-10 Mr-Apr '61.

(MIRA 14:7)

(Mazarovich, Aleksandr Nikolaevich, 1886-1950)

VARSANOF'YEVA, V.A.; BOGDANOV, A.A.; KUZNETSOV, Ye.A.; LANGE, O.K.;  
MERKLIN, R.L.; MURATOV, M.V.; PERMYAKOVA, A.I.; PETRUSHEVSKIY,  
B.A.; SOKOLOV, D.S.; SHVETSOV, M.S.; YANSHIN, A.L.

Nikolai Sergeevich Shatskii. Biul. MOIP. Otd. *geol.* **36** no.4:  
3-6 JI-Ag '61. (MIRA 14:9)  
(Shatskii, Nikolai Sergeevich, 1895-1960)

LANCE, Oktaviiy Konstantinovich, prof.; IVANOVA, Melentina Fedorovna;  
GARYNOV, F.I., red.; YERMAKOV, M.S., tekhn. red.

[General geology; lecture course] Obshchaia geologiya; kurs  
lektzii. Moskva, Izd-vo Mosk. univ., No.2. 1962. 162 p.  
(MIRA 16:12)

(Geology, Structural)

LANGE, O.K.; MEL'NIKOVA, K.P.

Dem'ian Ignat'evich Gordeev; on his 60th birthday. Vest. Mosk.  
un. Ser. 4: Geol. 18 no.4:75-85 JI-Ag '63. (MIRA 16:10)



LANGE, Oktaviy Konstantinovich; GORDEYEV, D.I., red.; KARPOVA,  
I.S., red.; MUKHINA, L.V., tekhn. red.

[Underground waters of the U.S.S.R.] Podzemnye vody  
SSSR. Moskva, Izd-vo Mosk. univ. Pt.2. [Underground  
waters of Siberia and Central Asia] Podzemnye vody Sibiri  
i Srednei Azii. 1963. 283 p. (MIRA 17:2)

MAVLIYANOV, G.A., akademik, prof., otv. red.; KENESARIN, N.A.,  
prof., zam. otv. red.; LANGE, O.K., prof., red.;  
TULYAGANOV, Kh.T., inzh.-gidr., red.; ASHIRMATOV,  
S.A., kand. geol.-miner. nauk, red.; GAFUROV, V.G.,  
kand. geol.-miner. nauk, red.; MIRZAYEV, S.Sh., kand.  
geol.-miner. nauk, red.; SULTANKHODZHAYEV, A.N., red.;  
KHODZHIBAYEV, N.N., kand. geol.-miner. nauk, red.;  
KHASANOV, A.S., kand. geol.-miner. nauk, red.

[Effect of irrigation on the secondary salinization of  
soils, the chemical composition, and regime of ground  
waters; Tashkent International Hydrogeological Symposium,  
August 6-12, 1962] Vliianie orosheniia na vtorichnoe za-  
solenie, khimicheskii sostav i rezhim podzemnykh vod;  
Tashkentskii mezhdunarodnyi gidrogeologicheskii simpozium  
6-12 avgusta 1962 goda. Moskva, Nauka, 1964. 297 p.

(MIRA 18:1)

1. International Symposium on the Influence of Irrigation  
on Secondary Salinization, Chemical Composition, and  
Ground Water Regime, Tashkent, 1962. 2. AN Uzbekskoy SSR  
(for Mavliyanov). 3. Chlen-korrespondent AN Uzbekskoy SSR  
(for Kenesarin).

LANGE, O.K., glav. red.; NURATDINOVA, M.R., red.; ASTAKHOV,  
A.N., red.

[Hydrogeological and engineering geological conditions of  
Uzbekistan] Gidrogeologicheskie i inzhenerno-geologicheskie  
usloviia Uzbekistana. Tashkent, Nauka UzSSR. Vol.2.  
1964. 319 p. (MIRA 18:6)

1. Akademiya nauk Uzbekskoy SSR, Tashkent. Institut gidro-  
geologii i inzhenernoy geologii.

LANGE, O.K.; PLOTNIKOV, N.I.

Book reviews and bibliography. Razved. i okh. nedr. 30 no.11:  
62-64. N '64. (MORA 1242)

1. Moskovskiy gosudarstvennyy universitet.

ZONENSHAYN, L.P.; BERTEL'S-USPENSKAYA, I.A.; SAFRONOV, V.S.; NEYMAN, V.R.;  
GENDLER, V.Ye.; CHURIKOV, V.S.; YEREMIN, N.I.; KOGAN, B.S.; YAKOVLEVA,  
M.N.; LANGE, O.K.; KABANOV, G.K.; KUENETSOVA, K.I.; SINITSYNA, I.N.;  
SMIRNOVA, T.N.; VENKATACHALAPATI, V.; MASLAKOVA, N.I.; BELJUSOVA, Z.D.;  
YAKUBOVSKAYA, T.A.; YURINA, A.L.; RYBAKOVA, N.O.; MOROZOVA, V.G.;  
BARASH, M.S.; FONAREV, V.I.; NIKONOV, A.A.

Activity of the Geological Sections of the Moscow Naturalists'  
Society. *Biul. MOIP. Otd. geol.* 39 no.6:127-151 N-D '64.  
(MIRA 1P.3)

STRAKHOV, N.M.; LANGE, O.K.; YABLOKOV, V.S.; SARYCHEVA, T.G.;  
OVCHINNIKOV, A.M.; SHCHEGOLEV, D.I.; KRASHENINNIKOV, G.F.;  
MENYAYLENKO, P.A.; KALEDA, G.A.; ANUFRIYEV, A.A., student

Mikhail Sergeevich Shvetsov, 1885- . Izv. vys. ucheb. zav.;  
geol. i razv. 8 no.11:7-13 N '65. (MIRA 18:12)

1. Moskovskiy geologorazvedochnyy institut (for Anufriyev).

SILLEN, L., LANGE, P., GABRIELSON, C.

"Zbiór zadań z chemii fizycznej" (Selected tasks from the physical chemistry),  
by L. Sillen, P. Lange, C. Gabrielson. Reported in New Books (Nowe Książki),  
No. 14, July 15, 1955

LANGE, Ryszard

First contribution to the discussion on the Zeran Works.  
Motor 11 no.2:3 14 Ja '62.



LANGE, S.M.

