PANOV, N.A., prof.; DEYEVA, M.M.

X-ray picture of changes in the pulmonary circulation in rheumatic
disorders of the mitral valve in children. Pediatriia 37 no.8:67-
72 Ag '59.   (MIRA 13:1)

1. Iz rentgenologicheskogo otdela (nauchnyy rukovoditel' - prof.
N.A. Panov) Nauchno-issledovatel'skogo pediatricheskogo instituta
Ministerstva zdravookhraneniya RSFSR (dir. - kand.med.nauk A.P.
Chernikova).
            (RHEUMATIC HEART DISEASE, pathology)
            (BLOOD CIRCULATION, physiology)

DEYEVA, M. M., CAND MED SCI, "ROENTGENOLOGICAL PICTURE OF MITRAL VALVE INSUFFICIENCY IN CHILDREN WITH RHEUMATISM." MOSCOW, 1961. (SECOND MOSCOW STATE MED INST IMENI N. I. PIROGOV). (KL.-DV, 11-61, 227).

-248-

DEYEVA, M.M.

Clinical and X-ray parallels in rheumatic defect and insufficiency of the mitral valve in children. Pediatriia no.1:63-67 '62.

(MIRA 15:1)

1. Iz rentgenologicheskogo otdela (nauchnyy rukovoditel' - prof. N.A. Panov) Nauchno-issledovatel'skogo pediatricheskogo instituta (dir. - doktor med.nauk A.N. Chernikova) Ministerstva zdravookhraneniya RSFSR.

(MITRAL VALVE--DISEASES) (RHEUMATIC HEART DISEASE)

DEYEVA, M.M.; DOGEL', N.V.; KAGANOV, S.Yu.; LEONT'YEV, V.Ya.

Late results of the hospitalization of children with chronic
nonspecific pulmonary diseases in sanatoria on the southern
Crimean shore. Pediatriia 41 no.9:57-62 S '62.   (MIRA 15:12)

1. Iz kliniki dlya detey starshego vozrasta (zav. S.Yu.
Kaganov) Gosudarstvennogo nauchno-issledovatel'skogo
pediatricheskogo instituta (dir. - kand.med.nauk V.P.Spirina)
Ministerstva zdravookhraneniya RSFSR.
                        (LUNGS—DISEASES)
            (CRIMEA—HEALTH RESORTS, WATERING-PLACES, ETC.)

SHUBIN, F.M.; DEYEVA, N.M.

Biological characteristics of meadow rescue and blue hybrid
alfalfa grown on coal ashes in experiment pots. Zap. Sverdl.
otd. VBO no.3:121-127 '64   (MIRA 18:2)

DEYEVA, R A.

PHASE I BOOK EXPLOITATION   SOV/4700

Moscow. Gosudarstvennyy okeanograficheskiy institut

Tablitsy prilivov; vody Aziatskoy chasti SSSR i prilegayushchikh
    zarubezhnykh rayonov; ch. 1: Prilivy v osnovnykh portakh; ch. 2:
    Popravki dlya dopolnitel'nykh punktov i garmonicheskiye postoyan-
    nyye prilivov (Tide Tables; Waters of Asiatic USSR and Adjacent
    Foreign Regions; Pt. 1: Tides in the Principal Ports; Pt. 2:
    Corrections for Additional Stations and Harmonic Constants of
    Tides) Leningrad, Gidrometeoizdat, 1960. 191 p. 8,175 copies
    printed.

Sponsoring Agencies: Glavnoye upravleniye gidrometeorologicheskoy
    sluzhby pri Sovete Ministrov SSSR; Gosudarstvennyy okeanografiche-
    skiy institut.

Resp. Eds.: R.A. Deyeva, Candidate of Geographical Sciences, and
    N.I. Chalysheva, Candidate of Geographical Sciences; Eds.:
    I.N. Moiseyev and Z.I. Mironenko; Tech. Ed.: M.I. Braynina.

Card 1/10

Tide Tables (Cont.)

PURPOSE:. The book is intended for oceanographers and navigators.

COVERAGE: This is the second of a 3-volume work on Tide Tables published by the State Oceanographic Institute. Volume 1 contains Tide Tables for the waters of European USSR and adjacent foreign regions, while Volume 3 contains data for waters of foreign countries. The present volume gives Tide Tables for waters of Asiatic USSR and adjacent foreign regions. It contains information on tidal conditions in 18 main ports (Part I) and 157 additional stations (Part II). These Tables differ from those previously published in that they give data on the time and height of tides in main ports in the form of constant characteristics related to two astronomic parameters. Formerly, Tide Tables were calculated only for a specific date of each year and became obsolete the following year. The table of incoming astronomical data in this work for the period from 1960 to 1966 does show yearly changes. Tide Tables for the main ports have been computed on the basis of long-period observations of the sea level and have taken into account precalculated data for the previous years. The following persons collaborated in the work:

Card 2/10

Tide Tables (Cont.)

SOV/4700

A.I. Duvanin, Doctor of Geographical Sciences; M.P. Vin'kov, Section Head in the Vychislitel'nyy tsentr mekhaniko-matematiche-skogo fakul'teta Moskovskogo gosudarstvennogo universiteta (Computing Center of the Department of Mechanics and Mathematics, Moscow State University); N.I. Chalysheva, Candidate of Geographical Sciences; K.N. Soloveychik of the DVNIGMI (Far East Hydro-meteorological Science and Research Institute); and R.A. Deyeva, Candidate of Geographical Sciences. There are no references.

TABLE OF CONTENTS:

Introduction

Card 3/10   5

FAYNSHTEYN, B.B., DEYEVA, R.I., PCHELINA, O.I., MALYSHKINA, M.

Improving the method for producing biomycin hydrochloride
(chlortetracycline). Med. prom. 12 no.7:46-47 Jl '58 (MIRA 11:8)

1. Moskovskiy khimiko-farmatsevticheskiy zavod imeni Karpova.
(AUREOMYCIN)

DEYEVA, T.A.

Significance of the vitamins of green aquatic vegetation in
rearing young-of-the-year carp. Trudy AzNIIRKH no.6:179-188
'63.   (MIRA 17:8)

MANUKOV, Nikolay Pavlovich;PESTRYAKOV, A.I., red.; DEYEVA, V.M.,
tekhn. red.

[New trends in the repair of machines and tractors] Novoe
v remonte mashinno-traktornogo parka. Izd.2., perer. i dop.
Moskva, Sel'khozizdat, 1963. 471 p.   (MIRA 17:1)

LEYEVA, V. P.

"Effectiveness of Various Methods of Utilizing Boron and Manganese in Cultivating Edible Tubers on Meadow-Podzolic Soils." Cand Agr Sci, All-Union Sci-Res Inst of Fertilizers Agricultural Engineering and Soil Sci, Acad Agricultural Sci imeni V. I. Lenin, Leningrad, 1954. (KL, No 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13)
SO: Sum. No. 598, 29 Jul 55

DEYEVA, V.P., agronom.

Microelements in vegetable gardening. Nauka i zhizn' 21 no.11:31 N '54.
(MLRA 7:12)
(Fertilizers and manures) (Plants, Effect of minerals on)

DEYEVA, V.P.

USSR / Cultivated Plants, Potatoes, Vegetables, Melons.   M

Abs Jour   : Ref Zhur - Biol., No 8, 1958, No 34695

Author   : Deyeva, V.P.
Inst   : AS LatvSSR
Title   : Effect of Boron and Manganese on Crops of Table
              Vogetablos (From Plants with Edible Roots) in
              Lime-Enriched Sod-Podzolic Soils.

Orig Pub   : V. sb.: Mikroclononty v s.kh. i meditsine,
              Riga, AN LatvSSR, 1956, 417-424.

Abstract   : Experiments conducted during 1952-1954 withtable
              beets of the variety Bordeaux and carro s of
              the variety Nantes at the Experimental Station
              of the Leningrad Branch of 3IUA and by the sov-
              khozos of the Leningradskaya Oblast , grown in
              sod-podzolic sandy loam soil with increased a-
              cidity (pH 4.5), have shown that spreading of B

Card 1/4

USSR / Cultivated Plants. Potatoes. Vegetables. Melons.   H

Abs Jour   : Ref Zhur - Biol., No 8, 1958, No 34695

(1.5 kg/h) on the lime base (5 t $CaCO_3$ per hec-
tare) produced higher crop of carrots (plus
29 hwt/h) than in lime-free soil (plus 16 hwt/h).
Increase of crop in beets was twice as high on
the lime-free background. Spreading of Mn pro-
duced the largest increase in beet and carrot
crops (17 hwt/h each) in lime-free and modera-
tely acid soil, as compared to lime-enriched
soil (beets - +14, carrots - +11 hwt/h). Over
a background of small amounts of lime (3 hwt/h
$CaCO_3$), spread into the rows, the effect of B
proved higher (carrot - +22%, beet - +15.5%),
than that of Mn (+8.1 and 10.6% respectively).
Moistening of seeds of these vegetables for 24
hours in solutions of 0.10% H_3BO_3 or of 0.2%
$MnSO_4$ increased the crops of the carrots. This

Card 2/4

63

USSR / Cultivated Plants. Potatoes. Vegetables. Melons.   M

Abs Jour   : Ref Zhur - Biol., No 8, 1958 No 34695

This moistening was carried out in the verna-
lization stage of the carrots; that of the beet
seeds was accomplished 6 to 7 days prior to
sowing. Sprinkling of plants, done three times
in August, every 10 days, with solutions of 0.2%
H_3BO_3 or of 0.4% $MnSO_4$, at a rate of liquid ab-
sorption of 600 1/h, also increased considera-
bly the beet crop (+31-32 hwt/h), as well as
the crop of carrots (+27-33 hwt/h.) to the ex-
tent that the soil acidity decreases, its con-
tent in water soluble Mn also diminishes, and
at the same time, the intake of Mn by the plant
decreases as well. With further growth deve-
lopment, the overall content of Mn increases in
the leaves, and decreases in the roots. Like-
wise, the presence of B and Mn in the leaves

Card 3/4

USSR / Cultivated Plants. Potatoes. Vegetables. Melons.   M

Abs Jour   : Ref Zhur - Biol., No 8, 1958, No 34695

                accelerates the synthesis and increases the
                amount of protein and carbohydrates, thus pro-
                moting a rich flowing of protein and carbo-
                hydrates from the leaves to the roots. B and
                Mn contribute to the development of carotene in
                the roots of the carrot. -- A. P. Shcherbakov.

