VOLKENSHTEYN, N.V.; GALOSHINA, E.V.

Temperature dependence of paramagnetic susceptibility electric conductivity and the Hall effect in metal scandium. Fiz. met. i metalloved. 16 no.2:298-301 Ag '63. (MIRA 16:8)

1. Institut fiziki metallov AN SSSR.
(Scandium—Magnetic properties)
(Electric conductivity)
(Hall effect)

L 17608-63 EWT(1)/EWG(k)/EWP(q)/ S/056/63/044/003/008/053
EWT(m)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3/IJP(C) Pz-4/Pad AT/JD/HW

AUTHOR: Volkenshteyn, N. V. and Fedorov, G. V.

TITLE: Temperature dependence of the electric conductivity and Hall effect of dysprosium and erbium

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 3, 1963, 825-831

TEXT: The ferromagnetic metals Fe, Ni, and Co and the rare earth metal Gd showed anomalously high values for the Hall emf. The authors decided to investigate the problem in the region of transitions from the paramagnetic to the antiferromagnetic phase and vice versa of the rare earth metals Dy and Er for which the magnetic structure is known from neutronographic data. The specific electric resistance and Hall emf in Dy and Er are measured in the temperature range from 4.2 to 350°K. The transition from paramagnetic to antiferromagnetic phase can easily be discerned on the $\rho(T)$ curves for Dy and Er. An investigation of the specific Hall emf for Dy revealed that extremal values of the effect correspond to transitions from a paramagnetic to antiferromagnetic phase and from an antiferromagnetic to

Card 1/2

L 17608-63

S/056/63/044/003/008/053

Temperature dependence of the electric...

ferromagnetic phase. Only one maximum of the emf is observed in Er during transition from the antiferromagnetic to the ferromagnetic phase. The Dy Hall effect in the ferromagnetic and antiferromagnetic region exhibits "hysteresis" and changes its sign from negative to positive at temperatures between 100 and 150°K. The sign of the Hall effect in Er is negative through the whole investigated temperature range and no hysteresis is observed. There are 7 figures.

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

SUBMITTED: October 1, 1962

Card 2/2

L 16887-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3 JD/JG

ACCESSION NR: AP3005240 S/0056/63/045/002/0043/0045

67
63

AUTHOR: Volkenshteyn, N. V.; Kachinskiy, V. N.; Starostina, L. S.

TITLE: On the Fermi surface of tungsten 27

SOURCE: Zhurn. eksper. i teoret. fiz., v. 45, no. 2, 1963, 43-45

TOPIC TAGS: tungsten, Fermi surface, galvanomagnetic property, magnetoresistance, Hall effect

21

ABSTRACT: The electric resistance in a transverse field, the Hall effect, and the transverse voltage on the Hall contacts were investigated in single crystals of pure tungsten at 4.2 K. The dependence of the resistance on the field direction and the quadratic variation of the resistance with the field (in all directions) were similar to those obtained by Fawcett (Phys. Rev. v. 128, 154, 1962), but the angular dependence of the Hall effect, and particularly of the even transverse voltage, exhibited strong anisotropy, with singularities in the form of rather sharp peaks. It is concluded tentatively on the basis of the results obtained that the Fermi surface of tungsten is open, and that Fawcett's conclusions concerning the absence of open trajectories in tungsten cannot be considered final.

Card 1/2

L 16887-63

ACCESSION NR: AP3005240 4

"The authors express their appreciation to A. I. Shal'nikov for his interest in the work and participation in its progress, and to N. A. Brilliantov for interest." Orig. art. has 1 figure.

ASSOCIATION: Institut kristallografii AN SSSR (Crystallography Inst. Acad. Sci. SSSR); Institut fiziki metallov AN SSSR (Metal Phys. Inst. Acad. Sci. SSSR)

SUBMITTED: 13Feb63 DATE ACQ: 06Sep63 ENCL: 01

SUB CODE: PH NO REF SOV: 004 OTHER: 003

Card 2/2

VOLKENSHTEYN, N.V.; FEDOROV, G.V.; STARTSEV, V.Ye.

Effect of the magnetic order on the electric and galvanomagnetic properties of rare earth metals. Izv. AN SSSR. Ser. fiz. 28 no. 3:540-544 Mr '64. (MIRA 17:5)

1. Institut fiziki metallov AN SSSR.

ACCESSION NR: AP4023383 S/0048/64/028/003/0423/0429

AUTHOR: Vlasov,K.B.; Volkenshteyn,N.V.; Vonsovskiy,S.V.; Mitsek,A.I.; Turchinskaya, M.I.

TITLE: Unidirectional anisotropy [Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May to 5 June 1963]

SOURCE: AN SSSR. Izvestiya fizicheskaya, v.28, no.3, 1964, 423-429

TOPIC TAGS: ferromagnetism, antiferromagnetism, cubic lattice ferromagnets, unidirectional anisotropy, nickel manganese alloy

ABSTRACT: A substance is said to possess unidirectional anisotropy (UA) when its magnetic properties differ in the two directions of the same crystallographic axis. This phenomenon was first observed by W.H.Mejklejohn and C.P.Bean (Phys.Rev.,105, 904,1956), who ascribed its appearance in their material to an exchange interaction across the boundaries between ferromagnetic and antiferromagnetic phases. Two of the present authors have suggested that UA could appear in a single ferromagnetic substance provided a weakly interacting sub-lattice constituting an antiferromagnetic subsystem were present, and they have given a thermodynamic discussion of a uni-

Card 1/3

ACCESSION NR: AP4023383

axial system of this sort (K.B.Vlasov and A.I.Mitsek, Fizika metallov i metallovedeniye,14,487,498,1962). In the present paper the theoretical treatment is extended to systems with cubic symmetry. UA is possible when the coupling between the antiferromagnetic vector and the crystal lattice is stronger than the coupling between the ferromagnetic and antiferromagnetic subsystems. The states with UA are metastable and can be altered by application of a magnetic field exceeding the threshold field of the antiferromagnetic subsystem. UA was observed in disordered Ni-Mn alloys (28.1 atomic percent Mn) at temperatures below 20.4°K. The magnetization was investigated in the [111] direction, and the UA was evinced by a characteristic bend in the magnetization curve or by a horizontal shift of the hysteresis loop. Samples that were cooled in the presence of a magnetic field showed UA; those that were cooled in the zero field did not. The samples were subjected to an intense pulsed magnetic field (up to 170 kOe) in an effort to alter their UA. At 4.2°K a field of 10 kOe appreciably altered the UA of a sample that had been cooled in a field of 1300 Oe, and a field of 130 kOe changed its sign. A sample that was cooled in the absence of a magnetic field and initially showed no UA, acquired UA when subjected to magnetic fields greater than 60 kOe. The degree of UA (as measured by the shift of the hysteresis loop) was a linear function of the field for inducing fields greater than 60 kOe. These fields are of the order of the threshold fields for typi-

Card 2/3

ACCESSION NR: AP4023383

cal cubic antiferromagnetics. The experimental results thus support the hypothesis that the investigated alloys possess both ferromagnetic and antiferromagnetic states. Orig. art. has: 14 formulas and 3 figures.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Physics of Metals, Academy of Sciences, SSSR): Ural'skiy gosudarstvennyy universitet (Ural State University)

SUBMITTED:	00	DATE ACQ:	10Apr64	ENCL:	00
SUB CODE:	PH	NO REF SOV:	005	OTHER:	003

Card 3/3

ACCESSION NR: AP4034065 S/0126/64/017/004/0627/0629

AUTHORS: Volkenshteyn, N. V.; Romanov, Ye. P.; Starostina, L. S.; Startsev, V. Ye.