M.V.Lomonosov and Soviet public health; on the 250th anniversary  
of his birth. Zdrav. Tadzh. 8 no.6:48-49 N-D '61. (MIRA 15:1)

1. Iz kafedry organizatsii zdravookhraneniya i istorii meditsiny  
(zav. - dotsent Ya.T.Tadzhiyev) Tadzhikskogo meditsinskogo instituta  
imeni Abuali ibni Sino.  
(LOMONOSOV, MIKHAIL VASIL'EVICH, 1711-1765)

LANGE, T.

"Research Methods in Cavitation (As Applied to---) in Liquids With the Aid of  
Ultra-sonic Waves", Problemy sovremennoy fiziki, No.9, 1953.

LANGE, T. I.

2798. LANGE, T. I. Izucheniye Yavleniya Skol'zheniya V Kristallakhs Pomoshch'yu  
Iskusstvennogo Sdvigodbrazovaniya. L., 1954. 10s. 19sm. (Leningrgos. Psd. In-t).  
100 ekz. B. Ts.-(54-54576)

SO: Letopis' Zhurnal'nykh Statey, Vol. 42, Moskva, 1949

LANGE, T. I.

"Study of the Phenomenon of Slippage in Crystals by Means of Artificial Shear Formation." Cand Phys-Math Sci, Leningrad State U, Leningrad, 1954. (ML No 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)  
SO: Sum. No. 556, 24 Jun 55

S/058/63/000/002/046/070  
A160/A101

AUTHORS: Lange, V. N., Lange, T. I.

TITLE: The temperature dependence of the mobility of current carriers in the tellurium-selenium and tellurium-sulfur systems

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 72, abstract 2E483 ("Izv. AN MoldSSR", no. 5, 1962, 113 - 116)

TEXT: Presented are experimental curves of the dependence of  $\lg R\sigma$  ( $R$  is the Hall constant,  $\sigma$  - the specific electric conductivity) on the temperature in the range of 90 - 390°K for the samples of the Te-Se and Te-S systems with a various content of admixtures (Se and S respectively). The curves reveal that an addition of Se (or S) in the amount of 0.05 - 0.1 atomic % leads to an increase of the interval in which the mobility of  $R\sigma$  slightly depends on the temperature. This fact is connected with an increase in the number of defects in the lattice. When further increasing the content of Se, complexes of impurity atoms start to develop. As a result, the concentration of defects decreases. Hereby, the interval of the weak dependence of  $R\sigma$  on the temperature is also

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A160/A101

The temperature dependence of the...

diminished, since in samples with a small concentration of defects the scattering on phonons starts to take effect at lower temperatures. When increasing the content of Se (or S) up to 0.50 atomic %, the scattering on impurity atom complexes starts to play an essential part, and a quick drop of the  $R\sigma$ -product becomes noticeable at a more higher temperature. It is shown that a quick decrease of  $R\sigma$ , observed in Te - Se and Te - S alloys during a transition to adequately high temperatures, should not be explained by a change in the width of the forbidden zone.

A. Kozyrev

[Abstracter's note: Complete translation]

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L 19496-63 EWP(q)/EWT(m)/EWP(B)/BDS AFFTC/ASD JD  
ACCESSION NR: AP3003913 S/0181/63/005/007/2029/2031

AUTHORS: Lange, V. N.; Lange, T. I.

TITLE: Investigations on the anisotropy of microhardness in indium antimonide, determined by the scratch test

SOURCE: Fizika tverdogo tela, v. 5, no. 7, 1963, 2029-2031

TOPIC TAGS: microhardness, anisotropy, In, Sb, scratch test, cleavage plane, crystal face, plastic characteristics

ABSTRACT: The authors have used the scratch test on the (111) crystal face and the (110) cleavage plane in n-type InSb crystals in which the concentration of active uncompensated impurities was on the order of  $10^{17} \text{ cm}^{-3}$ . The scratching was done with a  $5-10^\circ$  diamond pyramid in a PMT-3 microhardness tester by moving the object stand along one of the coordinate axes. This was done by smooth manual rotation of the appropriate knob, with a load of 10g on the pyramid. The hardness was computed from 20 measurements and was taken as the load (in kg) divided by the square of the scratch width (measured in mm). Results are shown in

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ACCESSION NR: AP3003913

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Figs. 1 and 2 (see enclosures). On the basis of these results, it is concluded that in studying the anisotropy of plastic characteristics of a crystal the scratch test may be used as well as the indentation test, and it may prove to be more sensitive. "The authors express their thanks to M. S. Ablova and A. R. Regel for discussing the results and also to I. P. Molodyan for furnishing single crystals for the investigation." Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki i matematiki AN MSSR, Kishinev (Institute of Physics and Mathematics, Academy of Sciences, Moldavian SSR)

SUBMITTED: 12Mar63

DATE ACQ: 15Aug63

ENCL: 02

SUB CODE: PH

NO REF SOV: 005

OTHER: 002

Card 2/2



I 26472-65 EWP(w)/EWT(m)/EWA(d)/EWP(t)/T/EWP(b) IJP(c) JD/JG

ACCESSION NR: AR5004859

S/0058/64/000/011/E077/E077

SOURCE: Ref. zh. Fizika, Abs. 11E628

26  
16  
B

AUTHORS: Lange, V. N.; Lange, T. I.

TITLE: Comparison of results of a study of the anisotropy of microhardness of beryllium single crystals by indentation and scratching methods

CITED SOURCE: Izv. AN MoldSSR. Ser. yestestv. i tekhn. n., no. 7, 1963, 23-28

TOPIC TAGS: crystal hardness, anisotropy, beryllium, single crystal, scratch test, indentation test

14 27 14

TRANSLATION: A procedure and results are described of a study of the anisotropy of microhardness (M) of beryllium single crystals by methods of scratch and indentation. The microhardness anisotropy was studied by the scratch method on the (0001) face and on the face perpendicular to it. The scratches on each of the planes were made in the FMT-3 device in different directions. It is shown that M varies periodically on both faces, depending on the direction. On the (0001) face the period amounts to 60°, and the minimum value of M is 150 kg/mm<sup>2</sup>; the maximum

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ACCESSION NR: AR5004859

is approximately 15% higher. The period of variation of M on the face containing the hexagonal axis  $C_6$  is  $180^\circ$ ; the maximum of M corresponding to scratches made along the  $C_6$  axis is  $215 \text{ kg/mm}^2$ ; when moving in the opposite direction, M is somewhat higher than  $100 \text{ kg/mm}^2$ ; minimum M is obtained for scratches making an angle  $40-45^\circ$  to the  $C_6$  axis. The results of the study of the anisotropy of M by the scratch and indentation methods are compared. It is noted that both curves showing the dependence of M on the direction have a form analogous to the development of the central cross section of the characteristic surface for the Young modulus of a hexagonal system. A. Nikonov.