Card4/4

L 2027-66   EWT(1)/EWT(m)/EWA(b)-2   RO

ACC NR: AP5024150   UR/0250/65/009/009/0610/0612

AUTHOR: Deyeva, V. P.; Mashtakov, S. M.

TITLE: Adenosine triphosphate, nucleic acids and protein level changes in plants under the effect of 2,4-D and some trace elements

SOURCE: AN BSSR. Doklady, v. 9, no. 9, 1965, 610-612

TOPIC TAGS: plant chemistry, plant metabolism, plant sensibility, boron, zinc, nucleic acid, protein, herbicide

ABSTRACT: The article reports a study of these processes under the effect of the herbicide 2,4-D, alone or mixed with traces of boron and zinc, conducted on two hybrid varieties of corn, one resistant and the other sensitive to 2,4-D. Changes in levels of the three substances were determined in sections of the root ends and the whole third leaf in the initial developmental stage. At that time, the plant was left to soak for 24 hrs in a 2,4-D solution with or without either or both of the trace elements. Under the effect of the herbicide, ATP synthesis declined by 29% in the resistant variety and by 46% in the sensitive variety. Similar ATP decrease also appeared in the leaves. The trace elements, particularly zinc, considerably impeded this reduction so that ATP levels in the resistant variety approximated that of controls. The nucleic acid level increased in both roots and leaves, since its

Card 1/2

L 2027-66

ACC NR: AP5024150

conversion into protein could not be accomplished, and decreased almost to control values upon addition of the trace elements. Protein synthesis decreased by 21-11.5% under the 2,4-D effect, and the trace elements, particularly zinc, led to its increase approximately to control values. The trace elements thus led to reestablishment of the plants' energy balance. Orig. art. has: 3 tables.

ASSOCIATION: Institut eksperimental'noy botaniki i mikrobiologii AN BSSR (Institute of Experimental Botany and Microbiology, AN BSSR)

SUBMITTED: 14Jan65   ENCL: 00   SUB CODE: LS

NR REF SOV: 006   OTHER: 008

Card 2/2

DEYEVA, V. YE.

62/49T52

USSR/Medicine - Pectin Decomposition   Jul/Aug 49
Medicine - Biochemistry

"Two-Phase Fermentative Decomposition of Pectin,'
N. V. Novotel'nov, V. Ye. Deyeva, Chair of Micro-
biol and Biochem, Leningrad Inst of Refrig and
Dairy Ind, 5½ pp

"Biokhim" Vol XIV, No 4, pp 311-316.

Study of decomposition of pectin by pectinase
prepared from Aspergillus niger indicated there
are at least two phases in the process. First is
characterized by a sudden decrease in viscosity
with a very small increase in the reducing sub-
stances due to the esterasic effect on the pectin

62/49T52

USSR/Medicine - Pectin Decomposition   Jul/Aug 49
(Contd)

molecule, and is accompanied by cleavage of the
uronom complex. "Pectolic" acid, liberated by
the cleavage, reacted with a hydrolytic agent is
decomposed at the glucoside bonds. Reducing sub-
stances are increased, and d-galacturonic acid is
the final product. Submitted 27 Oct 48.

62/49T52

DEYEVA, V. YE

USSR/Medicine - Vitamin C Pectin   Sep/Oct 49

"Use of a Fermentive Method to Obtain P-Factor Enriched Vitamin C Concentrate," N. V. Novotel'nov, B. Ye Deyeva, Chair of Microbiol and Biol, Leningrad Inst of Refrigeration and Milk Ind, 7 pp

"Biokhim" XIV, No 5, pp 398-404.

From chemical standpoint, hydrolytic disintegration of pectine obtained from dog rose represents complex system of related reactions. Due to severe maceration of plant cell, there is intersified release of blocked ascorbic acid. Pectine matter in dog rose conatins large quantity of substances, polyphenolic in nature, which react on process of pectolysis with freed carbonic comples. Glucosides--substances which are always present in the reaction --have P-vitamin activity. These substances are better than ordinary purified alcohol concentrates. Submitted 27 Oct. 48

Fdd

PA 157T59

DEYEVA, V. Ye.

Effect of pH and the oxidation-reduction potential on alcohol fermentation. A. M. Mafkov, V. E. Deeva, and O. I. Kryachkova. *Trudy Leningrad. Tekhnol. Inst. Pishchevoi Prom.* 5, 103-18 (1955); *Referat. Zhur., Khim.*, 1955, No. 3087.—A high oxidation-reduction potential (I) of the medium contributes to a lowering of the yield of alc. Thus, all the factors which contribute to a high I are undesirable; among these are lowering of pH of the mash and its aeration. An interrelation was found between the pH and the I of the mash and the yeast as well as an almost direct relation between the I of the fermenting medium and the intensity of yeast breathing. In the production of alc. the preferred pH was found to be 5.0-5.5.   M. Hoseh

DEYEVA, V. Ye.

DEYEVA, W. Ye.: "Seeking out ways of reducing losses of dry grain
        matter in producing malt". Leningrad, 1955. Min Higher Education
        USSR. Leningrad Technological Inst. of the Food Industry.
        (Dissertations for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya letopis', No. 52, 24 December, 1955. Moscow.

MALKOV, A.M.; DEYEVA, V.Ye.

Effect of orthophosphate on the amylolytic activity of the fungus
Aspergillus oryzae. Izv.vys.ucheb.zav.;pishch.tekh.no.5:68-71
'60.   (MIRA 13:12)

1. Leningradskiy tekhnologicheskiy institut pishchevoy promy-
shlennosti. Kafedra tekhnologii brodil'nykh proizvodstv.
          (Aspergillus oryzae)   (Potassium phosphate)

MALKOV, A.M.; DEYEVA, V.Ye.

Effect of sodium fluoride on the breathing, synthesis of biomass,
and amylolytic activity of Aspergillus oryzae. Izv. vys. ucheb.
zav.; pishch. tekh. no.2:57-60 '60.   (MIRA 14:7)

1. Leningradskiy tekhnologicheskiy institut pishchevoy
promyshlennosti, kafedra tekhnologii brodil'nykh proizvodstv.
                    (Aspegillus oryzae)
                    (Sodium fluoride)

MALKOV, A.M.; DEYEVA, V.Ye.

Influence of a partial inhibition of respiration in Aspergillus oryzae on the synthesis of a biomass, the amount of P_7 and on the aminolytic activity. Mikrobiologiia 30 no.2:229-235 Mr-Ap '61.
(MIRA 14:6)

1. Leningradskiy tekhnologicheskiy institut pishchevoy promyshlennosti.

(ASPERGILLUS ORYZAE)

MALKOV, A.M.; DEYEVA, V.Ye.; TKACHEVA, G.A.

Effect of potassium phosphate and sodium fluoride on the synthesis
of the biomass and the amylolytic activity of Bac. subtilis.
Mikrobiologiia 31 no.6:990-994 N-D '62.   (MIRA 16:3)

1. Leningradskiy institut sovetskoy torgovli imeni F. Engel'sa.
         (POTASSIUM PHOSPHATES) (SODIUM FLUORIDES)
                    (BACTERIA, AEROBIC)

BOGDANOV, N.I.; DEYEVA, Ye.G.; TEL'NOV, M.A., red.; KHAT'KOVA, Ye.S.,
        red.izd-va; PARAKHINA, N.L., tekhn.red.

[Manual of prices for overhauling machinery and equipment used
in lumbering] Sbornik optovykh tsen kapital'nogo remonta mashin
i mekhanizmov, primeniaemykh na lesozagotovkakh. Moskva, Gos-
lesbumizdat, 1960. 120 p.   (MIRA 13:6)

1. TSentral'noye byuro tekhnicheskoy informatsii lesnoy pro-
myshlennosti.
            (Lumbering--Machinery)

VAKHMISTROVA, M.P. Prinimali uchastiye: DEYEVA, Z.N.; YAKOVLEVA, A.F.
    CHEZHIK, F., otv. za vypusk

[Reclamation of virgin and waste lands in Kazakhstan: bibliography]
Osvoenie tselinnykh i zalezhnykh zemel' Kazakhstana; ukazatel'
literatury. Alma-Ata, 1959. 162 p.
                                            (MIRA 13:11)
1. Alma-Ata. Gosudarstvennaya respublikanskaya biblioteka.
        (Bibliography--Kazakhstan--Reclamation of land)

DEYEVA, Z.V.

AID P - 4955

Subject   : USSR/Engineering

Card 1/1   Pub. 110-a   -   4/21

Authors   : Bulgakova, N. V., Z. V. Deyeva, and A. M. Prokhorova,
               Engineers.

Title   : Thermal and chemical tests of a high-pressure once-
               through boiler fed by salt-free water.

Periodical   : Teploenergetika, 8,   17-18, Ag 1956

Abstract   : Tests with the above boilers, performed in the All-Union
               Heat Engineering Institute in February-March 1956, are
               described. The results of these tests show that the
               quality of the salt-free water is not worse than the
               quality of the condensate, and that accordingly the
               steam supplied by a boiler fed by salt-free water is
               equal in quality to the steam from a boiler using con-
               densate.