TITLE: Temperature dependence of the electrical conductivity of monocrystalline molybdenum

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 4, 1964, 627-629

TOPIC TAGS: molybdenum, electric conductivity, monocrystalline molybdenum, polycrystalline molybdenum, cryostat, copper molybdenum thermocouple, phonon, electron electron interaction

ABSTRACT: The authors studied the temperature dependence of monocrystalline Mo having a high degree of purity and a relative electrical resistance on the order of $R_{300\ K}/R_{4.2\ K} > 3500$, where 4.2K stands for liquid helium temperature. Test samples were obtained from a parent material of polycrystalline Mo rods 5 mm in diameter and 150 mm long, having a relative resistance of the order of 40. The approximate chemical composition was: 0.004% Fe, 0.001% Si, 0.0005% Ni, 0.0003% Mn and Al, 0.0002% Ca and Mg, 0.0001% Cu, and 0.0001% Na. Test specimens 4 mm in diameter and 25 mm long were placed in a cryostat. Temperature measurements were made with a dual copper-molybdenum thermocouple. The electrical resistance was

Card 1/3

ACCESSION NR: AP4034065

measured with a potentiometer set up with a galvanometer of sensitivity 5×10^{-8} volt/mm/m. The data showed that the temperature dependence of the relative resistance was linear at temperatures above 100K. From 40 to 80K it could be well approximated by the formula $\frac{R_T}{R_{0°C}} = \frac{R_0}{R_{0°C}} + aT^2 + bT^5$,

$\frac{R_0}{R_{0°C}} \cong 1{,}8 \cdot 10^{-4}$; $a \sim 10^{-6}$ град$^{-2}$; $b \sim 10^{-11}$ град$^{-5}$, whereas in the range of 7 to 18K it was found to fit the formula $\frac{R_T}{R_{0°C}} = \frac{R_0}{R_{0°C}} + AT^2$,

$A = 1{,}5 \cdot 10^{-6}$ град$^{-2}$.

It was inferred from the results that in monocrystalline Mo of high purity the electrical resistance was determined essentially by electron-electron interactions. For the sake of comparison the temperature dependence of the relative resistance of polycrystalline Mo was also plotted and was found to have a minimum at 26K. The authors thank V. A. Novosselov for his help in the experiments. Orig. art. has: 2 figures and 2 formulas.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR); Institut fiziki metallov AN SSSR (Institute of Physics of Metals, AN SSSR)

L 14385-65 EWT(1)/EWT(m)/EEC(f)/EWA(d)/EEC(b)-2/EWP(b) IJP(c)/APWL/ SSD/ASD(a)-5/AS(mp)-2/RAEM(c)/ESD(t) RDW/JD/JG/GG

ACCESSION NR: AP4046391 S/0056/64/047/003/0812/0813

AUTHOR: Volkenshteyn, N. V.

TITLE: Investigation of superconductivity in vanadium scandium alloys

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 3, 1964, 812-813

TOPIC TAGS: superconductivity, transition temperature, critical field, scandium, vanadium, alloy, scandium vanadium alloy, superconducting alloy

ABSTRACT: The critical field H_c and the superconducting transition temperature T_c were determined for vanadium scandium alloys containing 1, 4, 7, 30, 40, 50, and 60% vanadium. The ratio of resistivities of the materials (300K/4.2K) were initially 26 and 14 for Sc and V, respectively. The samples of alloys were annealed for 15—20 hr at 1100C. Experimentally determined dependences of T_c and H_c on the alloy composition are shown in Figs. 1 and 2 of the Enclosure. The critical temperature T_c reached a maximum of 7.04K when the content of Sc equalled 50%. This value exceeds T_c of pure vanadium by 1.5°. According to the authors, addition of Sc shifts the Fermi surface toward higher densities of state

Card 1/4

L 14385-65
ACCESSION NR: AP4046391

causing an increase in T_c. Orig art. has: 3 figures.

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

SUBMITTED: 31Mar64 ENCL: 02 SUB CODE: SS

NO REF SOV: 000 OTHER: 004

Card 2/4

L 14385-65
ACCESSION NR: AP4046391

ENCLOSURE: 01

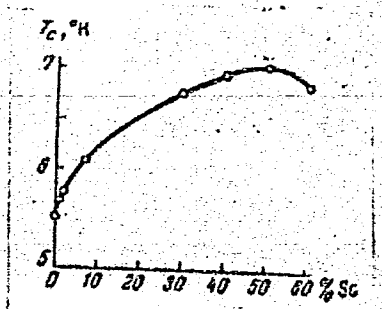


Fig. 1. Dependence of T_c on the composition of V-Sc alloys.

Card 3/4

L 14385-65
ACCESSION NR: AP4046391

ENCLOSURE: 02

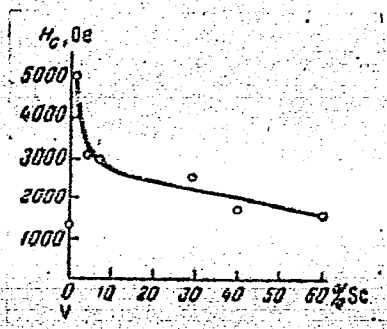


Fig. 2. Dependence of H_c on the composition of V-Sc alloys.

Card 4/4

L 18730-66 EWT(1)/EWT(m)/EWA(d)/EWP(t) IJP(c) JD/GG

ACC NR: AP6005132 SOURCE CODE: UR/0126/66/021/001/0017/0020

AUTHOR: Romanov, Ye. P.; Sadovskiy, V. D.; Volkenshteyn, N. V.; Smirnov, L. V.

ORG: Institute of the Physics of Metals, AN SSSR (Institut fiziki metallov)

TITLE: Disruption of superconductivity in an alloy with a disperse superconducting phase

21, 44, 55 18

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 1, 1966, 17-20

71
70
B

TOPIC TAGS: superconductivity, zirconium alloy, magnetic field, solenoid

ABSTRACT: This is a continuation of a previous investigation (Romanov et al. FMM, 1965, 20, 3) with the difference that it presents certain findings on the disruption of superconductivity in the alloy of Zr^{27}_{55} with 4% Nb^{27} by weight following the decomposition of supersaturated solid solution in a longitudinal magnetic field generated by means of a superconducting solenoid at 4.2°K. The current was introduced at a smoothly increasing rate into the specimens by means of a semiconductor amplifier and the disruption of superconductivity was recorded by means of an automatic-recording millivoltmeter. It is found that for the alloy investigated the transition from superconducting to normal state is abrupt in the absence of the magnetic field and increasingly smooth the greater is the intensity of the magnetic field applied. Plotting of the curves of electric resistance as a function of the current introduced (Fig. 1) revealed that

2

Card 1/3 UDC: 539.292:537.312.62

L 18730-66

ACC NR: AP6005132

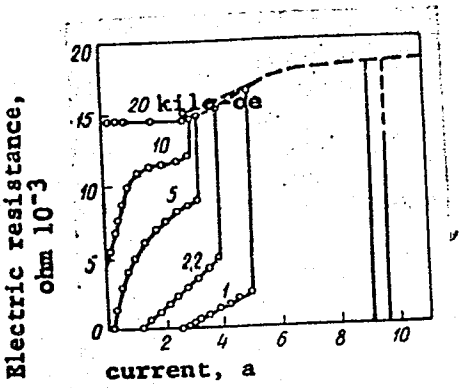


Fig. 1. Resistance as a function of the magnitude of the current introduced in a longitudinal magnetic field, for the alloy Zr + 4% Nb. Deformation 82%, tempering 550°C for 4 hr.