SUB CODE: SS

ENCL: 00

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L 26473-65 EWP(w)/EWT(m)/EWA(d)/EWP(t)/T/EWP(b) IJP(c) JD

ACCESSION NR: AR5004860

S/0058/64/000/011/E079/E079

SOURCE: Ref. zh. Fizika, Abs. 11E651

AUTHORS: Lange, V. N.; Lange, T. I.

TITLE: <sup>6</sup>Anisotropy of microhardness of single crystals of antimony and its connection with the structure

CITED SOURCE: Izv. AN MoldSSR. Ser. yestestv. i tekhn. n., no. 7, 1963, 29-34

TOPIC TAGS: antimony, single crystal, anisotropy, microhardness, crystal structure, crystal hardness.

TRANSLATION: Single crystals of antimony were split along the (111) and (11̄1) cleavage planes. The first cleavage plane passes through the layers connected by forces of a mixed character (partially Van der Waals, partially metallic) parallel to the principal tetrahedra forming the layers, and is called the principal cleavage plane. The second cleavage plane passes parallel to the sides of the tetrahedra and is called the secondary cleavage plane. On both cleavage planes,

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B

L 26473-65

ACCESSION NR: AR5004860

scratches were made with a diamond indenter in order to determine the anisotropy of the microhardness (MH). It was observed that on the principal cleavage plane the MH is maximal in directions perpendicular to the emergences of the secondary cleavage plane. The different values of the maxima for scratches made in the same direction but on opposite sides is explained by the fact that a larger lattice resistance is overcome when scratches are made in one direction than in the opposite direction. A plot of MH against directions on the  $(\bar{1}\bar{1}1)$  plane has a period of  $360^\circ$  and contains two maxima. One of these corresponds to scratches made perpendicular to the emergence of the principal cleavage plane, and the second in the opposite direction. The maximum on  $(\bar{1}\bar{1}1)$  is larger than on  $(11\bar{1})$ . The imprint of the diamond indenter on the  $(\bar{1}\bar{1}1)$  plane has the form of an asymmetrical rhombus, owing to the different character of the binding forces in different directions. A. Urusovskaya. (Abstract's Note. The symbols for the negative Miller indices are either absent or incorrectly printed in the original.)

SUB CODE: SS, MM

ENCL: 00

Card 2/2

VERAKSA, V.I.; LANGE, V.N.; LANGE, T.I.

Effect of small additions of the elements of the Vb subgroup of the periodic table on some properties of tellurium single crystals. Zhur. fiz.khim. 37 no.10:2308-2310 0 '63. (MIRA 17:2)

1. Laboratoriya poluprovodnikov AN Moldavskoy SSR.

ACCESSION NR: AP4028455

S/0181/64/006/004/1220/1222

AUTHORS: Lange, V. N.; Lange, T. I.

TITLE: Investigation of the anisotropy of the photomechanical effect in indium antimonide and in antimony

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1220-1222

TOPIC TAGS: photomechanical effect, indium antimonide, antimony, microhardness tester PMT 3, crystal property

ABSTRACT: By means of a PMT-3 microhardness tester, the authors have shown that the value of microhardness is related to the width (d) of the scratch and the pressure (P) at the point of the instrument by the formula  $H = Pd^{-2}$ . They also established that the photomechanical effect is anisotropic, giving rise to diminution in hardness, depending on direction, that ranges from 2 to 6% (as compared to the value in darkness) for crystals of InSb and from 4 to 10% for crystals of Sb. It was observed that the positions of the maximums of microhardness in crystals of Sb (large maximums of both  $H_d$  and  $H_l$ , i.e., maximums of hardness both in darkness and in light) correspond to the maximum position for  $\frac{H_d - H_l}{H_d}$ , whereas in InSb the

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ACCESSION NR: AP4028455

individual maximums correspond to minimums of  $\frac{H_d - H_i}{H_d}$ . "The authors express their sincere thanks to Professor A. R. Regel' for discussing the results and to M. S. Ablova for preparing the single crystals of indium antimonide and for her interest in the work." Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Laboratoriya poluprovodnikov AN Moldav. SSR, Kishinev (Laboratory of Semiconductors, AN Moldav. SSR)

SUBMITTED: 23Aug63

ENCL: 00

SUB CODE: EC, SS

NO REF SOV: 006

OTHER: 003

Card 2/2

ACCESSION NR: AP4041366

S/0048/64/028/006/1007/1009

AUTHOR: Kotrubenko, B. P.; Lange, V. N.; Lange, T. I.

TITLE: Physicochemical properties of alloys of the indium arsenide-tellurium section

*28-#6 - 1007-1009 - J 64*

TOPIC TAGS: indium arsenic tellurium system, indium arsenide tellurium alloy, alloy physicochemical property, alloy electrical property, alloy structure

ABSTRACT: Polycrystalline specimens of indium arsenide containing 0.00, 0.10, 0.20, 0.50, 1.00, 2.00, 5.00, 10.0, 15.0, and 20 at% Te have been prepared by direct fusion of the initial components. Their structure was investigated, and the thermal expansion coefficient, density, microhardness, electric conductivity and Hall coefficient were determined. X-ray diffraction patterns showed that a diamond-type structure exists in alloys with up to 20 at% Te. The microhardness of all the alloys is about the same,  $350 \pm 10 \text{ kg/mm}^2$ , which fact indicates that no substantial changes occur in the atom location

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ACCESSION NR: AP4041366

or in the nature of the bonds between them. The electric conductivity and the charge carrier concentration increase sharply with an increase in Te content up to about 1.0% and then decrease somewhat. Changes in the thermal expansion coefficient and density correlate well with the changes in the electron concentration; the former have their minima at about the same tellurium content at which the charge carrier concentration in the alloy is the highest. From the results of the study it appears that, in spite of a sharp difference in the structure of the initial components, the indium arsenide-tellurium section with up to about 10 at% tellurium has a region of solid solutions with a diamond-type lattice adjoining indium arsenide. Orig. art. has: 2 figures.

ASSOCIATION: Laboratoriya poluprovodnikovy\*kh soyedineniy Akademii nauk MoldSSR (Laboratory of semiconducting compounds, Academy of Sciences, MoldSSR)

SUBMITTED: 00

ATD PRESS: 3052

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 002

Card: 2/2

B/0048/64/028/006/1080/1084

ACCESSION NR: AP4041382

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

TITLE: Investigation of the microhardness anisotropy of some semiconductor compounds 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 presented. The microhardness measurements were performed by a method described elsewhere (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 crystal face in a controlled manner with a special machine. Materials investigated include InSb, In<sub>2</sub>Te<sub>3</sub>, 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-

1/3 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  $120^\circ$ , 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  $\text{In}_2\text{Te}_3$ . 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.