Institution : All-Union Heat Engineering Institute

Submitted   : No date

DIYEVA, Z.V., Cand Tech Sci--(diss) "Study of basic factors which
determine the vapor purity of a (continuously operating coil) boiler of supercritical
pressure." Mos, 1958. 19 pp, incl cover (Min of Electric Power Stations USSR.
All-Union Order of Labor Red Banner Heat-Engineering Sci Res Inst
im F.E. Dzerzhinskiy), 120 copies (KL, 48-58, 104)

-35-

DEYEVA, Z. V.

DEYEVA, Z.V., inzh.; KOT, A.A., kand.tekhn.nauk.

Solubility of sodium chloride in superheated steam. Elek.sta.
29 no.1:14-16 Ja '58.   (MIRA 11:2)
                    (Salt) (Steam)

DEYEVA, Z.V.

BULGAKOVA, N.V.,inzh.; DEYEVA, Z.V.,inzh.; KOT, A.A,kand.tekhn.nauk; RAKOV, K.A. kand.tekhn.nauk

Using chemically desalted feed water in high-pressure and super-pressure once-through boilers. Elek.sta. 29 no.3:8-12 Mr '58.
(Feed water)   (MIRA 11:5)

8 (6)   SOV/91-59-11-19/27

AUTHORS: Kot, A.A., Candidate of Technical Sciences, and
              Dyeva, Z.V., Engineer

TITLE: The Purity of Steam Entering a Turbine

PERIODICAL: Energetik, 1959, Nr 11, pp 28-30 (USSR)

ABSTRACT: The authors determined the permissible quantities of
              SiO_3^{2-} and Na_2SO_4 in steam entering a turbine. At a steam
              pressure of 125 atmospheres and a temperature of 480°C,
              the SiO_3^{2-} content of steam must not exceed 0.01-0.015 mg/
              kg, while the Na_2SO_4 content must not be higher than
              0.04-0.06 mg/kg. The SiO_3^{2-} content was determined by a
              FEK-M photocalorimeter, whose accuracy must be taken in-
              to consideration. The authors mention the experimental
              work of the Vodnoye otdeleniye VTI (Water Department of
              VTI) concerning the investigation of scale on turbine
              blades, which was performed in 1958. In 1957, VTI and
              MO TsKTI established in a joint work that the salt con-
              tent of steam is composed basically of sodium salts. The
Card 1/2   data of the authors confirm the data obtained by VTI

SOV/91-59-11-19/27

The Purity of Steam Entering a Turbine

and TsKTI from a SVK-150 turbine of the Cherepets GRES.
There are 2 tables and 1 Soviet reference.

Card 2/2

KOT, A.A., kand.tekhn.nauk; DEYEVA, Z.V., kand.tekhn.nauk

Concerning the derived transition zone of once-through boilers
with super-high and supercritical pressures. Elek.sta. 33
no.12:6-9 D '62.   (MIRA 16:2)
(Boilers)

DEYGEN, M. F.   PA 19.49T88

USSR/Physics   Sep/Oct 48
        Polarons
        Light - Absorption

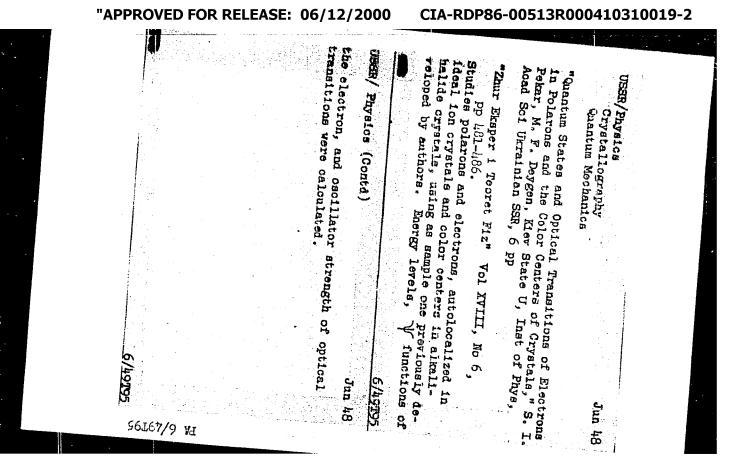"Some Optic Properties of Polarons and Color Centers,"
M. F. Deygen, Phys Inst, Acad Sci Ukrainian SSR,
3 3/4 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XII, No 5, pp 646-64.

Treats subject under: (1) absorption of light by
polarons, (2) absorption of light by F-centers (color
centers), (3) comparison with experimental results,
and (4) conclusions.

                                                      19/49T88

USSR/Physics
Crystallography
Quantum Mechanics

Jun 48

"Quantum States and Optical Transitions of Electrons in Polarons and the Color Centers of Crystals," S. I. Pekar, M. F. Deygen, Kiev State U, Inst of Phys, Acad Sci Ukrainian SSR, 6 pp

"Zhur Eksper i Teoret Fiz" Vol XVIII, No 6, pp 481-486.

Studies polarons and electrons, autolocalized in ideal ion crystals and color centers in alkali-halide crystals, using as sample one previously developed by authors. Energy levels, ψ functions of

USSR/Physics (Contd) Jun 48

the electron, and oscillator strength of optical transitions were calculated.

PA 6/49T95

PA 9/49T96

USSR/Physics

Crystals - Color
Crystals - Photoelectric Properties

Sep 48

"The Theory of Internal Photoelectric Effect in
Polarons and Centers of Coloring," M. F. Deygen,
Kiev State U, 7 pp

"Zhur Eksper i Teoret Fiz" Vol XVIII, No 9,
pp 818-824.

Considers internal photoelectric effect on polarons
and centers of coloring (F centers). Derives wave
function of continuous spectrum of polaron. Calcu-
lates relation of probability of photoelectric
effect on polarons to frequency of light, and

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USSR/Physics (Contd)   Sep 48

qualitative relation of probability of photoelectric
effect to frequency of light in cases of F-centers.
Demonstrates disadvantage of identifying P-absorp-
tion curves as absorption curves by appropriate
conversions of electrons directly in a continuous
spectrum.

9/49T96

DEYGEN, M.F.

Light absorption by polarons and by color centers. Nauk.
zap. Kiev. un. 9 no.2:21-39 '50.

(MLRA 9:12)

(Absorption of light) (Crystallography, Mathematical)
(Electrons)

DEYGEN, M. F.

189T84

USSR/Physics - Crystallography,   Jul 51
                 Conduction Electron

"States of a Conduction Electron in an Ideal
Homeopolar Crystal," M. F. Deygen, S. I.
Pekar, Phys Inst, Acad Sci Ukrainian SSR

"Zhur Eksper i Teoret Fiz" Vol XXI, No 7, pp
803-808

Studies possibility of elastic local deforma-
tion of crystal by fld of an electron and
stationary location of electron close to de-
formation. Shows that such a self-conformal
local electron state does not exist in the

LC   189T84

USSR/Physics - Crystallography,   Jul 51
                 Conduction Electron (Contd)

crystal-continuum approximation, but exists in
more detailed (atomic) model of a crystal, if
a suitable crit inequality is satisfied. In
last case self-localized state is more favor-
able for energy than free state of electron in
the zone of conduction. Submitted 24 Jun 50.

LC   189T84

DEYGEN, M. F.

USSR/Physics - Crystallography   Sep 51

"Energy of Thermal Dissociation and Ground State of Double Color Center in Ionic Crystals," M. F. Deygen, Phys Inst, Acad Sci Ukrainian SSR

"Zhur Eksper i Teoret Fiz" Vol XXI, No 9, pp 992-1000

Discusses behavior of 2 closely located color centers in ionic crystals from quantum-mech standpoint. Interaction of centers leads to formation of new system of double centers. Analyzes thermal dissocn energy and parameters of ground state of

PA 193T94

LC

USSR/Physics - Crystallography (Contd)   Sep 51

double centers. Deduces thermal dependence of concn of centers and computes numerical values. Deygen thanks Prof S. I. Pekar for advice. Submitted 28 Sep 50.

193T94

LC

193T94

Electronic Phenomena
3

CP

Relation between the frequency of the maximum of the absorption band of color centers and the lattice constant in alkali halide crystals. M. F. Deigen (Phys. Inst. Acad. Sci., Ukr. S.S.R., Kiev). *Zhur. Eksptl. i Teoret. Fiz.* 22, 126-7(1952).—If the width ΔE of the forbidden zone is identified with the half width of the descending red branch of the short-wave absorption max., it is found that for NaCl, KCl, RbCl, NaBr, KBr, RbBr, NaI, KI, RbI, the ratio $h\nu_F/\Delta E$ (where ν_F = frequency of the max. of the absorption band of the color centers) varies only between 0.23 and 0.29. Consequently, it is legitimate to conclude that $h\nu_F/\Delta E = \gamma = $ const. This relation is even more general than the known relation $h\nu_F d^2 = K$, where $d = $ lattice const. The const. K can be evaluated, with the aid of a one-dimensional crystal model, by $\Delta E = (h^2/2\pi^2 m d)$ $(\varphi^2 + \pi\varphi)$, where d_e is the closest distance between positive lattice points, and $\varphi = \arctan A P$, with P characteristic of the electron band in the crystal, and A independent of P. In strongly bonded crystals P is large and φ close to $\pi/2$, hence $\varphi^2 + \varphi\pi = 3\pi^2/4 = $ const., and $d_e = qd$, where q depends on the type of structure. Hence, $K = h\nu_F d^2 = 2 (h^2/4\pi^2 m)(1/q^2)\gamma(\varphi^2 + \pi\varphi)$; for NaCl-type structures, $q^2 = 1/2$, and $K = 0.9 \times 10^{-28}$ erg-cm.², as against the exptl. mean $K = 1.3 \times 10^{-28}$. For the CsCl type, $q^2 = 1$, and $K = 0.45 \times 10^{-28}$, exptl. 0.53 × 10⁻²⁸. For CaF₂, $q^2 = 1/3$, $K = 0.9 \times 10^{-28}$, exptl. 1.0 × 10⁻²⁸.   N. Thon

DEYGEN, M.F.; LASHKAREV, V.Ye.