Card 2/3

L 18730-66
ACC NR: AP6005132

the disruption of superconductivity occurs over a wide range of the values of the current and magnetic field. Apparently, various sectors of the superconducting circuit differ in the dependence of their critical current on the intensity of the magnetic field. Electric resistance increases with increasing magnetic-field intensity. On the whole, the character of the transition curves indicates that, in the alloy investigated, disruption of superconductivity by current in a longitudinal magnetic field occurs gradually owing to the successive elimination of the superconducting state of individual sectors of the superconducting circuit. Although specimens in fields of the order of 20 kilo-oersteds become markedly heated, some of their sectors still remain in superconducting state. "The authors are indebted to A. Prekul for affording them the opportunity of performing the measurements with the aid of a superconducting solenoid." Orig. art. has: 3 figures.

SUB CODE: 11, 14, 20/ SUBM DATE: 28Jul65/ ORIG REF: 001/ OTH REF: 008

Card 3/3 SmU

L 15672-66 EWT(1)/EWT(m)/EWP(t)/EWA(1) IJP(c) JD/WW/JG

ACC NR: AP6000199 SOURCE CODE: UR/0056/65/049/005/1450/1452

AUTHOR: Aliyev, N. G.; Volkenshteyn, N. V.

ORG: Institute of Metal Physics, Academy of Sciences, SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Thermal conductivity of Tm, Yb, and Lu at low temperatures

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 5, 1965, 1450-1452

TOPIC TAGS: heat conductivity, thulium, ytterbium, lutetium, magnetic structure, Curie point, Debye temperature, paramagnetism, antiferromagnetism, phonon, electron, electric resistance, rare earth metal, temperature measurement

ABSTRACT: To determine the cause of the high Lorentz number of rare-earth metals, and to check on the hypothesis that the thermal conductivity of these metals can have a magnon component in addition to the electron and phonon components, the authors investigated for the first time the thermal conductivities of three consecutive elements in the series of rare-earth heavy metals, Tm, which has a complex magnetic structure, and Yb and Lu which have no magnetic ordering. The temperature measurements were made on strips 0.25 mm thick in the temperature range 2--100K for Tm and Lu and 2--80K for Yb. The electric resistivity of these samples was also measured at room temperature and at 4.2K. The results show that the antiferromagnetic-paramagnetic transition affected the thermal conductivity of Tm at 53K. At 4.2K, the Lorentz numbers calculated for Yb and Lu, which had no magnetic ordering, were higher

Card 1/2

L 15672-66

ACC NR: AP6000199

than the theoretical values. The Lorentz number for Tm, which has a magnetic structure, was anomalously high. It is suggested on the basis of the results that at 4.2K the Yb and Lu still had a considerable lattice component in addition to the electronic component of the thermal conductivity, while Tu also had a magnetic component. The low values of the Curie point and of the Debye temperature of these metals can also be attributed to the presence of magnons. Orig. art. has: 1 figure and 1 table.

SUB CODE: 11,20,07/ SUBM DATE: 21Jun65/ ORIG REF: 003/ OTH REF: 006

Card 2/2

L 23940-66 EWT(d)/EWT(m)/EWP(j)/T/EWP(l) IJP(c) RM
ACC NR: AP6014944 SOURCE CODE: UR/0217/65/010/005/0723/0728

AUTHOR: Vol'kenshteyn, M. V.; Fishman, S. N.

ORG: Institute of High-Molecular Compounds, AN SSSR, Leningrad (Institut vysokomolekulyarnykh soyedineniy AN SSSR)

TITLE: Theory of matrix synthesis of polynucleotides

SOURCE: Biofizika, v. 10, no. 5, 1965, 723-728

TOPIC TAGS: macromolecule, polymer, oligomer, organic synthetic process

ABSTRACT: The article contains a mathematical analysis of the problem of determining the length of chains built up in synthesis of a polymer on an oligomer and of why the time for building a particular chain depends closely on the size of the seed oligomer. The mathematical model takes into consideration not only the two kinetic stages: 1) filling of the matrix, and 2) its slippage with respect to the matrix, but also the kinetic factor of the possibility that the reaction will be halted because of the matrix tearing away from the chain being built up. Synthesis of such chains will occur later than in chains which did not separate from the matrix. The lag period observed experimentally in synthesis without a matrix corresponds to the time necessary to build up the first macromolecules. Separation of the chains from the matrix is then considered exclusively as a suspension of the reaction rather than as a "secondary" synthesis. The authors thank Yu. Ya. Gotlib for valuable discussions. Orig. art. has: 7 figures and 20 formulas. [JPRS]

SUB CODE: 07 / SUBM DATE: 22Mar65 / OTH REF: 007
UDC: 577.3

Card 1/1 FV

L 26646-66 EWT(m)/EPF(n)-2/T/EWP(t) IJP(c) JD/WW/JG

ACC NR: AP5025333 SOURCE CODE: UR/0126/65/020/003/0455/0458

AUTHOR: Romanov, Ye. P.; Smirnov, L. V.; Sadovskiy, V. D.; Volkenshteyn, N. V.

ORG: Institute of Metal Physics, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Critical current of the superconductive dispersion phase obtained during aging

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 3, 1965, 455-458

TOPIC TAGS: martensitic transformation, zirconium base alloy, niobium containing alloy, superconductivity, metal aging, solid solution, plastic deformation, metal heat treatment, current density

ABSTRACT: A nonsuperconductive alloy at 4.2°K was used which could separate a superconductive dispersion phase during the process of thermal treatment or aging. The alloy used was zirconium with 4% niobium. After preparation, superconductivity was obtained even after short thermal treatment at a temperature of 500°C. Maximum critical density is obtained after heating the sample for 2½ hours. Further heating results in a decrease of critical current density. When heating the zirconium-4% niobium alloy a supersaturated niobium α-solid solution is obtained from the stable β-solid solution as a result of martensite transformation.

Card 1/2 UDC: 537.312.62

L 26646-66

ACC NR: AP5025333

Plastic deformation increases considerably the density of lattice defects, and correspondingly increases the density of separations. It can be assumed that because of the above phenomena, increase of critical current density is observed with increase of the degree of cold deformation. The appearance of superconductivity in the alloy is explained only by the separated phase which is independent of the matrix properties. It can be noted that even a slight phase separation will result in a considerable increase of current density. Orig. art. has: 5 fig.

SUB CODE: 11,20/SUBM DATE: 19Mar65/ ORIG REF: 004/ OTH REF: 008

Card 2/2

L 10309-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6017302 (A) SOURCE CODE: UR/0126/66/021/005/0674/0677

AUTHORS: Volkenshteyn, N. V.; Dyakina, V. P.; Novoselov, V. A.; Startsev, V. Ye.

ORG: Institute of Metal Physics, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Peculiarities of the temperature dependence of electric resistivity of dysprosium at low temperatures

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 5, 1966, 674-677

TOPIC TAGS: dysprosium, electric resistivity, resistivity

ABSTRACT: The electric resistivity of highly purified dysprosium ($R_{300K}/R_{42K} \cong 105$) was measured over the temperature interval 1.5--300K to determine the magnetic contribution to the electric resistivity as a function of temperature. The resistivity was measured on 10 x 1 x 0.5 mm strips made of distilled dysprosium using a cryostat (R. V. Colvin and S. Arajs. Phys. stat. sol., 1964, 4, 73). The results are shown in Fig. 1. These results were found to agree well with the thecretical predictions proposed by A. K. Mackintosh (Phys. Lett., 1963, 4, 140). This is demonstrated in Fig. 2 which shows a comparison.

UDC: 539.292:537

Card 1/2

L 40307-66

ACC NR: AP6017302

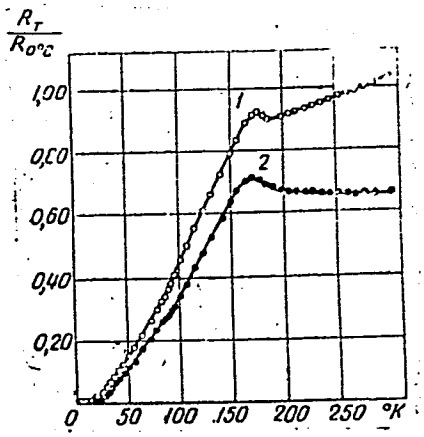


Fig. 1. Electric resistivity of dysprosium: 1 - total resistivity; 2 - magnetic resistivity.