Card 2/3

ACCESSION NR: AP4041382

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

SUBMITTED: 00

ENCL: 00

SUB CODE: SS, MS

NR REF SOV: 008

OTHER: 002

Card 3/3

LANGE, V.N.; LANGE, T.I.; OGANYAN, S.G.

Studying the polar anisotropy of abrasion hardness in antimony crystals by the selective etching method. Kristallografiia 10 no.2:260-262 Mr-Apr '65. (MIRA 18:7)

1. Institut fiziki i matematiki AN Moldavskoy SSR.

L 9204-66 EWT(l)/EWT(m)/EWP(w)/T/EWP(t)/EWP(b) IJP(c) GG/JD

ACC NR: AR600123

SOURCE CODE: UR/0058/65/000/008/E054/E055

SOURCE: Ref. zh. Fizika, Abs. 8E409

AUTHORS: <sup>44,55</sup> Lange, V. N.; <sup>44,55</sup> Lange, T. I.; <sup>44,55</sup> Shutov, S. D.

ORG: none

TITLE: Anisotropy of microhardness

CITED SOURCE: Izv. AN MoldSSR. Ser. fiz.-tekh. i matem. n., no. 12, 1964, 61-68

TOPIC TAGS: <sup>21,44,55</sup> antimony compound, <sup>21,44,55</sup> crystal property, <sup>21,44,55</sup> hardness | 6

TRANSLATION: The scratching method was used to investigate the anisotropy of the microhardness of  $Sb_2Se_3$  crystals on the planes (100), (010), and (001). It is shown that the magnitude of the microhardness, and also the external form of the scratches, depends essentially on the direction of the scratching on the investigated face. On the (010) plane the maximum of the microhardness is observed in the scratch directions (301) and ( $\bar{3}$ 01). An interpretation of the character of the dependence of the microhardness on the direction on the (010) face is difficult. Apparently, in  $Sb_2Se_3$  crystals the slip occurs along the (010) plane in the  $\langle 100 \rangle$  direction. On the (001) plane the minimum of hardness is observed close to the  $\langle 100 \rangle$  direction, and on the (100) plane the greatest hardness is in the  $\langle 010 \rangle$  direction, i.e., perpendicular to the emergence of the cleavage plane on the (100) face. It is also shown that in all directions the hardness in scratching decreases upon illumination, i.e., a photo-mechanical effect takes place. V. Osvenskiy.

SUB CODE: 20

Card 1/1 *ads*

I 00533-67 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) RDW/JD

ACC NR: AR6017810

SOURCE CODE: UR/0058/66/000/001/E043/E043

AUTHORS: Lange, V. N.; Lange, T. I.; Titov, V. A.; Chizhevskaya, S. N.

TITLE: Influence of slight indium impurities on the physicochemical properties of selenium

SOURCE: Ref. zh. Fizika, Abs. 1E328

REF SOURCE: Sb. Materialy dokl. 1-y Nauchno-tekhn. konferentsii Kishinevsk. politekhn. in-ta. Kishinev, 1965, 70

TOPIC TAGS: selenium, indium, thermal expansion, solid solution, crystal impurity, impurity center, physical chemistry property

ABSTRACT: To clarify the question whether the impurity atoms in Se are actually grouped together, measurements were made of the density, and coefficient of thermal expansion of alloys of the Se-In system, and also the viscosity of the corresponding melts. It is established that the variation of these properties with increasing In concentration is a complicated one. The data obtained, in the opinion of the authors, confirm the hypothesis that groups of In atoms are formed, and also indicate that the atoms (complexes) of In arrange themselves in chains made up of selenium atoms, and do not dispose themselves between them. [Translation of abstract]

SUB CODE: 20, 11

Card 1/1 pb

L 05907-67 INT(m)/EWF(t)/ETI IJP(c) JD

ACC NR: AR6017479

SOURCE CODE: UR/0137/66/000/001/A008/A008

AUTHOR: Lange, V. N.; Lange, T. I.; Titov, V. A.; Chizhevskaya, S. N.

23  
3

TITLE: Effect of indium impurities on the physical and chemical properties of selenium

SOURCE: Ref. zh. Metallogiya, Abs. 1A53

REF SOURCE: Sb. Materialy dokl. 1-y Nauchno-tekhn. konferentsii Kishinevsk. politekh. in-ta. Kishinev, 1968, 70

TOPIC TAGS: indium, selenium, indium containing alloy, selenium base alloy

ABSTRACT: The density and coefficient of thermal expansion of alloys in the Se-In system are measured as well as the viscosity of the corresponding melts to determine whether grouping of impurity atoms in selenium actually takes place. It is found that these characteristics change in a complex manner as the indium concentration is increased. The authors feel that the resultant data confirm the hypothesis of grouping of indium atoms and also indicate that the indium atoms (complexes) are incorporated in chains made up of selenium atoms rather than being distributed among them. (From RZh Fiz.) [Translation of abstract]

SUB CODE: 11, 20

Card 1/1

KH

UDC: 669.776'872-154:541.6



LANGE, V.

27662

O rasprostraneni i roda irgi (Amelanchier Med.) na  
territorii latviyskoy SSR. trudy in - ta lesokhoz.  
problem (Akad. nauk latv. SSR), Vyp. 1, 1949, s. 151-  
61. ---na latysh.yaz. ---rezyume na rus. yaz.

SO: Knizhnaya Letopis, Vol. 1, 1955

LANGE, V.

29165

Nekotorye člannye o kachestve semran sible<sup>6</sup>skikh i evropeyskikh listrennits,  
proizrastayushchikh na territorii latviyskoy SSR. Izvestiya Akad. nauk  
Latv. SSR, 1949, No. 8, s. 123-27-Na latysh. yaz.-Rezyume na Rus. yaz-  
Bibliogr: 5, Nazv.

SO: Letopis' Zhurnal'nykh Statey, Vol. 39, 1949

USSR/Forestry - General Problems.

K.

Abs Jour : Ref Zhur - Biol., No 15, 1958, 67981.

Author : Lango, V.

Inst : Latvian Agricultural Academy.

Title : Comparative Data for 1939-1940 and 1955-1956 on the Effect of Winter Frosts on Forest Species in the Latvian SSR.

Orig Pub : Tr. Latv. s.-kh. akad., 1957, No 6, 465-476.