Transparency coefficient of semiconductor--metal contacts. Trudy
Inst.fiz. AN URSR no.4:3:10 '53.   (MLRA 7:12)
        (Semiconductors)

DRYGEN, M.F.; TOLPYGO, K.B.

Discussion on the zonal theory of solids. Trudy Geof.inst.
no.4:122-127 '53.
                (Crystallography) (Solids)   (MLRA 7:12)

DEYGEN, M.F.

Optical excitation of the double color center in ionic crystals.
Zhur.eksp. i teor.fiz. 24 no.6:631-642 Je '53.   (MLRA 7:10)
(Crystallography)

DEYGEN, M.F.; TOLPYGO, K.B.

On S.V.Tiablikov's review of S.I.Pekar's book "Studies of the electron theory of crystals." Usp. fiz. nauk 51 no.3:426-428 N '53. (MLRA 6:12)

(Crystallography)

DEYGEN, M.F.

Magnetic properties of metal-ammonium solutions and balanced
concentration of local centers in dielectrics. Trudy Inst.fiz.
AN URSR no.5:105-118 '54.
                                                    (MLRA 7:12)
        (Ammonium compounds--Magnetic properties) (Dielectrics)

DNYGEN, M.F.

Theory of the optical properties and electric conductivity of metal-ammonium solutions. Trudy Inst. fiz. AN URSR no.5: 119-136 '54.

(MLRA 7:12)

(Ammonium compounds)

USSR/ Physics

Card 1/2   Pub. 43 - 44/62

Authors   : Deygen, M. F.

Title   : Optical characteristics of local electron centers in solid and liquid ion
             dielectrics

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 716-717, Nov-Dec 1954

Abstract   : A quantum-mechanical system consisting of two closely situated and strongly
             reacting centers of a dye (so-called double center of a dye or F_2-center)
             was investigated to determine the optical properties of the local electron
             centers. The parameters of the basic and excited states, the energy of
             thermal dissociation of the F_2-center, the frequency of the F_2-absorption
             band maximum, as well as the width of this band were calculated.

Institution : Acad. of Sc., Ukr. SSR, Phys. Inst.

Submitted   : ......

Card 2/2   Pub. 43 - 44/62

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 716-717, Nov-Dec 1954

Abstract   : It was established that the theory of local electron states makes it
              possible to determine the magnetic properties and the anomalies in the
              concentration-conductivity dependence for solid and liquid dielectrics.
              Sixteen references: 12 USSR and 4 USA (1943-1954).

USSR/Physics - Magnetic metal-ammonium   FD-1361

Deygen

Card 1/1   : Pub. 146-6/18

Author   : Deygen, M. F.

Title   : Theory of the magnetic properties of metal-ammonium solutions

Periodical   : Zhur. eksp. i teor. fiz., 26, 293-299, Mar 1954

Abstract   : On the basis of representations concerning local centers of electrons
                    in an ionic dielectric (polarons, centers of coloration, and double
                    centers of coloration) the author develops the theory of the magnetic
                    properties of metal-ammonium solutions. He determines the equilibrium
                    of concentration and the coefficients of magnetic susceptibility of
                    local centers. He computes the coefficient of magnetic susceptibility
                    of the solution as a function of temperature and concentration of metal
                    atoms. The results of theory are found in agreement with experiment.
                    Eleven references, 7 USSR (e.g. S. I. Pekar and M. F. Deygen, ZhETF,
                    18, 481, 1948).

Institution   : Physics Institute, Acad. Sci. Ukrainian SSR

Submitted   : July 14, 1953

USSR/Physics - Metal-ammonium   *DEYGEN*   FD-1362

Card 1/1   : Pub. 146-7/18

Author   : Deygen, M. F.

Title   : Optical properties and electrical conductivity of metal-ammonium
              solutions

Periodical : Zhur. eksp. i teor. fiz., 26, 300-306, Mar 1954

Abstract   : On the basis of the representation concerning local centers of elec-
              trons in an ionic dielectric (polarons, centers of coloration, and
              double centers of coloration) the author explains the peculiarities
              of the absorption spectra of light, and also the dependence of elec-
              trical conductivity and temperature coefficient of conduction upon the
              concentration of the metal in metal-ammonium solutions. He calculates
              the position of the maximum and the half-widths of the bands of light
              absorption by the polarons. Sixteen references, 9 USSR (e.g. M. A.
              Krivoglaz and S. I. Pekar, Trudy In-ta fiziki AN USSR (Works of the
              Physics Institute, Acad. Sci. Ukrainian SSR), 4, 37, 1953).

Institution : Physics Institute, Acad. Sci. Ukrainian SSR

Submitted   : July 14, 1953

DEYGEN.M.F.

A spherically symmetrical case of bipolar diffusion of semiconductor
current carriers in the presence of an external field; linear ap-
proximation. Zhur.tekh.fiz.25 no.6:1175-1181 Jl'55.   (MIRA 8:10)
                    (Semiconductors)

FD-3194

USSR/Physics - Semiconductors

Deygen M. F.   Pub. 153-3/28

Card 1/1

Author   : Deygen M. F.

Title   : Dipole diffusion of current carriers in semiconductors in the case
               of spherical symmetry in presence of an exterior field (Linear ap-
               proximation)

Periodical : Zhur. Tekh. Fiz., 25, No 7, 1175-1181, 1955
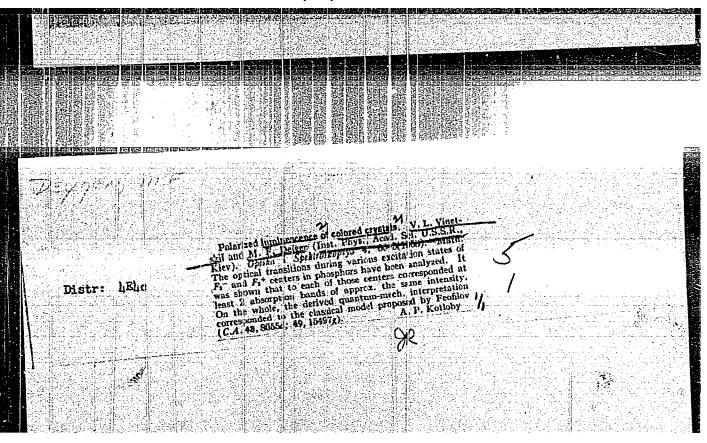
Abstract   : Diffusion of current carriers in a mixed conductivity semiconductor
               was analyzed in linear approximation in the case of a spherically
               symmetrical exterior field. Space distribution of electron and hole
               concentration was determined. The type of control of excess conduc-
               tivity different from a flat contact, was established. Indebted to
               Member of Acad. Sci. Ukrainian SSR V. Ye. Lashkarev. Six USSR ref-
               erences.

Institution :

Submitted   : June 28, 1954

Distr: 4E4c

Polarized luminescence of colored crystals. V. L. Vinet-
skii and M. F. ...sige... (Inst. Phys., Acad. Sci. U.S.S.R.,
Kiev). *Optika i Spektroskopiya* 4. ...... The optical transitions during various excitation states of
F_2^- and F_3^+ centers in phosphors have been analyzed. It
was shown that to each of those centers corresponded at
least 2 absorption bands of apprax. the same intensity.
On the whole, the derived quantum-mech. interpretation
corresponded to the classical model proposed by Feofilov
(C.A. 48, 8055x; 49, 15497x).   A. P. Kotloby

DEYGEN, M. F

USSR/Physical Chemistry - Crystals, B-5

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 60915

Author: Deygen, M. F., Pekar, S. I.

Institution: None

Title: Generalization of the Method of Effective Mass of Electron in the Case of Overlapping Zones and Several Interacting Conductivity - Electrons

Original Periodical: Tr. In-ta fiziki AN SSSR, 1956, No 7; 108-115

Abstract: The method of effective mass is extended to the instance when 2 lowest zones of conductivity are substantially overlapping and bottom of second energy zone is close to bottom of conductivity zone. Moreover this method is generalized for the instance of several interacting conductivity electrons. Considered are characteristics of energy spectra of electrons of local centers in the case of overlapping zones.

Card 1/1

DEYGEN, M.F.

B-5

Category: USSR / Physical Chemistry - Crystals

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29745

Author : Deygen M. F.
Inst   : not given
Title : Theory of Local States of Electron in Isotropic Homeopolar Crystal

Orig Pub: Zh. eksperim. i teor. fiziki, 1956, 31, No 3, 504-511

Abstract: Consideration of behavior of an electron localized in the vicinity
of a defect in a non-metallic, homeopolar crystal, taking into acc-
ount the "condenson" interaction of electron and crystal. The "con-
denson" state is meant to denote self-consistent state of electron
localized at discrete level of potential well (region of increased
density). Energy therms of the system are calculated and also the
energy of thermal dissociation of electron, on quantum-mechanics
treatment of electron motion and on classical and a quantum-mechanics
treatment of the motion of electrons of the lattice. It is shown
that condenson interaction leads to a difference between the energies
of thermo- and photo-dissociation of electron. A determination has

Card   : 1/2   -35-

Category: USSR / Physical chemistry - Crystals   B-5

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29745

been made of the light absorption band of the localized electron
(position of maximum, half-width of band and its temperature depend-
ence). As an example are presented numerical calculations in the
case of Coulomb potential of defect (for instance of an admixture
atom with valency electron).

Card   : 2/2   -36-

DEYGEN, M.F.