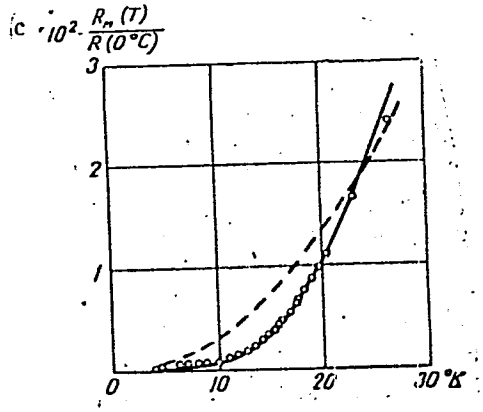


Fig. 2. Low temperature electric resistivity: O - experimental results; solid line - curve $\rho_M = aT^2 e^{-\frac{\Delta}{kT}}$, with $a/R_{0C} = 1.27 \times 10^{-4}$ degrees^{-2}, $\Delta/k = 30K$; dotted line - curve of T^2 function having common point with experimental results at T = 24K.

Orig. art. has: 2 formulas and 3 figures.

Card 2/2 mcl SUB CODE: 11/ SUBM DATE: 10Aug65/ ORIG REF: 005/ OTH REF: 004

L 11737-66 EWT(l)/EWP(e)/EWA(c)/EWT(m) IJP(c) JD/JG

ACC NR: AP6020204 SOURCE CODE: UR/0056/66/050/006/1505/1509

AUTHOR: Volkenshteyn, N. V.; Grigorova, I. K.; Fedorov, G. V.

ORG: Institute of Physics of Metals, Academy of Sciences, SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: On the anisotropy of the Hall effect in gadolinium

SOURCE: Zh eksper i teor fiz, v. 50, no. 6, 1966, 1505-1509

TOPIC TAGS: gadolinium, Hall effect, magnetic anisotropy, rare earth metal, magnetic structure, temperature dependence

ABSTRACT: To obtain additional information on the magnetic anisotropy of rare-earth metals, the authors investigated the Hall effect in single-crystal samples of gadolinium ($\rho(292K)/\rho(4.2K) = 20$) in the temperature interval 4.2 - 370K. The measurements were made with crystals cut in two mutually perpendicular directions. In the first the primary current was directed along the a_o axis and the magnetic field along the c_o axis, and the Hall field was measured in the b_o direction. For the second sample the primary current was along a_o, the magnetic field along b_o, and the Hall field along c_o. The authors have published elsewhere the procedure used to measure the Hall emf (FMM v. 2, 377, 1956) and the data reduction procedure (FMM v. 18, 26, 1964). The dependence of the Hall effect on the field in gadolinium exhibits noticeable anisotropy. The Hall emf at temperatures below the Curie point depends on the induction in the sample linearly, but the temperature at which the linearity begins

Card 1/2

L 11737-66

ACC NR: AP6020204

differs with the sample. The Hall voltage and the spontaneous Hall coefficient exhibit a noticeable temperature dependence, similar to that previously observed by N. A. Babushkina (FTT v. 7, 3026, 1965). It is thus demonstrated that even in gadolinium, which has a simpler magnetic structure than other rare-earth metals, the Hall effect has noticeable anisotropy, due to the difference in the magnetic properties in different crystallographic directions. The authors thank L. V. Smirnov and Ye. P. Romanov for supplying the single-crystal gadolinium, and T. V. Ushkova and L. V. Puzanova for x-ray determinations of the orientation and of the crystallographic perfection of the samples. Orig. art. has: 5 figures and 4 formulas.

SUB CODE: 20// SUBM DATE: 22Jan66/ ORIG REF: 005/ OTH REF: 001

Card 2/2 af

ACC NR: AP6018556 SOURCE CODE: UR/0181/66/008/006/1895/1898

AUTHOR: Volkenshteyn, N. V.; Fedorov, G. V.

ORG: Institute of Physics of Metals, AN SSSR, Sverdlovsk (Institut fiziki metallov AN SSSR)

TITLE: Hall effect in holmium

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1895-1898

TOPIC TAGS: holmium, Hall effect, temperature dependence, rare earth metal

ABSTRACT: In view of the lack of data on the temperature dependence of the Hall effect in holmium, the authors measured it in the interval 4.2 - 300K. The holmium purity was 99.9% ($\rho_{300K}/\rho_{4.2K} = 12$). The inductions used in the sample reached 20 kG. The procedure used for the measurements was the same as in an earlier paper (FMM v. 2, 377, 1956). The data-reduction procedure was also described elsewhere (FMM v. 18, 26, 1963). The dependence of the specific Hall emf on the induction for different temperatures and on the temperature for different inductions are plotted, and the effective Hall coefficient is calculated. The temperature dependence of the specific Hall emf exhibits a minimum at 100C, and the Hall coefficient consists of two components, the ordinary one, which does not depend on the temperature (found to be -2.8×10^{-12} ohm-cm/G), and a component inversely proportional to the temperature, which includes the anomalous Hall coefficient connected with the paramagnetic magnetization. The latter is likewise independent of the temperature and is found to be -2.2×10^{-12} ohm-cm/G. The results are compared with those obtained for dysprosium and erbium,

ACC NR: AP6018556

and are found to be quite similar. It is concluded that measurements with polycrystalline samples disclose the connection between the singularities of the Hall effect and the characteristics of the magnetic structures, but do not yield complete information on the connection between them. Orig. art. has: 1 formula.

SUB CODE: 20 SUBM DATE: 30Nov65/ ORIG REF: 008/ OTH REF: 008

L 00779-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6023708 SOURCE CODE: UR/0126/66/021/004/0639/0640

61
B

AUTHOR: Prokul, A. F.; Volkenshteyn, N. V.

ORG: Institute of Metal Physics, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Fluctuations and jumps of flux in superconducting solenoids

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 4, 1966, 639-640

TOPIC TAGS: external magnetic field, homogeneous magnetic field, solenoid, superconductivity

ABSTRACT: It is known that flux jumps in specimens of superconducting material[18] placed in an external magnetic field occur only in a certain definite region of a magnetic field, whereas in superconducting coils under self-excitation conditions they are observed up to the transition to the normal state. This effect was investigated in coils made of 65BT conductor. The coil being studied was placed in a practically homogeneous magnetic field of a large superconducting solenoid. In the case of the coil placed in the external field, small-amplitude fluctuations of magnetic flux begin in fields of 200-300 Oe; as the magnetic field increases further, the number and duration of the fluctuations decrease. In the case of self-excitation conditions, the pulses are of the same form as in the preceding case, but are observed up to the transition to the normal state. At certain values of the current in the coil, jumps which are huge in amplitude and duration (e. g., 250 msec) appear. The variation of the characteristic

Card 1/2 UDC: 537.312.62

L 00779-67

ACC NR: AP6023708

H = H(I) on the axis of a large solenoid in the presence of the coil being studied was investigated. It is concluded that large flux jumps are due to the appearance of a metastable region of finite resistance in the material of the coil. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 16Aug65/ OTH REF: 004

awm

Card 2/2

L 07101-67 EWT d)/EWT(l)/EWT(m)/EWP(t)/ETI IJP(c) JD/AW

ACC NR: AP6029113 SOURCE CODE: UR/0048/66/030/006/0979/0980

AUTHOR: Volkenshteyn, N.V.; Zotov, T.D.