Abstract : Tables are given of the results of observations of forest-brush species from 400 different parts of the republic. Species of the following genera are represented: Abies, Chamacyparis, Juniperus, Larix, Picea, Pinus, Pseudotsuga, Taxus, Thuja, Tsuga, Acer, Aesculus, Alnus, Amelanchier, Berberis, Betula, Caragana, Carpinus, Carya, Castanea, Cerasus, Cornus, Corilus, Cotoneaster, Crataegus, Elaeagnus, Evonimus, Fagus, Fraxinus, Juglans, Iaberrum, Liriodendron,

Card 1/2

BIRKMANE, K.; EUMBURE, M.; GALENIEKS, P., prof., doktor; JAUDZEME, V.;  
PETERSONE, A.; OZOLINA, E., retsenzent; LANGE, V., retsenzent;  
DIMDINS, J., red.; KRASOVSKA, M., tekhn. red.

[Flora of the Latvian S.S.R.]Latvijas PSR flora. P.Galienieka  
red. Riga, Latvijas Valsts izdevnieciba. Vol.4. 1959. 524 p.  
[In Latvian] (MIRA 15:1)

(Latvia—Botany),

LANGE, V., inzh.

Some defects of the UralZIS-353A engine and methods for the  
determination of these defects. Avt. transp. 37 no.8:24-25  
Ag '59. (MIRA 12:12)

(Automobiles--Engines)

LANGE, V., inzh.

Reducing the formation of foam in the lubrication system of  
the UralZIS-353A engines. Avt.transp. 39 no.3:42 Mr '61.  
(MIRA 14:3)  
(Automobiles--Lubrication)

LANGE, V.I., redaktor; SHAPIRO, G.M., tekhnicheskiy redaktor.

[Specifications for mechanical wood working] Normali po  
mekhanicheskoi obrabotke drevesiny. Moskva, Gos.izd-vo  
mestnoi promysh. RSFSR, 1952. 56p. [microfilm]

(MIRA 9:4)

1. Russia 1917- R.S.F.S.R.) Ministerstvo mestnoy promy-  
shlennosti. (Woodworking industries)

KONDRAT'YEV, N.P.; SHTER, B.O.; CHERNYSHOVA, T.Ye.; LANGE, V.I.,  
redaktor; POLOSINA, A.S., tekhnicheskiy redaktor.

[Operation and maintenance of a fleet of automobiles and  
tractors in the petroleum industry; a collection of articles]  
Ekspluatatsiya i remont avtotraktornogo parka neftyanoi pro-  
myshlennosti; sbornik materialov. [Sost. N.P.Kondrat'ev, B.O.  
Shter, T.E. Chernyshova] Izd.2-oe, ispr. i dop. Moskva, Gos.  
nauchno-tekhn.izd-vo neftyanoi i gorno-toplivnoi lit-ry,  
1952. 502 p. (MLRA 8:10)

1. Russia (1923- U.S.S.R.) Ministerstvo neftyanoy promyshlen-  
nosti.

(Automobiles) (Tractors) (Petroleum industry)



FRIDLYAND, A.A., kandidat tekhnicheskikh nauk; LANGE, V.I., redaktor;  
MEL'NIKOVA, N.V., tekhnicheskii redaktor

[Leather processing in local tanneries] Vyrabotka kozhi na zavodakh  
mestnoi promyshlennosti. Moskva, Gos. izd-vo mestnoi promyshl.  
RSFSR, 1953. 295 p. (MIRA 7:10)  
(Leather industry and trade)

OGRYZKO, P.V.; FRENKEL', M.I.; LANGE, V.I., redaktor; MEL'NIKOVA, N.V.,  
tekhnicheskiy redaktor. ~~REDAKTOR~~

[Innovators in furniture making] Mebel'shchiki-novatory. Moskva,  
Gos.izd-vo mestnoi promyshl.BSFSR No.1. 1954. 37 p.(MLRA 8:11)  
(Furniture industry):

VOLKOV, V.A.; LANGE, V.I., redaktor; MEL'NIKOVA, N.V., tekhnicheskii  
redaktor

[Repair of metal equipment in common use] Remont bytovykh metalli-  
cheskikh izdelii. Moskva, Gos. izd-vo mestnoi i toplivnoi pro-  
myshlennosti RSFSR, 1954. 71 p. (MLRA 8:1)  
(Metalwork--Repairing)

ODNORALOV, N.V.; LIBERMAN, A.B., spetsredaktor; LANGE, V.I., redaktor;  
MEL'NIKOVA, N.V., tekhredaktor.

[Decorative finishing of metal consumers' goods] Dekorativnaia  
otdelka metallicheskih izdelii shirokogo potrebleniia. Moskva,  
Rosgiznestprom, 1954. 102 p. (MIRA 7:11)  
(Metals--Finishing)

GOLOTIN, I.M.; KOSTRIKIN, Yu.M., kandidat tekhnicheskikh nauk, redaktor;  
LANGE, V.I., redaktor; MEL'NIKOVA, N.V., tekhnicheskij redaktor.

[Water treatment for low pressure boiler installations] Vodoobra-  
botka v kotel'nykh ustanovkakh maloi moshchnosti. Pod red. I.U.M.  
Kostrikiana. Moskva, Gos. izd-vo mestnoi i toplivnoi promyshl.  
RSFSR, 1954. 124 p. [Microfilm] (MLRA 8:2)  
(Steam boilers)

KHOKHLOV, V.P.; LANGE, V.I., redaktor; MEL'NIKOVA, N.V., tekhnicheskiy redaktor.

[Brief manual of a furniture maker] Kratkii spravochnik mebel'shchika.  
Moskva, Gos. izd-vo mestnoi i toplivnoi promyshlennosti ~~RSFSR~~, 1954.  
317 p. (MLRA 8:2)  
(Furniture industry)

FRENKEL', M.I.; OGRYZKO, P.V.; LANGE, V.I., redaktor; MEL'NIKOVA, I.V.,  
tekhnicheskiy redaktor.

[Progressive methods of making semirigid chairs] Peredovye metody  
v tekhnologii proizvodstva polyzhestkikh stol'ev. Moskva, Gos.  
izd-vo mestnoi promysh., 1955. 53 p. (MLRA 8:12)  
(Chairs)

YURCHAK, I.Ya.; LANGE, V.I., redaktor; MEL'NIKOVA, N.V., tekhnicheskii redaktor.