PRIKHOT'KO, A.F.

24(7)   p.3   PHASE I BOOK EXPLOITATION   SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1:
Molekulyarnaya spektroskopiya (Papers of the 10th All-Union
Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy)
[L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies
printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po
spektroskopii. Ed.: Qazer, S.L.; Tech. Ed.: Saranyuk, T.V.;
Editorial Board: Landsberg, O.S., Academician (Resp. Ed., Deceased),
Neporent, B.S., Doctor of Physical and Mathematical Sciences,
Pabelinskiy, I.L., Doctor of Physical and Mathematical Sciences,
Fabrikant, V.A., Doctor of Physical and Mathematical Sciences,
Kornitskiy, V.O., Candidate of Technical Sciences, Rayskiy, S.M.,
Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K.,
Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S.,
Candidate of Physical and Mathematical Sciences, and Glauberman,
A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Deygen, M.F. Theory of Light Absorption by
Impurity Centers in Homeopolar Crystals

Deygen, M.F., and V.L. Vinetskiy. Optical Properties
of F_2^+ centers in Ionic Crystals   135

Rashba, E.I. Impurity Absorption in Molecular
Crystals   137

Kats, M.L. Absorption Spectra of Some Solid
Solutions and Their Change When Subjected
to Hard Radiation   140

Grum-Grzhimaylo, S.V., B.N. Grechushnikov, and R.A.
Kravchenko-Berezhnoy. Vibrational Structure in the
Absorption Spectrum of Corundum Tinted With
Vanadium (at 100°K)   141

Slavnova, Ye. N. Spectrophotometric Study of Dye
Impurities in Crystals of Lead and Barium Nitrites   144

                                                            146

Card 2/4

DEYGEN, M.F.; DEMIDENKO, O.A.; CHKHARTISHVILI, Yu.B.

On the theory of F-centers in mixed crystals [with summary in English]. Ukr.fiz.zhur. 2 no.2 suppl:24-29. '57.   (MLRA 10:7)

1. Institut fiziki AN URSR, Kiivs'kiy derzhavniy universitet i Tbilis'kiy derzhavniy universitet.
                    (Crystallography, Mathematical)

DEYGEN, M.F

AUTHOR: Deygen, M.F.   51-5-6/26

TITLE: On a Theory of Impurity Centres in Anisotropic Homopolar
        Crystals. (K teorii primesnykh tsentrov v anizotropnykh
        gomeopolyarnykh kristallakh)

PERIODICAL: Optika i Spektroskopiya,1957,Vol.2,No.5,pp.587-591(USSR)

ABSTRACT: This paper develops further an earlier theory of impurity
          atoms in isotropic
          homopolar crystals, taking into account the interaction of
          electrons with the acoustic vibrations of the lattice, using the
          so-called "condensed" coupling of the electrons with the vib-
          rations. Ref.(5) gives the energies for thermo- and photo-
          dissociation of electrons, parameters of the quantum states of
          the system, position of the maximum and the half-width of the
          impurity absorption band, etc. Some of these results were
          repeated in Ref.(8). The theory given in this paper generalises
          the above results for the case of an anisotropic energy surface
          of a band electron. In this theory, the behaviour of band
          electrons is described by two effective masses μ_1 and μ_2 ,
          taking into account the interactions of the electrons with the
          lattice vibrations.
          The following parameters of the absorption band of the impurity
Card 1/2

51-5-6/26

On a Theory of Impurity Centres in Anisotropic Homopolar Crystals.

atoms are calculated: position of the maximum of the band, magnitude and the temperature dependence of the half-width. Results of the calculations are compared with the experimental data for silicon. The calculated band half-width at the absolute zero was found to be 3×10^{-3} eV, while the experimental value for silicon at helium temperature [Ref.5] is 1.5×10^{-3} eV.

The author was assisted by two students of the Kishinev University, Fayershteyn and Vladesko.

There are 9 references, of which 6 are Slavic.

ASSOCIATION: Institute of Physics of the Ac.Sc. Ukrainian SSR, Kiyev. (Institut Fiziki AN USSR, Kiyev.)

SUBMITTED: October 31, 1956.

AVAILABLE: Library of Congress.

Card 2/2

51-1-4/18

Deygen, M. F. and Shul'man, L. A.

AUTHORS:

TITLE: On a Theory of Electron-spin Resonance of F-Centres in Ionic Crystals (Continuous Model of a F-Centre - "Smoothed Functions"). (K teorii spin-elektronnogo rezonansa na F-tsentrakh v ionnykh kristallakh (Kontinuual'naya model' F-tsentra - "sglazhennyye funktsii").

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr.1, pp.21-28. (USSR)

ABSTRACT: A mathematical paper. It discusses in relativistic (Darwin's method) and non-relativistic (Pauli's method) approximations the interaction of a localized s-electron with the nuclear magnetic moment, displaced from the centre of symmetry of the electron wave-function. Hyperfine structure of the energy levels of the electron is obtained. Calculation is generalized to the case of interaction with several nuclear magnetic moments. The results obtained are used to discuss spin-resonance, absorption of radiowaves by F-centres using "smoothed" wave-functions of the electron and to estimate the

51-1-4/18

On a Theory of Electron-spin Resonance of F-Centres in Ionic Crystals.

maximum width of the absorption band.   There are 12 references, 3 of which are Slavic.

ASSOCIATION: Institute of Physics of the Academy of Sciences of the Ukrainian SSR, Kiyev; (Institut fiziki AN USSR, Kiyev.) Tadzhik State University, Stalinabad. (Tadzhikskiy gosudarstvennyy universitet, Stalinabad).
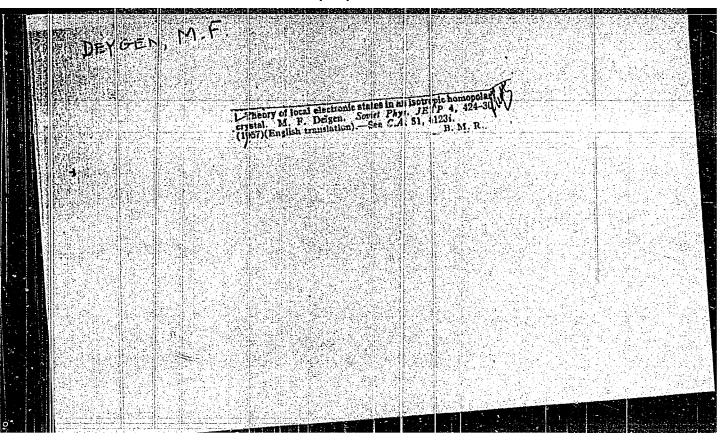
SUBMITTED: December 28, 1956.

AVAILABLE:

Card 2/2

DEYGEN, M.F.

Theory of local electronic states in an isotropic homopolar crystal. M. F. Deigen. *Soviet Phys. JETP* 4, 424-30 (1957)(English translation).—See C.A. 51, 11231. B. M. R.

PA - 2544

DEYGEN, M.F.

AUTHOR: DEYGEN, M.F.

TITLE: The Interaction of Localized Electrons with Acoustic Oscillations in Homoepolar Crystals (Vzaimodeystviye lokalizirovannykh elektronov s akusticheskimi kolebaniyami v gomeopolyarnykh kristallakh, Russian).

PERICDICAL: Izvestiia Akad. Nauk SSSR, Ser. Fiz., 1957, Vol 21, Nr 1, pp 68 - 68 (U.S.S.R.).

Received: 4 / 1957   Reviewed: 5 / 1957

ABSTRACT: This is a short summary of the lecture published in Zhurn. eksp. i teor. fiz., 1956, Vol 31, 34. Irrespective of the inter-action mentioned in the title, it is not possible to assess the width of the absorption bands of local centres, the difference between the energies of thermal- and photodissociation etc.

The author studies the above mentioned interaction on the basis of the "mechanism of condensation", which consists essentially of the following: At anx point of the crystal a domain of in-creased density and therefore with an increased dielectric con-stant is produced by elastic deformations. According to the theory of macroscopic electrostatics the electron is pulled into that domain. Therefore this compressed area represents a po tential well for the electron, which does not follow the movements of the electron because of the inertia of the atoms.

Card 1/3

PA - 2344

The Interaction of Localized Electrons with Acoustic Oscil-
lations in Homoepolar crystals.
The Hamiltonian of this system is H = -($\hbar^2/2\mu$)Δ + Q(r) + v(r) +
+ $\hat{H}_{ak}$. This was obtained by using the method of effective
mass. Q(r) denotes the energy of the electrons in the field of the
defect, $\hat{H}_{ak}$ the Hamiltonian of the acoustic oscillations of the
lattice, V(r) the energy of the interaction of the electron with
the deformed domain of the crystal (the energy of condensation
interaction).

The solution of the Schrödinger equation corresponding to the
above Hamiltonian determines the energy levels and the wave-
function of the system. The parameters of the 1s and the 2p
levels and the energy of thermal dissociation of a localized
electron have been calculated. In homoepolar crystals absolute
value of the energy of photodissociation is higher than the ener-
gy of thermal dissociation similar to the case in ion crystals.

Taking into consideration a note by S.I.Pekar and M.A. Kriviglaz
it is possible, in addition, to determine the parameters of the
absorption band of light influenced by atoms of admixtured sub-
stances. Computations show that the half width of the ab-

Card 2/3

PA - 2344

The Interaction of Localized Electrons with Acoustic
Oscillations in Homoepolar Crystals.

sorption curve can be considerable even at absolute zero.
(No illustrations).