ORG: Institute of Metal Physics, Academy of Sciences, SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Investigation of the temperature dependence of the spontaneous magnetization of a magnetite single crystal at low temperatures (Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk)

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 6, 1966, 979-980

TOPIC TAGS: spontaneous magnetization, ferrite, single crystal, temperature dependence, low temperature effect, spin wave theory

ABSTRACT: The authors have employed a pendulum magnetometer of the type described by Domenikali (Rev. Sci. Instrum., 21, 327 (1950)) to measure the spontaneous magnetization of a natural magnetite single crystal at temperatures from 4.2 to 50° K. The 19.3 kOe external magnetic field was more than adequate to insure saturation of the spherical specimen. The main impurity of the specimen was 0.1 to 0.3% titanium, and x-ray studies down to liquid nitrogen temperatures revealed no static lattice deformations. The specimen was cooled through the 111° K transition temperature in an external magnetic field parallel to [100] and the measurements were made with the field in that direction. The spontaneous magnetization M(T) at temperature T was

Card 1/2

L 07101-67

ACC NR: AP6029113

found to be well represented by the formula $M(T)/M(0) = 1 - \alpha T^n$ with $n = 3/2$ and $\alpha = 3.5 \times 10^{-5}$ $deg^{-3/2}$, which does not conflict with the spin wave theory of the spontaneous magnetization of ferrites. The experimental data exclude the possibility that $n = 2$ in the above formula. The authors thank A.P.Pronina for assisting with the work. Orig. art. has: 2 figures and 1 formula.

SUB CODE: 20 DATE SUBM: 00 ORIG. REF: 008 OTH REF: 003

Card 2/2

L 06425-67 EWT(d)/EWT(1)/EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) JD/WW/JG

ACC NR: AP6026700 SOURCE CODE: UR/0181/66/008/008/2450/2454

AUTHOR: Samokhvalov, A. A.; Bamburov, V. G.; Volkenshteyn, N. V.; Zotov, T. D.; Ivakin, A. A.; Morozov, Yu. N.; Simonova, M. I.

ORG: Institute of Metal Physics, AN SSSR, Sverdlovsk (Institut fiziki metallov AN SSSR)

TITLE: Magnetic properties of EuO at low temperatures

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2450-2454

TOPIC TAGS: europium compound, spontaneous magnetization, magnetic susceptibility

ABSTRACT: EuO was prepared by the solid-state reaction $Eu_2O_3 + C \rightarrow 2EuO + CO$, and its magnetization curves were plotted for 4.2, 20.4 and 82°K. The temperature dependence of spontaneous magnetization was measured at 1.7°K and above, and was analyzed from the standpoint of the spin-wave theory. At 4.2 and 20°K, the magnetization reaches saturation in fields slightly above 4000 Oe. The paramagnetic Curie point and the effective magnetic moment, both determined from the temperature dependence of the magnetic susceptibility, were found to be 75°K and 7.3 μ_B respectively. The exchange integral I was calculated from the low-temperature range ($T < T_c/2$) and found to be equal to 0.394k. It is shown that when the term with $T^{5/2}$ is taken into account in Bloch's law, the range of applicability of Bloch's law expands, but the value of coefficient C_1 at $T^{5/2}$, determined experimentally and giving the best agreement with the experi-

Card 1/2

L 06425-67

ACC NR: AP6026700 O

mental spontaneous magnetization curve, differs markedly from the calculated value. Orig. art. has: 4 figures, 1 table and 3 formulas.

SUB CODE: 20/ SUBM DATE: 10Nov65/ ORIG REF: 002/ OTH REF: 005

Card 2/2 fdh

ACC NR: AP7000535 SOURCE CODE: UR/0386/66/004/010/0396/0400

AUTHOR: Volkenshteyn, N. V.; Dyakina, V. P.

ORG: Institute of Physics of Metals, Academy of Sciences SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Singularities of transverse magnetoresistance of single-crystal gadolinium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 10, 1966, 396-400

TOPIC TAGS: gadolinium, magnetoresistance, galvanomagnetic effect, temperature dependence, magnetic structure

ABSTRACT: The purpose of the investigation was to ascertain the effect of a change in the magnetic structure on the anisotropy of the transverse magnetoresistance of single-crystal gadolinium in a wide range of temperatures. The tests were made on cylindrical samples cut along the [10$\bar{1}$0] axis, with a ratio of room-temperature resistance to helium-temperature resistance equal to 20. The isotherms of the transverse magnetoresistance were measured in fields sufficient to produce saturation and extrapolated to zero field in the sample, so as to exclude the resistance variations due to the paraprocess. The tests showed that the transverse saturation magnetoresistance has a complicated temperature dependence and is strongly anisotropic. From the measured temperature dependence of the transverse saturation magnetoresistance in fields parallel to [0001] and [11$\bar{2}$0] it is deduced that the magnetic anisotropy con-

Card 1/2

L 10945-67

ACC NR: AP7000535

stant has a maximum near 120K and vanishes at 230K. Rotation diagrams show that above 250K the transverse magnetoresistance is negative in all directions, and its absolute value is minimal in the easy-magnetization direction. Below 130K, the rotation curves show maxima connected with the appearance of the "cone" of easy magnetization axes. The results show also that a correlation exists between the temperature dependence of the galvanomagnetic effect and the magnetic structure. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 06Aug66/ ORIG REF: 003/ OTH REF: 002

Card 2/2 bp

L 22584-67 EWT(1)/EWT(m)/EWT(t)/ETI IJP(c) JD/JG
ACC NR: AP6032474 SOURCE CODE: UR/0056/66/051/003/0780/0785

AUTHOR: Volkenshteyn, N. V.; Grigorova, I. K.; Fedorov, G. V.

ORG: Metal Physics Institute, Academy of Sciences SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Anisotropy of the Hall effect in dysprosium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 3, 1966, 780-785

TOPIC TAGS: Hall effect, dysprosium, dysprosium single crystal, anisotropy, dysprosium anisotropy

ABSTRACT: The Hall effect is measured in single crystals of dysprosium ($\rho(294K)/\rho(4.2K) = 10$) at temperatures between 4.2 and 350K. An anisotropy of the field and temperature dependence of the Hall emf is found in the temperature range of existence of the magnetic ordered structure. An anisotropy of the Hall coefficient above the Neel temperature has also been observed. Orig. art. has: 5 figures. [Authors' abstract]

SUB CODE: 20/ SUBM DATE: 22Apr66/ ORIG REF: 007/ OTH REF: 007

Card 1/1

L 07116-67 EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6029115 SOURCE CODE: UR/0048/66/030/006/0984/0989

AUTHOR: Amokhvalov, A.A.; Ivakin, A.A.; Morozov,Yu.N.; Simonova, M.I.; Bamburov,V.G.; Volkenshteyn,N.V.; Zotov,T.D.

ORG: none

TITLE: Magnetic, high frequency, and electric properties of some oxide compounds of divalent europium /Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 6, 1966, 984-989

TOPIC TAGS: ferromagnetism, dielectric constant, dielectric loss, magnetization, temperature dependence, europium compound, oxide, aluminate, silicate, ELECTRIC PROPERTY, MAGNETIC PROPERTY

ABSTRACT: The authors have synthesized EuO, Eu_3O_4, $Eu_3Al_2O_6$, $EuAl_2O_4$, Eu_2SiO_4, and two series of solid solutions containing EuO and CaO, or EuO, CaO, and Eu_2O_3, and have investigated their magnetic and electric properties. The investigation was undertaken because the high magnetization of divalent europium compounds make them of interest in connection with technical applications and the simple crystal structure of EuO makes it a suitable material with which to compare the predictions of theories of ferromagnetism. The magnetization measurements were made with a Domenikali type pendulum magnetometer in fields up to 18 kOe and at temperatures down to 1.6° K. The ferro- and paramagnetic resonance of EuO was investigated at 9 and 35.7 kMHz down to 4.2°K,