[Methods of testing china and earthenware] Metody ispytaniia farforovoi i faiansovoi posudy. Moskva, Gos.izd-vo mestnoi promysh., 1955. 69 p. (MLRA 9:1)  
(Pottery)



YAKOVKIN, M.V.; LANGE, V.I., redaktor; MEL'NIKOVA, N.V., tekhnicheskiy  
redaktor

[Volumetric tables for lumber; up to 100 pieces] Tablitsy ob'emov  
pilomaterialov; do 100 shtuk. Moskva, Gos.izd-vo mestnoi promyshlen-  
nosti RSFSR, 1955. 203 p. (MIRA 9:1)  
(Lumber trade---Tables and ready-reckoners)

TARAN, K.A.; MATSKIN, L.A.; LANGE, V.I., vedushchiy red.; POLOSINA,  
A.S., tekhn.red.

[Tank-farm gager] Slivshchik-nalivshchik neftebaz. Moskva,  
Gos.nauchno-tekhn.izd-vo نفت. i gorno-toplivnoi lit-ry,  
1951. 160 p. (MIRA 12:10)

(Petroleum--Storage)

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

LANGE, V. N., Candidate Phys-Math Sci (diss) -- "Investigation of anomalies in the physical properties of monocrystals of tellurium with small admixtures of selenium and sulfur". Leningrad, 1959. 11 pp (Min Educ RSFSR, Leningrad State Ped Inst im A. I. Gertsen), 150 copies (KL, No 22, 1959, 108)

LANGE, V.N.; REEEL', A.R.

Some anomalies in the interdependence of density and microhardness  
of Te-Se and Te-S alloys. Fiz. tver. tela 1 no.4:559-561 '59.  
(MIRA 12:6)

Leningradskiy gosudarstvennyy pedagogicheskiy institut im.  
A.I. Gertsena.  
(Tellurium alloys)

LANGE, V.N.; REHEL', A.R.

Peculiarities of the electric properties of continuous solid solutions in the systems Te - Se and Te - S. Fiz. tver. tela 1 no.4: 562-564 '59. (MIRA 12:6)

1. Leningradskiy gosudarstvennyy pedagogicheskiy institut im. A.I. Gertsena.

(Tellurium alloys--Electric properties)

84591

9.4300 (1138, 1143)  
24.7700 (1043 only)

S/181/60/002/010/013/051  
B019/B070

AUTHORS: Lange, V. N. and Regel', A. R.

TITLE: The Peculiarities of the Dependence of the Forbidden Band Width and the Mobility of Carriers on the Composition of Tellurium - Selenium and Tellurium - Sulfur Solid Solutions

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 10, pp. 2439-2445

TEXT: Data about the dependence of the forbidden band width and the hole mobility in the impurity region are given as function of the composition of the systems Te - Se and Te - S. These data provide a proof of the mechanism of the action of the impurities. The results on hole mobility are shown in Figs. 1-4. The change of resistivity of the Te - S alloy in a magnetic field is graphically shown in Fig. 5; the dependence of this change on the composition of the alloy is shown in Fig. 6. The results on forbidden band widths are collected in a table. From the results obtained here, it is concluded that the introduction of selenium or sulfur atoms leads to an increase in the hole concentration and electric conductivity. The structural changes brought about by the introduction of the impurity

4

Card 1/2

81,591

The Peculiarities of the Dependence of the  
Forbidden Band Width and the Mobility of  
Carriers on the Composition of Tellurium -  
Solid Solutions

S/181/60/002/010/013/051  
B019/B070

Selenium and Tellurium - Sulfur

atoms are discussed on the two dimensional lattice model (Fig. 7). The anomaly of the mobility is interpreted on this model. Since the transport of the carrier from one to the other chain is easier in a lattice with distorted chains, an increase of the macromobility takes place while the micromobility decreases. The change of resistivity in the magnetic field expresses the degree of anisotropy of the material. This change is minimum in isotropic substances and maximum in strongly anisotropic substances. There is no change in the forbidden band width for small impurities, only when the impurity concentration is a few per cent, does a change appear possible. The minimum of the dependence of the forbidden band width on the composition at 0.5 - 0.10 at % agrees with the above mentioned mechanism of the action of impurities described by the authors. There are 9 figures, 2 tables, and 8 references: 4 Soviet, 3 US, and 1 Swiss. X

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of  
Semiconductors of the Academy of Sciences USSR, Leningrad)

SUBMITTED: April 4, 1960

Card 2/2



9.4310

S/081/62/000/006/012/117  
B166/B101

AUTHOR: Lange, V. N.

TITLE: Evaluation of the probability of formation of impurity atom complexes in the systems tellurium - selenium and tellurium - sulfur

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 36, abstract 6B226 (Uch. zap. Ussuriysk. gos. ped. in-t, v. 2, no. 3, 1961, 3-4)

TEXT: An approximate evaluation is given of the probability of formation of various combinations of impurity atoms in a Te - Se solid solution as a function of their concentration. [abstracter's note: Complete translation.]

VB

Card 1/1

24.7700

S/058/62/000/008/075/134  
A061/A101

AUTHORS: Lange, V. N., Regel', A. R.

TITLE: Some properties of tellurium - sulfur and tellurium - selenium systems

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 25, abstract 8E187  
("Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena", 1961, v. 207, 5 - 11)

TEXT: Te-Se and Te-S systems possessing a specific molecular chain structure have been investigated. It is apparent from the cited dependences of the electrical properties of Te-S alloys on composition that an increase of electrical conductivity, of carrier mobility (holes), and a drop of the Hall effect are observable in alloys with an S content of  $\sim 0.05 - 0.1$  at.%. The presence of two "special" points, wherein the properties change similarly as above described, has been discovered for the Te-Se system. The first point is detected at Se concentrations of  $\sim 0.1$  at.%, while the other shifts toward the region of high impurity concentrations in alloys prepared from purer Te. The anomalies

JB

Card 1/2

Some properties of...

S/058/62/000/008/075/134  
A061/A101

observed in the electrical properties are related to the formation of local structural defects (vacancies related to chain discontinuities), which is confirmed by anomalies in density and hardness.

VB

Yu. Al'shevskiy

[Abstracter's note: Complete translation]

Card 2/2

S/139/62/000/003/014/021  
E039/E420

AUTHORS: Veraksa, V.I., Lange, V.N., Sukhanova, R.V.  
TITLE: Some characteristics of the microhardness of single crystals of tellurium with small admixtures of antimony  
PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Fizika, no.3, 1962, 124-126

TEXT: The effect of small admixtures on the properties of semiconductors in general is discussed and published work on tellurium alloys reviewed. The work described in this paper was undertaken on the grounds that changes in mechanical properties must be closely connected with structural changes in the lattice of the alloys. Samples of the binary alloy Te-Sb were prepared from vacuum distilled materials mixed for half an hour at 500°C with an electromagnetic vibrator. Single crystals were then grown and annealed for 10 hours at 300°C. Two series of microhardness tests were carried out and the results are expressed in terms of hardness relative to pure tellurium as unity. As the antimony content increases there is an initial decrease in hardness to about 0.6 for 0.002% Sb rising to .