ASSOCIATION: Institute for Physics of the Academy of Science of the
Ukrainian SSR.
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress.
Card 3/3

AUTHORS: Deygen, M. F., Dykman, I. M., Tolpygo, K. B.   57-27-7-40/40

TITLE: All-Union Conference on the Theory of Semiconductors
              (Vsesoyuznoye soveshchaniye po teorii poluprovodnikov).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol. 27, Nr 7,
              pp. 1628-1642 (USSR)

ABSTRACT: The conference took place in Kiyev on October 9-13, 1956.
              40 lectures were held. They comprised the following branches
              of knowledge: multielectron-theory of the solid body,
              exiton-processes in semiconductors, interaction between
              current-carriers and lattice, theory of the polarons, theory
              of the local states of the electron in semiconductors, zonal
              structure of the semiconductors, magnetic properties of the
              semiconductors, phenomenological theory of the semiconductors.
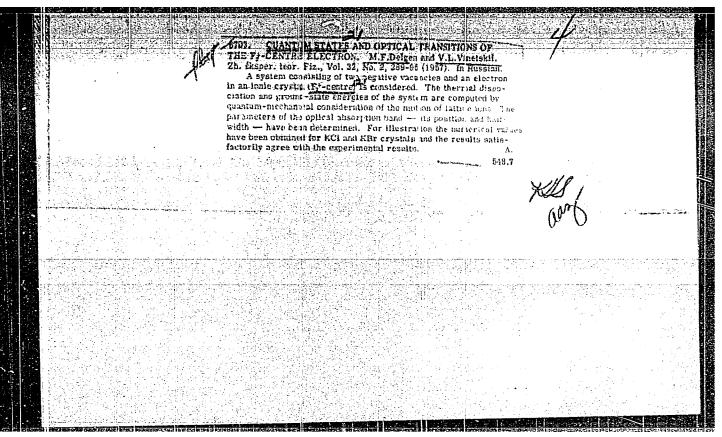   There are 16 references, 12 of which are Slavic.

SUBMITTED: December 30, 1956

AVAILABLE: Library of Congress
              1. Conferences-Theory of semiconductors-Kiyev   2. Semiconductors-Theory

Card 1/1

6703.   QUANTUM STATES AND OPTICAL TRANSITIONS OF
THE F2-CENTRE ELECTRON.   M.F.Deigen and V.L.Vinetskii.
Zh. Eksper. teor. Fiz., Vol. 32, No. 2, 389-96 (1957). In Russian.

A system consisting of two negative vacancies and an electron
in an ionic crystal (F2-centre) is considered. The thermal disso-
ciation and ground-state energies of the system are computed by
quantum-mechanical consideration of the motion of lattice ions. The
parameters of the optical absorption band — its position and half-
width — have been determined. For illustration the numerical values
have been obtained for KCl and KBr crystals and the results satis-
factorily agree with the experimental results.   A.

5-48.7

DEYGEN, M. F.

56-6-15/56

AUTHOR: DEYGEN,M.F., VINETSKIY,V.L.
TITLE: Interaction between Current Carriers and F-Centers and Acoustical
           Vibrations of Ionic Crystal Lattices. (Vzaimodeystviye nositeley
           toka i F-tsentrov s akusticheskimi kolebaniyami resnetki v ionnykh
           kristallakh, Russian)

PERIODICAL: Zhurnal Eksperim. i Teoret.Fiziki, 1957, Vol 32, Nr 6, pp 1382-1392
             (U.S.S.R.)

ABSTRACT: Theoretically the influence exercised by a "surplus electron" in
             an ion crystal, the lattice of which was excited optically or
             acoustically, is investigated. The acoustical case leads to a de-
             crease of the energy of the system, a change of the mass of the
             current carriers - polaron effect. - In consideration of the con-
             densor effect the wave function, the energy of the ground- and
             excited states of the F-centers, and the parameters of the F-light
             absorption bands are calculated. (With 8 Slavic References).

ASSOCIATION: Physical Institute of the Ukrainian Academy of Science
PRESENTED BY:
SUBMITTED: 7.7.1956
AVAILABLE: Library of Congress

Card 1/1

DEYGEN, M.F.

56-3-32/59

AUTHOR: Deygen, M.F.

TITLE: Theory of the Paramagnetic Resonance of F-Centers in Ionic
             Crystals. (Teoriya paramagnitnogo rezonansa F-tsentrov v ionnykh
             kristallakh)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 3,
             pp. 773-779 (USSR)

ABSTRACT: The theory of the hyperfine interaction between a localized
             electron and the magnetic nuclear moments shifted from the
             symmetry center of the wave function of the electron by a certain
             interval is developed. A hyperfine structure of the level of the
             electrons is obtained. Computations were carried out by means of
             the "homogeneous" and the "detailed" wave functions of the
             F-centers. The results make possible the development of a theory of
             the paramagnetic absorption of radiofrequency of the F-centers.
             It is applied to the form and the width of the absorption line
             in KCl and NaCl. For KCl and NaCl the half width of the ab-
             sorption bands computed amounts to 8 and 13 Oe while for KCl 52 Oe
             were measured experimentally. Thus, it can be seen that the theory
             only gives the correct order of quantity. There are 4 Slavic
             references.

Card 1/2

Theory of the Paramagnetic Resonance of F-Centers in Ionic Crystals. 56-3-32/59

ASSOCIATION: Physics Institute AN of the Ukrainian SSR (Institut fiziki
              Akademii nauk Ukrainskoy SSR)

SUBMITTED: March 25, 1957.

AVAILABLE: Library of Congress

Card 2/2

DEYGEN, M.F. [Deyhen, M.F.]; ROYTSIN, A.B. [Roitsyn, O.B.]

Double paramagnetic resonance of incorporated atoms and F-centers in mixed crystals [with summary in English]. Ukr.fiz.zhur. 3 no.4:439-448 Jl-Ag '58.

(MIRA 11:12)

1. Institut fiziki AN USSR.
(Crystal lattices) (Color)

DEYGEN, M.F.

51-4 -1-8/26

. AUTHORS: Vinetskiy, V. L.   and   Deygen, M. F.

TITLE: On Polarized Luminescence of Coloured Crystals.
(O polyarizovannoy lyuminestsentsii okrashennykh
kristallov.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.1,
pp. 60-65.   (USSR)

ABSTRACT: This paper is entirely theoretical.   It discusses
optical transitions to various excited states of
F_2 and F_2^+-centres.   It is shown that intensity of
phototransition to one of the higher energy levels in
F_2 and F_2^+-centres is comparable with the intensity
of phototransitions (Refs.2,3) to the lower excited
levels of the same centres.   This means that F_2
and F_2^+-centres may have two absorption bands of
approximately the same intensity.   The present authors
Card 1/3 discuss in detail Feofilov's work (Ref.4) on aggregate

51- 4-1-8/26

On Polarized Luminescence of Coloured Crystals.

colour centres.   Feofilov studied the azimuthal
dependence of the degree of polarization of light
emitted in luminescence excited by polarized light of
wavelengths corresponding to the colour centres.
Feofilov gives a classical interpretation of his
results based on absorbing and emitting oscillators.
The present paper gives a quantum-mechanical inter-
pretation of Feofilov's results.   It is shown that the
experimental data on the azimuthal dependence of the
degree of polarization of luminescence agree with
results calculated for F_2 and F_2^+-centres.   The
discussion is based on the macroscopic approximation
(Refs.2,3,5).   Quantitative calculations were made for
a KCl crystal.   There are 1 figure and 10 references,
Card 2/3 of which 8 are Russian and 2 American.

On Polarized Luminescence of Coloured Crystals.   51- 4 -1-8/26

ASSOCIATION: Institute of Physics of the Academy of Sciences of
the USSR, Kiyev (Institut fiziki AN SSSR, Kiyev)

SUBMITTED: March 14, 1957.

AVAILABLE: Library of Congress.

1. Crystals-Luminescence-Polarization

Card 3/3

24(7)'

SOV/48-22-11-14/33

AUTHOR: Deygen, M. F.

TITLE: Paramagnetic Resonance of the Impurity Centers in Ionic Crystals
(Paramagnitnyy rezonans primesnykh tsentrov v ionnykh
kristallakh)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol 22,
Nr 11, pp 1341-1346 (USSR)

ABSTRACT: In spite of the circumstance that spin-electron and spin-nucleus
resonance methods have only for a short time been applied to the in-
vestigation of impurity centers in semiconductors, there has
already been obtained a number of fundamental results. Theoreti-
cal work in this field is above all devoted to two problems:
How to explain the nature of band widening in the spin-electron
absorption curve of the F-centers in alkali-halide crystals
(Ref 2) and how to compute the position of the lines of spin-
electron resonance of the 5th group impurity atoms which are
added to silicon (Ref 4). In the paper cited by reference 2 it
was emphasized that only a rough orbital model of the F-center
leads to a reasonable value of widening. The customary con-
tinuum model is said not to be in a position to explain this

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Paramagnetic Resonance of the Impurity Centers in Ionic Crystals

effect, leading to a divergence between theory and experiment of four orders of magnitude. This assertion was, however, refuted by the author in a previous paper (Ref 5). He proved that a correct application of the continuum model of the F-center yields reasonable results in the calculation of the width and of the shape of the absorption curve. Furthermore, in this paper some results from the theory of paramagnetic resonance are presented, which were obtained by the author and coworkers and which were published already in previous papers. Thus, the spin-Hamiltonian of the hyperfine interaction of the localized electron was studied (Refs 6,7). The theory of spin-electron resonance in F-centers and that of the dependence of the hyperfine structure of the F-center upon the orientation of the crystal in an external magnetic field are the subject matter of other papers (Refs 5-7, and 9). The spin-electron resonance in the stoichiometric metal excess in a NaCl type crystal is subjected to an investigation in reference 13. Finally, in reference 14 the hyperfine interaction and the spin-electron resonance in polarons and excitons is investigated. This paper presents a summary of the various previous papers, inasmuch as they are of

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SOV/48-22-11-10/34

Paramagnetic Resonance of the Impurity Centers in Ionic Crystals

importance for the problem under review. There are 2 figures and 19 references, 17 of which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk USSR (Institute of Physics, Ukraine)

Card 5/5

AUTHORS: Glinchuk, M. D., Deygen, M. F.