Card 1/2

ACC NR: AP6029115

and of the other materials, at room temperature. The dc electrical properties of the materials were investigated and their ultrahigh frequency complex dielectric constants were measured with a resonant cavity technique. Some of the measurement results are presented graphically and others are discussed briefly. The saturation magnetization of EuO, extrapolated to infinite field and 0° K, was found to be 232 Gs cm^3/g. The saturation magnetization of Eu_3O_4 was approximately one-third that of EuO, indicating that the ferromagnetic properties of Eu_3O_4 are due to the divalent Eu ion. The low temperature spontaneous magnetization of EuO was a linear function of $T^{3/2}$, and not of T^2, whereas that of Eu_3O_4 and of the solid solutions containing it was a linear function of T^2, and not of $T^{3/2}$. The aluminates and silicate had a g factor (determined by paramagnetic resonance) of 2, as did EuO, and their spontaneous magnetizations followed the $T^{3/2}$ law. The ultrahigh frequency conductivity of EuO was found to be approximately 5×10^{-3} ohm^{-1} cm^{-1}, which is some six orders of magnitude higher than the dc conductivity. It is suggested that the same ultrahigh frequency dielectric loss mechanism is active in EuO as in the 3d transition metals. Other results than those listed above are presented. The authors thank S.V.Vonsovskiy for his interest and advice. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 001 OTH REF: 006

Card 2/2 egf

ACC NR: AP6037057 SOURCE CODE: UR/0056/66/051/005/1311/1316

AUTHOR: Startsev, V. Ye.; Volkenshteyn, N. V.; Novoselov, N. A.

ORG: Institute of the Physics of Metals, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Galvanomagnetic properties of molybdenum crystals in intense effective fields

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 5, 1966, 1311-1316

TOPIC TAGS: molybdenum, crystal, molybdenum crystal, single crystal, transverse magnetic field, galvanomagnetic effect, Hall effect

ABSTRACT: The anisotropy of galvanomagnetic properties (Hall effect which is even with respect to a magnetic field of transverse voltage and magnetic resistance) of a high purity single crystal is investigated at liquid helium and liquid hydrogen temperatures in transverse magnetic fields up to 25 koe. The results are discussed within the framework of the theory of galvanomagnetic phenomena [I. M. Lifshits,

Card 1/2

ACC NR: AP6037057

M. Ya. Azbel', M. I. Kaganov. ZhZTF, 31, 63, 1965]; [I. M. Lifshits, V. G. Peschanskiy, ZhZTF, 35, 1251, 1958; ZhZTF, 38, 188, 1960]. The authors wish to express their appreciation to G. A. Bolotin, T. D. Zotov and V. N. Kachinskiy for useful suggestions. Orig. art. has: 5 figures. [Authors' abstract] [AM]

SUB CODE: 20, 13/ SUBM DATE: 02Jun66/ ORIG REF: 008/ OTH REF: 006/

Card 2/2

SAMOKHVALOV, A.A.; BAMBUROV, V.G.; VOLKENSHTEYN, N.V.; ZOTOV, T.D.; IVAKIN, A.A.; MOROZOV, Yu.N.; SIMONOVA, M.I.

Magnetic properties of Eu_3O_4. Fiz. met. i metalloved. 20 no.2: 308-309 Ag '65.

Temperature dependence of the saturation magnetization of the ferromagnetic oxide of EuO. Ibid.:309-310 (MIRA 18:9)

1. Institut fiziki metallov AN SSSR.

ALIYEV, N.G.; VOLKENSHTEYN, N.V.

Heat conductivity of Tu, Yb, and Lu at low temperatures.
Zhur.eksp. i teor.fiz. 49 no.5:1450-1452 N '65.
(MIRA 19:1)

1. Institut fiziki metallov AN SSSR.

L 8165-66 EWT(1)/EWT(m)/T/EWP(b)/EWP(w)/EWP(t) IJP(c) JD/JG

ACCESSION NR: AP5019893 UR/0181/65/007/008/2560/2562

66
63
B

AUTHOR: Aliyev, N. G.; Volkenshteyn, N. V. 44 55 44 55

TITLE: Thermal conductivity of holmium and erbium from 2 to 100K

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2560-2562

TOPIC TAGS: holmium 97,55, erbium 97, thermal conduction 8, electric conductivity 21,44,55, ferromagnetic structure, antiferromagnetism

ABSTRACT: Inasmuch as earlier measurements of the thermal conductivity of these substances was measured only near room temperature, the authors have determined the temperature dependence of the thermal conductivity in polycrystalline samples ~ 99.9% pure in the temperature interval 2 -- 100K. The samples were strips measuring 3 x 0.2 x 0.025 cm. Both metals were annealed. The ratios of the electric conductivity at room temperature and at 4.2K were 10.9 and 10.2 for Ho and Er, respectively. The results are shown in Fig. 1 of the Enclosure. The peaks at 20K are related to the transition from the ferromagnetic to the antiferromagnetic state.

The Lorentz numbers for Ho and Er are found to be 9.10 and 9.04 x 10^{-8} v^2/deg^2 respectively. Since these values differ strongly from the theoretical value

Card 1/3

0702 0203

L 8165-66

ACCESSION NR: AP5019893

(2.45 x 10^{-8}), it is suggested that additional heat transfer mechanisms, other than electronic (phonon and magnon thermal conductions) are present in these metals. Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki metallov AN SSSR, Sverdlovsk (Institute of Metal Physics AN SSSR)

SUBMITTED: 05Apr65 ENC: 01 SUB CODE: SS, MM

NR REF SOV: 000 OTHER: 005

Card 2/3

L 8165-66

ACCESSION NR: AP5019893 ENCLOSURE: 01

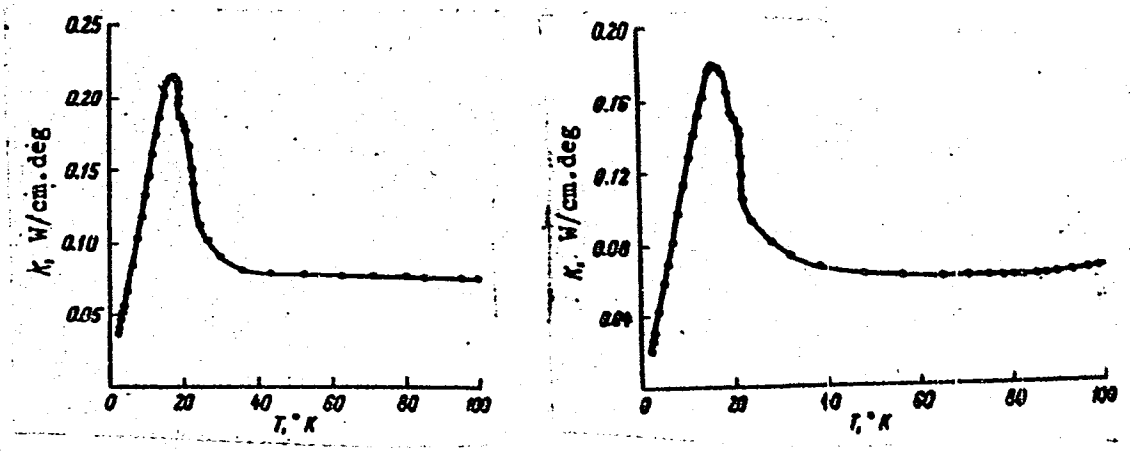


Fig. 1. Temperature dependence of the thermal conductivity of holmium (left) and erbium (right)

jw

Card 3/3

L 5401-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) LJP(c) JD/JG

ACC NR: AP5027396 SOURCE CODE: UR/0181/65/007/011/3213/3217

AUTHOR: Volkenshteyn, N. V.; Fedorov, G. V.