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Some characteristics of ...

S/139/62/000/003/014/021  
E039/E420

a maximum about 1.4 at a concentration of 0.01% Sb after which the hardness tends to decrease again. This anomalous behaviour may be correlated with changes in the number of defects as the concentration of Sb is altered. Comparison is made with analogous results on the Te-Se system obtained by other authors and in particular with results obtained by Japanese authors on the change in electrical properties in the Te-Sb system. The authors conclude that there is still insufficient data and for clarification comparison with other properties and systems is required. There are 2 figures.

ASSOCIATION: Ussuriyskiy gospedinstitut  
(Ussuri State Pedagogical Institute)

SUBMITTED: January 9, 1961

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S/058/63/000/002/046/070  
A160/A101

AUTHORS: Lange, V. N., Lange, T. I.

TITLE: The temperature dependence of the mobility of current carriers in the tellurium-selenium and tellurium-sulfur systems

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 72, abstract 2E483 ("Izv. AN MoldSSR", no. 5, 1962, 113 - 116)

TEXT: Presented are experimental curves of the dependence of  $\lg R\sigma$  ( $R$  is the Hall constant,  $\sigma$  - the specific electric conductivity) on the temperature in the range of 90 - 390°K for the samples of the Te-Se and Te-S systems with a various content of admixtures (Se and S respectively). The curves reveal that an addition of Se (or S) in the amount of 0.05 - 0.1 atomic % leads to an increase of the interval in which the mobility of  $R\sigma$  slightly depends on the temperature. This fact is connected with an increase in the number of defects in the lattice. When further increasing the content of Se, complexes of impurity atoms start to develop. As a result, the concentration of defects decreases. Hereby, the interval of the weak dependence of  $R\sigma$  on the temperature is also

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A160/A101

diminished, since in samples with a small concentration of defects the scattering on phonons starts to take effect at lower temperatures. When increasing the content of Se (or S) up to 0.50 atomic %, the scattering on impurity atom complexes starts to play an essential part, and a quick drop of the  $R\sigma$ -product becomes noticeable at a more higher temperature. It is shown that a quick decrease of  $R\sigma$ , observed in Te - Se and Te - S alloys during a transition to adequately high temperatures, should not be explained by a change in the width of the forbidden zone.

A. Kozyrev

[Abstracter's note: Complete translation]

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L 19496-63 EMP(q)/EWT(m)/EWP(B)/BDS AFFTC/ASD JD  
ACCESSION NR: AP3003913 S/0181/63/005/007/2029/2031

AUTHORS: Lange, V. N.; Lange, T. I. AB  
18

TITLE: Investigations on the anisotropy of microhardness in indium antimonide, determined by the scratch test 15 27 27

SOURCE: Fizika tverdogo tela, v. 5, no. 7, 1963, 2029-2031

TOPIC TAGS: microhardness, anisotropy, In, Sb, scratch test, cleavage plane, crystal face, plastic characteristics

ABSTRACT: The authors have used the scratch test on the (111) crystal face and the (110) cleavage plane in n-type InSb crystals in which the concentration of active uncompensated impurities was on the order of  $10^{17} \text{ cm}^{-3}$ . The scratching was done with a 5-10 $\mu$  diamond pyramid in a FMT-3 microhardness tester by moving the object stand along one of the coordinate axes. This was done by smooth manual rotation of the appropriate knob, with a load of 10g on the pyramid. The hardness was computed from 20 measurements and was taken as the load (in kg) divided by the square of the scratch width (measured in mm). Results are shown in

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ACCESSION NR: AP3003913

Figs. 1 and 2 (see enclosures). On the basis of these results, it is concluded that in studying the anisotropy of plastic characteristics of a crystal the scratch test may be used as well as the indentation test, and it may prove to be more sensitive. "The authors express their thanks to M. S. Ablova and A. R. Regel for discussing the results and also to I. P. Molodyan for furnishing single crystals for the investigation." Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki i matematiki AN MSSR, Kishinev (Institute of Physics and Mathematics, Academy of Sciences, Moldavian SSR)

SUBMITTED: 12Mar63

DATE ACQ: 15Aug63

ENCL: 02

SUB CODE: PH

NO REF SOV: 005

OTHER: 002

Card 2/2

L 26472-65 EWP(w)/EWT(m)/EWA(d)/EWP(z)/T/EWP(b) IJP(c) JD/JG

ACCESSION NR: AR5004859

S/0058/64/000/011/E077/E077

SOURCE: Ref. zh. Fizika, Abs. 11E628

AUTHORS: Lange, V. N.; Lange, T. I.

26  
16  
B

TITLE: Comparison of results of a study of the anisotropy of microhardness of beryllium single crystals by indentation and scratching methods

CITED SOURCE: Izv. AN Mol. SSR. Ser. yestestv. i tekhn. n., no. 7, 1963, 23-28

TOPIC TAGS: crystal hardness, anisotropy, beryllium, single crystal, scratch test, indentation test

16 21 16

TRANSLATION: A procedure and results are described of a study of the anisotropy of microhardness (M) of beryllium single crystals by methods of scratch and indentation. The microhardness anisotropy was studied by the scratch method on the (0001) face and on the face perpendicular to it. The scratches on each of the planes were made in the PMT-3 device in different directions. It is shown that M varies periodically on both faces, depending on the direction. On the (0001) face the period amounts to 60°, and the minimum value of M is 150 kg/mm<sup>2</sup>; the maximum

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ACCESSION NR: AR5004859

is approximately 15% higher. The period of variation of M on the face containing the hexagonal axis  $C_6$  is  $180^\circ$ ; the maximum of M corresponding to scratches made along the  $C_6$  axis is  $215 \text{ kg/mm}^2$ ; when moving in the opposite direction, M is somewhat higher than  $100 \text{ kg/mm}^2$ ; minimum M is obtained for scratches making an angle  $40-45^\circ$  to the  $C_6$  axis. The results of the study of the anisotropy of M by the scratch and indentation methods are compared. It is noted that both curves showing the dependence of M on the direction have a form analogous to the development of the central cross section of the characteristic surface for the Young modulus of a hexagonal system. A. Nikonov.