TITLE: Spin-Electron Resonance in the Stoichiometrical Excess of a
Metal in NaCl-Type Crystals (Spin-elektronnyy rezonans v
stekhiometricheskom izbytke metalla v kristallakh tipa NaCl)

ABSTRACT: The theory of paramagnetic resonance developed in this paper
covering this phenomenon in the stoichiometric excess atoms
of a metal in the lattice of NaCl-type crystals permits to
give a unique answer concerning the character of the F-center
in the crystal. This method of investigating the paramagnetic
resonance is a general one and can be applied to any kind of
atoms occupying interstitial sites in lattices of different
type. This paper contains a computation of the superfine
structure of the energy levels of a valence electron of the
metal atom which occupies an interstitial site in a lattice
of the NaCl-type. The contour, the width, and the intensity
of the band of spin-electron resonance in the stoichiometrical
excess metal atoms is determined (the paramagnetic resonance
in the F-center on the model by Gil'sh and Pol'). This paper
covers a quantitative investigation of the paramagnetic re-

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SOV/57-2-5-13/39

Spin-Electron Resonance in the Stoichiometrical Excess of a Metal in NaCl-
Type Crystals

sonance of the Na-atoms occupying interstitial sites in NaCl.
A sample problem furnishes quantitative results. Qualitatively
the results found in this paper differ considerably from the
corresponding ones for the F-center obtained from the model
by De-Bur. This permits **estimating** the appropriateness
of the model of the F-center in various crystals according
to the contour of the band of paramagnetic resonance. From
the formulas **derived** (12) and (20) and using the table given
in this paper it is possible to construct all spectral lines
and to determine the shape of the absorption curve. Particular
features of the absorption bands are indicated. There are
1 figure, 2 tables, and 13 references, 8 of which are Soviet.

ASSOCIATION: Institut Fiziki AN UkSSR, Kiyev (Institute of Physics, AS
Ukr SSR, Kiyev)

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SOV/56-34-3-22/55

AUTHORS: Deygen, M.F., Pekar, S. I.

TITLE: Hyperfine Interaction and Spin-Electron Resonance in Polarons and Excitons (Sverkhtonkoye vzaimodeystviye i spin-elektronnyy rezonans v polyaronakh i eksitonahkh)

ABSTRACT: The present paper shows that in polarons and excitons the correction of energy dependent on the hyperfine interaction in first approximation is equal to zero. First the operator of the energy of hyperfine interaction of an electron with the magnetic moments of the nuclei of the crystals is put down: $\hat{U} = \sum_l \hat{U}_l$; $\hat{U}_l = \frac{\mu \, \mu_l}{S I_l} \sum_{\vec{n}} (\vec{S}, \text{curl curl} \frac{I_l \vec{m}}{\rho_l \vec{n}})$ Here the index 1 enumerates the nuclei and U_1 - is the energy operator of the hyperfine interaction of an electron with the magnetic moments of the nuclei of the type 1: $\vec{n}$ denotes the number of the node of the 1.th sublattice; I_l and I_n and the spin of the nucleus and its modulus; μ denotes

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Hyperfine Interaction and Spin-Electron Resonance in $\quad$ SOV/56-34-3-22/55
Polarons and Excitons

the Bohr magneton; α_1 the magnetic moment of a nucleus; ρ_{1R}
the distance from the $1\vec{n}$-nucleus to the electron. The
operation curl is carried out in the coordinates of the
electron. The Hamiltonian of the crystal may not contain
the spins of the nuclei in zero'th approximation. Then the
wave function of the crystal can be put down in form of the
product of the wave function χ of the nuclear spins with the
function $\psi(r,R)$ of the coordinates of all electrons (r) and
the coordinates of progressive motion of the nuclei (R).
The correction (first approximation of the energy) dependent
on the hyperfine interaction is put down and the several
times transformed: $U_\ell = \frac{\alpha_\mu_\ell}{S I_\ell} \alpha_\ell P_\ell$ $\quad ; P_\ell = \sum_{n} I_{\ell n z}$ P_1 denoting
the projection of the total spin moment of all nuclei of
the ℓ-type of the crystal. P_1 is actually equal to zero on

the average but in reality it slightly fluctuates. With
increasing volume of the base region of the crystal U_1 and
consequently also U tend to zero with $V^{-1/2}$. Therefore the
hyperfine interaction does not furnish any broadening in the

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Hyperfine Interaction and Spin-Electron Resonance in   SOV/56-34-3-22/55
Polarons and Excitons

case of polarons and excitons, and this fact makes possible
the experimental differentiation of polarons from local
electron centers. Then the authors shortly report on several
works dealing with the same subject. It would be interesting
to find out why by illumination of the crystal such a high
concentration of electrons can be produced that the spin –
-electronic absorption of radio waves by excitons can be
determined experimentally. The excitons which absorbed a
radion quantum have a much longer life with regard to
fluorescence than the usual excitons. There are 5 references,
2 of which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk Ukrainskoy SSR (Institute for
Physics AS Ukrainian SSR)

SUBMITTED: September 12, 1957

Card 3/3

AUTHORS: Deygen, M. F., Zevin, V. Ya.   SOV/56-34-5-13/61

TITLE: The Dependence of the Hyperfine Structure of F-Centers on the
            Orientation of the Crystal in an External Magnetic Field
            (Zavisimost' sverkhtonkoy struktury F-tsentra ot oriyentatsii
            kristalla vo vneshnem magnitnom pole)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
            Vol. 34, Nr 5, pp. 1142-1147 (USSR)

ABSTRACT: Taking into account the results of previous papers, the authors
            find a general expression for the spin interaction between an
            F-center electron and the angular moments of the first and
            second coordinational spheres surrounding the nuclei by using
            the continuous and orbital models of F-centers in KCl type
            lattices. The investigation of the anisotropy of the coeffi-
            cients of the spin Hamiltonian leads to a good consistency
            with the results obtained by G. Feher (Feyer)'s experiments.
            First, the explicit form of the spin Hamiltonian of the
            interaction of the localized electron in a crystal with the
            magnetic moment of the k-th nucleus of the lattice is given.
            The authors take into account the interaction with the nuclei
            of the first and second coordination spheres, as this inter-

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The Dependence of the Hyperfine Structure of   SOV/56-34-5-13/61
F-Centers on the Orientation of the Crystal in an External
Magnetic Field

action is the most essential one. The form of the ψ-function
depends on the model of the F-center. In the case of the
continuous model (using the method of the effective mass and
the approximation of strong coupling) one may write
$\psi = \varphi(r) \sum_k c_k \psi_k(\varrho_k)$ where $\varphi(r)$ denotes the wave function that
is spherically symmetric with respect to the lattice defect.
$\psi_k(\varrho_k)$ denotes the atomic 4s-functions of K and Cl. The authors
then give an explicit expression for the ψ-function taking into
account the contribution of the first and of the second coor-
dination spheres and also of the central ion Cl. This ex-
pression is specialized for the model of the F-center. The
authors first investigate the hyperfine interaction of
the F-center electron with one of the nuclei of the first
coordinate sphere. The corresponding expression for H_k is
given explicitly. The authors then derive the spin Hamiltonian
of the hyperfine interaction of the F-center electron with the
chlorine nucleus of the second coordinate sphere. Some differ-

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The Dependence of the Hyperfine Structure of F-Centers   SOV/56-34-5-13/61
on the Orientation of the Crystal in an External Magnetic Field

ences between the results of this paper and those obtained
by Feher (Feyer) are mentioned. There are 1 figure, 2 tables,
and 10 references, 7 of which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk Ukrainskoy SSR (Institute of
Physics, AS Ukr SSR)

SUBMITTED: November 10, 1957

1. Perturbation theory   2. Crystals—Magnetic factors   3. Crystals
—Lattices   4. Mathematics—Applications

Card 3/3

AUTHORS: Vinetskiy, V. L., Deygen, M. F.   SOV/56-35-1-45/59

TITLE: On the Influence of Acoustic Vibrations on the Parameters
              of the Bands of the Absorption in Crystals Caused by Ad-
              mixtures (O vliyanii akusticheskikh kolebaniy na parametry
              polos primesnogo pogloshcheniya v kristallakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
              Vol. 35, Nr 1,   pp. 287 - 289 (USSR)

ABSTRACT: In a previous paper (Ref 1) the authors investigated the
              system ionic crystal-F-center in a macroscopic approximation
              and they obtained expressions for the energies of the
              ground state and of the excited state of the system and
              also for the parameters of the corresponding absorption
              band. In this previous paper, the results of a paper by
              Tolpygo (Ref 2) were used for the calculations. In this
              paper by Tolpygo, the investigations were carried out
              in a microscopic approximation. But also a macroscopic
              investigation is possible for a wide group of crystals, the
              anisotropy of which is not too intensive. For the crystals
Card 1/2   which do not satisfy these conditions, numerical computations

On the Influence of Acoustic Vibrations on the Para-   SOV/56-35-1-45/59
meters of the Bands of the Absorption in Crystals Caused by Admixtures

       are necessary. The calculations are discussed step by step,
       and the formulae obtained are given explicitly. The
       approximation used in this paper may be applied also to
       the investigation of the behavior of the electron of an
       impurity center in homeopolar crystals. There are 2 refer-
       ences   which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk USSR (Institute of Physics,
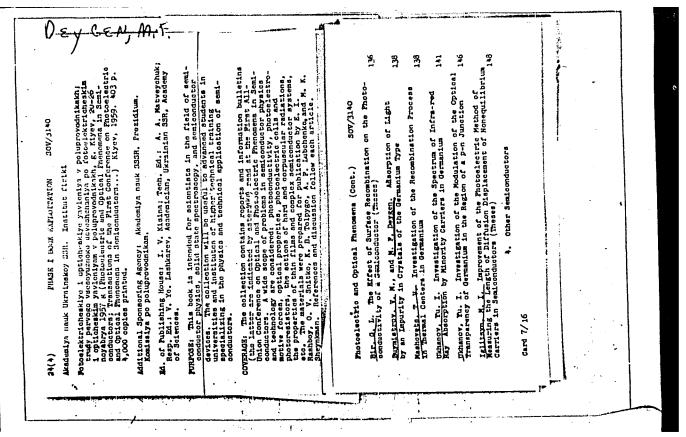   AS UkrSSR)

SUBMITTED: April 1, 1958

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DEYGEN, M.F., Doc Phys-Math Sci (diss) —"Study based on the theory of the local states of electrons in dielectrics and semiconductors." Kiev, 1959, 15 pp (Acad Sci UkSSR. Inst of Physics) 150 copies. Bibliography: pp 14-15 (51 titles) (KL, 28-59, 122)

- 1 -

Dey Gen, A.F.