ORG: Institute of Physics of Metals, AN SSSR, Sverdlovsk (Institut fiziki metallov AN SSSR)

TITLE: The Hall effect in neodymium and samarium

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3213-3217

TOPIC TAGS: samarium, neodynium, lanthanide series, Hall effect

ABSTRACT: Data are given from measurements of the Hall effect in neodymium and samarium of ~99.9% purity at temperatures from 2.4 to 350°K. The Hall effect in Nd is positive throughout this temperature interval. The specific Hall emf is a linear function of induction in the Nd specimen above 20.4°K. Curves for $e_H(B)$ have a poorly defined inflection at 20.4°K which shows up more clearly when the temperature is reduced. The $e_H(B)$ curves for 4.2 and 2.4°K show two inflections: one at ~6-7 kilogauss corresponding to the critical range of the magnetic field which destroys antiferromagnetism, and a second at ~18-20 kilogauss due to ferro-

Card 1/2

L 5401-66

ACC NR: AP5027396

magnetic saturation. The Hall emf in Nd is only slightly dependent on temperature in the 100-300°K range. There is a noticeable inflection at ~60-70°K although no change is observed in the magnetic structure of the specimen. As the temperature approaches the Néel point, e_H increases sharply and then diminishes at lower temperatures. However, the maximum e_H is not at the Néel point but at 7-8°K, i. e., at the temperature for interchange of magnetic planes. The Hall effect is negative at high temperatures in Sm, changing sign at ~170°K. Contrary to other lanthanons, the Hall effect in Sm is considerably dependent on temperature in the paramagnetic region. Hall emf in this element is a linear function of induction with only a slight inflection in the $e_H(B)$ curve at 4.2°K. The maximum effective Hall coefficient in Sm is reached at a temperature of ~17°K, i.e., somewhat higher than the Néel point. These results are compared with the field and temperature relationships of the Hall effect in the heavy lanthanons. It is concluded that the field and temperature singularities with respect to the Hall effect in lanthanons is due to the unusual magnetic structure of these elements. Recommendation is made for a study of anisotropy in the Hall effect in lanthanon single crystals. Orig. art. has: 5 figures.

SUB CODE: SS/ SUBM DATE: 03May65/ ORIG REF: 005/ OTH REF: 010

BVK

Card 2/2

VOLKENSHTEYN, N.V.; GALOSHINA, L.V.

Paramagnetic susceptibility of transition metals and a small number of ferromagnetics at low temperatures. Fiz. met. i metalloved. 20 no.2:308-312 S '65.

(MIRA 18:10)

1. Institut fiziki metallov AN SSSR.

ROMANOV, Ye.P.; SMIRNOV, L.V.; SADOVSKIY, V.D.; VOLKENSHTEYN, N.V.

Critical current of a disperse superconducting phase obtained during aging. Fiz. met. i metalloved. 20 no.3:455-458 S '65. (MIRA 18:11)

1. Institut fiziki metallov AN SSSR.

VOLKENSHTEYN, N.V.; GALOSHINA, E.V.

Hall effect in transition metals with a small number of d-electrons. Fiz. met. i metalloved. 20 no.3:475-478 S '65. (MIRA 18:11)

1. Institut fiziki metallov AN SSSR.

L 8086-66 EWT(m)/ETC/EWG(m)/EWP(t)/EWP(b) IJP(c) RDW/JD

ACC NR: AP5027133 SOURCE CODE: UR/0126/65/020/004/0508/0511

AUTHOR: Volkenshteyn, N. V.; Fedorov, G. V.

ORG: Institute for the Physics of Metals AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: The Hall effect in terbium and thulium

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965, 508-511

TOPIC TAGS: Hall effect, terbium thulium, rare earth metal

ABSTRACT: The article is a continuation of previous work by the authors on the Hall effect in rare earth metals. Measurements were made in the temperature interval from 4.2 to 350°K for terbium and 4.2 to 294°K for thulium. The spontaneous, R_s, and conventional effective, R_0^*, Hall coefficients were calculated for terbium in the ferromagnetic region, by methods described in a previous article. In the paramagnetic region, R_s' and the usual Hall coefficient, R_0, were calculated from the relationship $R_0^* = R_0 + R_s'Z$, where $Z = 4\pi C/(T - \Theta + 4\pi C)$, $R_0^* = \rho_\perp/B$; this was done graphically in the region where this relationship gives a straight line. R_s' and R_0 for thulium in the paramagnetic region were calculated in the same way. The terbium had a purity of 99.9% and a ratio $\rho_{300°K}/\rho_{4.2°K} = 18.8$. The experimental

Card 1/2 UDC: 539.292:538.63

L 8086-66

ACC NR: AP5027133

data is shown graphically. In the paramagnetic region, R_s' and R_o are negative and constant in magnitude up to approximately 275°K. At lower temperatures and near the paramagnetic-antiferromagnetic transition point, R_s' decreases sharply, while R_o increases in absolute value. In the ferromagnetic region, R_s changes sign twice; in the same region, R_o^* changes sign once, but in absolute value is equal to R_s. The thulium had a purity of 99.9% and a ratio $\rho_{293°K}/\rho_{4.2°K} = 7.4$. In the paramagnetic region, e_x for thulium depends linearly on the induction in the sample. At lower temperatures and near the paramagnetic - antiferromagnetic transition point, R_o^* rises sharply. Below this temperature the curves of the function $e_x^o(B)$ take on the form characteristic of ferromagnetics but, at induction values of about 20 kilogauses, there is a break in the curves and a more rapid increase in $e_x(B)$, particularly marked at 20.4 and 4.2°K. This break corresponds to the sharp rise in the magnetization of thulium in fields of about 16 to 18 kilogauss at temperatures below approximately 50°K. Graphic calculation gives for thulium, in the paramagnetic region, a value of $R_s = -2.35 \times 10^{-12}$ ohm-cm/gauss, which corresponds to 0.8 el/atom. These data agree well with earlier published values. Orig. art. has: 5 figures.

SUB CODE: MM,EM/ SUBM DATE: 26Oct64/ ORIG REF: 006/ OTH REF: 011

nw

Card 2/2

ALIYEV, N.G.; VOLKENSHTEYN, N.V.

Thermal conductivity of holmium and erbium between 2° and 100°K.
Fiz. tver. tela 7 no.8:2560-2562 Ag '65. (MIRA 18:9)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

VOLKENSHTEYN, N.V.; GALOSHINA, E.V.

Hall effect and the paramagnetic susceptibility of hafnium. Fiz.met. i metalloved. 18 no.5:784-786 N '64.
(MIRA 18:4)

1. Institut fiziki metallov AN SSSR.

TSIOVKIN, Yu.N.; VOLKENSHTEYN, N.V.

Heat capacity of 0.5% solutions of Cr, Mn, Fe, Ni in platinum.
Fiz. tver. tela 7 no.2:543-545 F '65.
(MIRA 18:8)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

L 1717-66 EPF(c)/EWT(m)/EWP(b)/T/EWF(w)/EWP(t) IJP(c) JD/JG

ACCESSION NR: AP5021944 UR/0126/65/020/002/0308/0309 50 49 B
539.292:538.114

AUTHOR: Samokhvalov, A. A.; Bamburov, V. G.; Volkenshteyn, N. V.; Zotov, T. D.; Ivakin, A. A.; Morozov, Yu. N.; Simonova, M. I.