SUB CODE: SS

ENGL: 00

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L 26473-65 EWP(w)/EWT(m)/EWA(d)/EWP(t)/T/EWP(b) IJP(c) JD

ACCESSION NR: AR5004860

S/0058/64/000/011/E079/E079

SOURCE: Ref. zh. Fizika, Abs. 11E651

AUTHORS: Lange, V. N.; Lange, T. I.

25  
15  
B

TITLE: <sup>16</sup> Anisotropy of microhardness of single crystals of antimony and its connection with the structure <sub>16</sub> <sup>27</sup>

CITED SOURCE: Izv. AN MoldSSR. Ser. yestestv. i tekhn. n., no. 7, 1963, 29-34

TOPIC TAGS: antimony, single crystal, anisotropy, microhardness, crystal structure, crystal hardness.

TRANSLATION: Single crystals of antimony were split along the (111) and (11̄1) cleavage planes. The first cleavage plane passes through the layers connected by forces of a mixed character (partially Van der Waals, partially metallic) parallel to the principal tetrahedra forming the layers, and is called the principal cleavage plane. The second cleavage plane passes parallel to the sides of the tetrahedra and is called the secondary cleavage plane. On both cleavage planes,

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ACCESSION NR: AR5004860

scratches were made with a diamond indenter in order to determine the anisotropy of the microhardness (MH). It was observed that on the principal cleavage plane the MH is maximal in directions perpendicular to the emergences of the secondary cleavage plane. The different values of the maxima for scratches made in the same direction but on opposite sides is explained by the fact that a larger lattice resistance is overcome when scratches are made in one direction than in the opposite direction. A plot of MH against directions on the (111) plane has a period of 360° and contains two maxima. One of these corresponds to scratches made perpendicular to the emergence of the principal cleavage plane, and the second in the opposite direction. The maximum on (111) is larger than on (111). The imprint of the diamond indenter on the (111) plane has the form of an asymmetrical rhombus, owing to the different character of the binding forces in different directions. A. Urusovskaya. (Abstract's Note. The symbols for the negative Miller indices are either absent or incorrectly printed in the original.)

EUB CODE: SS, MM

ENCL: 00

Card 2/2

VERAKSA, V.I.; LANGE, V.N.; LANGE, T.I.

Effect of small additions of the elements of the Vb subgroup of the periodic table on some properties of tellurium single crystals. Zhur. fiz.khim. 37 no.10:2308-2310 O '63. (MIRA 17:2)

1. Laboratoriya poluprovodnikov AN Moldavskoy SSR.

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.

ACCESSION NR: AP4028455

S/0181/64/006/004/1220/1222

AUTHORS: Lange, V. N.; Lange, T. I.

TITLE: Investigation of the anisotropy of the photomechanical effect in indium antimonide and in antimony

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1220-1222

TOPIC TAGS: photomechanical effect, indium antimonide, antimony, microhardness tester PMT 3, crystal property

ABSTRACT: By means of a PMT-3 microhardness tester, the authors have shown that the value of microhardness is related to the width (d) of the scratch and the pressure (P) at the point of the instrument by the formula  $H = Pd^{-2}$ . They also established that the photomechanical effect is anisotropic, giving rise to diminution in hardness, depending on direction, that ranges from 2 to 6% (as compared to the value in darkness) for crystals of InSb and from 4 to 10% for crystals of Sb. It was observed that the positions of the maximums of microhardness in crystals of Sb (large maximums of both  $H_d$  and  $H_l$ , i.e., maximums of hardness both in darkness and in light) correspond to the maximum position for  $\frac{H_d - H_l}{H_d}$ , whereas in InSb the

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ACCESSION NR: AP4028455

individual maximums correspond to minimums of  $\frac{H_d - H_i}{H_d}$ . "The authors express their sincere thanks to Professor A. R. Regel' for discussing the results and to M. S. Ablova for preparing the single crystals of indium antimonide and for her interest in the work." Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Laboratoriya poluprovodnikov AN Moldav. SSR, Kishinev (Laboratory of Semiconductors, AN Moldav. SSR)

SUBMITTED: 23Aug63

ENCL: 00

SUB CODE: EC, SS

NO REF SOV: 006

OTHER: 003

Card 2/2

ACCESSION NR: AP4041366

S/0048/64/028/006/1007/1009

AUTHOR: Kotrubenko, B. P.; Lange, V. N.; Lange, T. I.

TITLE: Physicochemical properties of alloys of the indium arsenide-tellurium section

*28-#6 1007-1009-Je 64*

TOPIC TAGS: indium arsenic tellurium system, indium arsenide tellurium alloy, alloy physicochemical property, alloy electrical property, alloy structure

ABSTRACT: Polycrystalline specimens of indium arsenide containing 0.00, 0.10, 0.20, 0.50, 1.00, 2.00, 5.00, 10.0, 15.0, and 20 at% Te have been prepared by direct fusion of the initial components. Their structure was investigated, and the thermal expansion coefficient, density, microhardness, electric conductivity and Hall coefficient were determined. X-ray diffraction patterns showed that a diamond-type structure exists in alloys with up to 20 at% Te. The microhardness of all the alloys is about the same,  $350 \pm 10 \text{ kg/mm}^2$ , which fact indicates that no substantial changes occur in the atom location.

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ACCESSION NR: AP4041366

or in the nature of the bonds between them. The electric conductivity and the charge carrier concentration increase sharply with an increase in Te content up to about 1.0% and then decrease somewhat. Changes in the thermal expansion coefficient and density correlate well with the changes in the electron concentration; the former have their minima at about the same tellurium content at which the charge carrier concentration in the alloy is the highest. From the results of the study it appears that, in spite of a sharp difference in the structure of the initial components, the indium arsenide-tellurium section with up to about 10 at% tellurium has a region of solid solutions with a diamond-type lattice adjoining indium arsenide. Orig. art. has: 2 figures.

ASSOCIATION: Laboratoriya poluprovodnikov\*kh soyedineniy Akademii nauk MoldSSR (Laboratory of semiconducting compounds, Academy of Sciences, MoldSSR)

SUBMITTED: 00

ATD PRESS: 3052

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 002

Card 2/2

S/0048/64/028/006/1080/1084

ACCESSION NR: AP4041382

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

TITLE: Investigation of the microhardness anisotropy of some semiconductor compounds 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 presented. The microhardness measurements were performed by a method described elsewhere (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 crystal face in a controlled manner with a special machine. Materials investigated include InSb, In<sub>2</sub>Te<sub>3</sub>, 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-

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