24(4)   PHASE I BOOK EXPLOITATION   SOV/3140

Akademiya nauk Ukrainskoy SSR. Institut fiziki

Fotoelektricheskiye i optichekiye yavleniya v poluprovodnikakh;
trudy pervogo vsesoyuznogo soveshchaniya po fotoelektricheskim
i optichekim yavleniyam v poluprovodnikakh, 5. Kiyev, 20-26
noyabrya 1957 g (Photoelectric and Optical Phenomena in Semi-
conductors; Transactions of the First Conference on Photoelectric
and Optical Phenomena in Semiconductors...) Kiyev, 1959. 403 p.
4,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR. Prezidium.
Komissiya po poluprovodnikam.

Ed. of Publishing House: I. V. Kislni; Tech. Ed.: A. A. Matveychuk;
Resp. Ed.: V. Ye. Lashkarev, Academician, Ukrainian SSR, Academy
of Sciences.

PURPOSE: This book is intended for scientists in the field of semi-
conductor physics, solid state spectroscopy, and semiconductor
devices. The collection will be useful to advanced students in
universities and institutes of higher technical training
specializing in the physics and technical application of semi-
conductors.

COVERAGE: The collection contains reports and information bulletins
(the latter are indicated by asterisks) read at the First All-
Union Conference on Optical and Photoelectric Phenomena in Semi-
conductors. A wide scope of problems in semiconductor physics
and technology are considered: photoconductivity, photoelectro-
motive forces, optical properties, photoelectric cells and
photoresistors, the actions of hard and corpuscular radiations,
the properties of thin films and complex semiconductor systems,
etc. The materials were prepared for publication by E. I.
Rashbov, O. V. Snitko, K. B. Tolpygo, A. P. Lubchenko, and M. K.
Sheykman. References and discussion follow each article.

Photoelectric and Optical Phenomena (cont.)   SOV/3140

Bir, G. L. The Effect of Surface Recombination on the Photo-
conductivity of a Semiconductor (Theses)   136

Burstein, L. M., and M. F. Deygen, Absorption of Light
by an Impurity in Crystals of the Germanium Type   138

Mashovets, T. V. Investigation of the Recombination Process
in Thermal Centers in Germanium   138

Dzhanov, Yu. I. Investigation of the Spectrum of Infra-red
Ray Absorption by Minority Carriers in Germanium   141

Dzhanov, Yu. I. Investigation of the Modulation of the Optical
Transparency of Germanium in the Region of a p-n Junction   146

Igitkam, M. I. Improvement of the Photoelectric Method of
Measuring the Length of Diffusion Displacement of Nonequilibrium
Carriers in Semiconductors (Theses)   148

4. Other Semiconductors

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S/058/62/000/004/114/160
A061/A101

AUTHORS: Buymistrov, V. M., Deygen, M. F.

TITLE: Light absorption by impurities in germanium-type crystals (Theses)

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 41-42, abstract 4E361
             (V sb. "Fotoelektr. i optich. yavleniya v poluprovodnikakh", Kiyev,
             AN USSR, 1959, 137)

TEXT: A theory is developed, in macroscopic approximation, on light
absorption by impurity atoms of group V in Ge-type crystals. The electron-phonon
interaction is described by the deformation potential; the coupling constant
in the interaction potential is assumed to be arbitrary. The anisotropy of the
conduction band (the presence of two effective masses) is considered. In addi-
tion, the calculations take account of the existence of three lattice vibration
branches with different angular dependences in the dispersion laws. The shape of
the light absorption band during the transition of an electron of the impurity
atom from the ground state to the excited state is obtained. The case of large
heat liberation is considered. The results are applied to Ge and Si crystals.

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Light absorption by impurities ...

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A061/A101.

The calculated half-width of the light absorption band fits the one obtained for Si experimentally.

[Abstracter's note:. Complete translation]

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SOV/181-1-9-24/51

AUTHORS: Buymistrov, V. M., Deygen, M. F.

TITLE: On the Theory of Light Absorption by Impurities in Homeo-
                polar Crystals

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1463 - 1465 (USSR)

ABSTRACT: The aim of the investigation under review was to set up
                criteria of applying the strong coupling method to the
                calculation of the parameters characterizing the shape of the
                light absorption band, in the case of absorption occurring by
                impurity atoms. The results of a number of pertinent
                publications are discussed in detail. The initial formulas
                used by the authors are taken from references 6, 7, and 10.
                The following criterion was obtained:

$$\int_{x} < \frac{0.64 \cdot 3\sqrt{\pi \hbar} \, \varepsilon c_1}{2 \sqrt{2} \, e^2} = 5 \cdot 10^{-9} \, \varepsilon c_1 \ll 1$$

$$\int_{x} \equiv \left| \frac{a_{x} \hbar \omega_{x}}{c_{x}} \right| \ll 1;$$ ω_{x} denotes the frequency of the longi-

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On the Theory of Light Absorption by Impurities in   SOV/181-1-9-24/31
Homeopolar Crystals

tudinal acoustic vibrations with the wave vector x, ε is the
dielectric constant of the crystal, c_1 is the longitudinal
sound velocity, a is the constant of the deformation potential.
It is shown that this condition is satisfied for silicon and
germanium, and therefore, that the strong coupling method can
be used for the calculation of the parameters. There are
11 references, 8 of which are Soviet.

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics of the
              AS UkrSSR, Kiyev)

SUBMITTED: March 27, 1959

Card 2/2

24(3)

AUTHORS: Deygen, M. F., Roytsin, A. B.   SOV/56-36-1-24/62

TITLE: The Paramagnetic Resonance of F-Centers in Static Magnetic
               Fields of Arbitrary Strength (Paramagnitnyy rezonans
               F-tsentrov v staticheskikh magnitnykh polyakh proizvol'noy
               velichiny)

ABSTRACT: The authors develop a theory on the paramagnetic resonance
               of F-centers for an arbitrary value of the field strength of
               the external static field, and especially for the case in
               which such a field is lacking. The first part of the present
               paper deals with the hyperfine splitting up of energy levels
               of the F-center in the case of the presence of an external
               static magnetic field. First, the spin-Hamiltonian of the
               system to be developed is written down and transformed by
               separation of the terms of the Fermi type. For purposes of
               illustration, the calculation of the energy levels for
               alkali-halide crystals with a lattice of the NaCl type
               (halide salts of K, Na, Rb, Li) is carried out up to the
Card 1/4   determination of numerical values. The spins of the metal

The Paramagnetic Resonance of F-Centers in Static   SOV/56-36-1-24/62
Magnetic Fields of Arbitrary Strength

ion nuclei contained in these lattices are equal to 3/2.
For the total spin of the sextuple of nuclei in the first
coordination-sphere the following values are obtained:

I = 0   1   2   3   4   5   6   7   8   9
N = 34   90 120 120 96 64 35 15   5   1

N determines the statistical weight of the quantum state
corresponding to a certain I-value. The papers dealing with
double paramagnetic resonance (Refs 9, 12, 13) permit
determination of the coupling constant of the spin Hamiltonian.
Also in very exact numerical computations the second term in
the Zeeman term of the aforementioned spin Hamiltonian can be
neglected. The total number of levels in the case under

investigation is $\sum\limits_{I=0}^{9} 2(2I + 1) = 200$. The numerical

computations of the energy levels in the case of the existence
of an external electric field were carried out for the value
H = 50 oersted. In the next chapter the quantum transitions
in the spectrum of hyperfine splitting up and the intensity of

Card 2/4   the lines of paramagnetic resonance are calculated. For this

The Paramagnetic Resonance of F-Centers in Static   SOV/56-36-1-24/62
Magnetic Fields of Arbitrary Strength

purpose, an expression for the wave function of the system
is at first written down. Inclusion of the perturbation taken
into account by the aforementioned Hamiltonian eliminates
degeneration completely and leads to the occurrence of
200 levels. The system of wave functions occurring herefrom
is written down. Under the action of a radiofrequency field
the transitions between the steady states of the systems,
which were discussed in the preceding chapter, occur, and an
expression for the solution of the corresponding time-dependent
Schrödinger equation is written down. The results obtained
by calculations are given by 2 diagrams. The next chapter
deals with paramagnetic resonance in the case of a lacking
field. Also in this case the intensity of the lines of
paramagnetic resonance is, in the case of an arbitrary
orientation of the external magnetic alternating field,
determined by the product $J'N$, in which case
$J' = (8I/3)(I + 1)/(2I + 1)$ holds. The results obtained by
calculating the frequencies and intensities of the transitions
of paramagnetic resonance in the case of a lacking external

Card 3/4   field are given by a diagram. These intensities are of the