TITLE: Magnetic properties of Eu_3O_4

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 2, 1965, 308-309

TOPIC TAGS: magnetization, saturation magnetization, temperature dependence, Curie temperature, Weiss-Forrer method, magnetic moment, europium compound

ABSTRACT: To elucidate the magnetic properties of Eu_3O_4 the authors measured the temperature dependence of magnetization in the presence of different magnetizing fields at temperatures of upward of 1.65°K and thus determined for the first time the principal magnetic characteristics of Eu_3O_4: saturation magnetization σ_s and Curie temperature T_C. The measurements were performed with the aid of a pendulum magnetometer. The external magnetic field in the measurements reached 12,300 oe, which sufficed to bring the specimen to magnetic saturation. Through extrapolation from the set of curves $\sigma(H, T)$ to $H = \infty$ the saturation magnetization σ_s was found

Card 1/3

L 1717-66

ACCESSION NR: AP5021944

to be 89.4 gauss·cm^3/g. From the same curves, using the Weiss-Forrer method of lines of equal magnetization, the authors found the Curie temperature, which proved to be 7.8°K. With its relatively large magnetic moment and low Curie point, this oxide appears a suitable means of verifying the spin-wave theory. Verification of this theory showed that the linear T^2-dependence of saturation magnetization exists throughout a broad temperature range (from 1.65 to 4.6°K) (0.6 T_C). The same dependence is also observed for a number of uncompensated antiferromagnetics and for certain rare earths. Orig. art. has: 1 figure.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Metal Physics, AN SSSR)

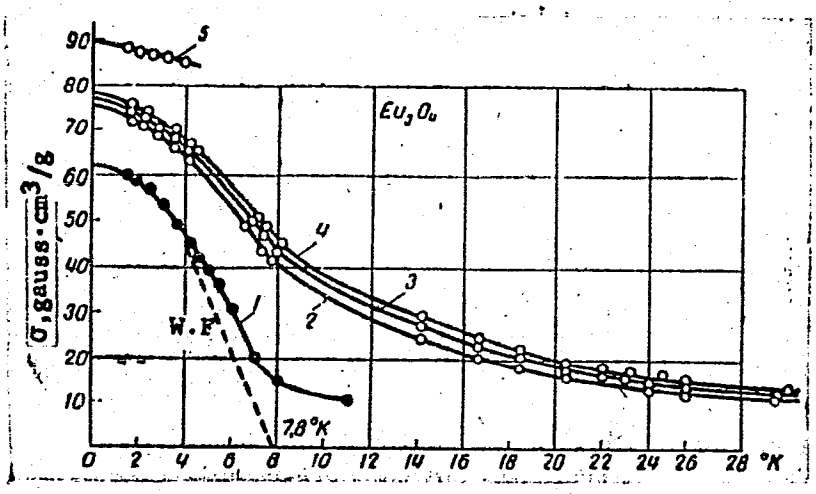
SUBMITTED: 20Oct64 ENCL: 01 SUB CODE: IC, EM

NO REF SOV: 000 OTHER: 004

Card 2/3

L 1717-66

ACCESSION NR: AP5021944 ENCLOSURE: 01



Temperature dependence of Eu_3O_4 in the presence of different fields:

1 - H = 0; 2 - H = 15,200 oe; 3 - H = 17,300 oe; 4 - H = 18,400 oe; 5 - H = ∞; broken line denotes the magnetization curve plotted by the Weiss-Forrer method

Card 3/3

TSIOVKIN, Yu.N.; VOLKENSHTEYN, N.V.

Electroconductivity of diluted solutions of transition metals in platinum. Zhur. eksp. i teor. fiz. 48 no.3:796-799 Mr '65. (MIRA 18:6)

1. Institut fiziki metallov AN SSSR.

L 63956-65 EWT(l)/EWT(m)/EWP(t)/EWP(b)/ETC(m) IJP(c) JD/JG

ACCESSION NR: AP5019211 UR/0056/65/049/001/0024/0026

AUTHOR: Aliyev, N. G.; Volkenshteyn, N. V.

TITLE: Thermal conductivity of gadolinium and terbium at low temperatures

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 1, 1965, 24-26

TOPIC TAGS: gadolinium, terbium, gadolinium thermal conductivity, terbium thermal conductivity, gadolinium resistivity, terbium resistivity, thermal conductivity, resistivity

ABSTRACT: Thermal conductivity of gadolinium and terbium at 2—100K has been measured. It was found that the thermal conductivity of gadolinium increases with increasing temperature, reaches a maximum at 16—20K, and then drops slowly. The thermal conductivity of terbium first decreases with increasing temperature, drops to a minimum at 5K, then rises again to a maximum at 16—20K, and then slowly decreases. Electric resistivity at 4.2K was 3.00 μohm·cm for Gd and 4.13—7.90 μohm·cm for Tb. From the values of electric and thermal

Card 1/2

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860520001-8"

L 63956-65

ACCESSION NR: AP5019211

conductivity, the values of Lorentz numbers were calculated. These values greatly exceeded the theoretical, which indicates that besides the electron thermal conductivity, there are some other mechanisms which contribute to the total thermal conductivity of these rare-earth metals. Anomalies in the thermal and electric conductivity of Tb observed at temperatures below 5K are explained by the presence of impurities. Orig. art. has: 3 figures. [ND]

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of the Physics of Metals, Academy of Sciences, SSSR); Institut fiziki Akademii nauk Azerbaydzhanskoy SSR (Institute of Physics, Academy of Sciences, Azerbaydzhan SSR)

SUBMITTED: 14Jan65 ENCL: 00 SUB CODE: MM, TD

NO REF SOV: 002 OTHER: 004 ATD PRESS: 4071

Card 2/2

TSIOVKIN, Yu.N.; VOLKENSHTEYN, N.V.

Heat capacity of a 0.5% solution of Gd in platinum. Fiz. met. i metalloved. 19 no.1:133-135 Ja '65. (MIRA 18:4)

1. Institut fiziki metallov AN SSSR.

L 47373-65 EPF(n)-2/EWT(m)/EWP(b)/EWP(t) Pu-4/Pad IJP(c) WW/JD/HW/JG

ACCESSION NR: AP5008734 S/0056/65/048/003/0796/0799

AUTHORS: Tsiovkin, Yu. N.; Volkenshteyn, N. V.

TITLE: Electric conductivity of dilute solutions of transition metals in platinum

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 3, 1965, 796-799

TOPIC TAGS: transition metal, platinum, solid solution, electric conductivity, residual resistance, localized state theory

ABSTRACT: The authors measured the temperature dependence of the resistance of solutions (0.5 at.%) of Sc, Ti, V, Cr, Mn, Fe, Co, Y, Zr, Nb, and Mo in platinum in the temperature range 273--373K. The investigated samples were in the form of strips 0.08 mm thick, 2--3 mm wide, and 15--30 mm long. The quantity compared was the 'residual" resistance connected with the scattering of the conduction electrons

L 47373-65
ACCESSION NR: AP5008734

by the impurity centers, defined as the difference between the ratios of the solution and matrix resistances at zero and at 373K. Such a ratio is independent of the geometry of the sample. The results show that the residual resistance of the metals solutions varies nonmonotonically, in analogy with results previously obtained by J. O. Linde for copper (Ann. Physik v. 15, 219, 1932). The maximum residual resistance for solutions of 3d-metals in platinum is observed with the impurity is Ti, while for the 4d metals the maximum corresponds to the Zr impurity. The results are discussed on the basis of the presently existing theory of localized states. Orig. art. has: 2 figures and 1 formula.

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

SUBMITTED: 29Jul64 ENCL: 00 SUB CODE: SS, MM

NR REF SOV: 002 OTHER: 010

Card 2/2 CC

ACCESSION NR: AP4023404 S/0048/64/028/003/0540/0544

AUTHOR: Volkenshteyn, N.V.; Fedorov, G.V.; Startsev, V.Ye.

TITLE: Effect of magnetic order on the electric and galvanomagnetic properties of the rare earth metals /Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May to 5 June 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.3, 1964, 540-544

TOPIC TAGS: rare earths, resistivity, Hall effect, rare earth resistivity, rare earth Hall effect

ABSTRACT: The authors point out that it would be desirable to measure the electrical conductivity and the Hall coefficient on the same pure samples of all the rare earths over a wide temperature range (down to liquid helium temperatures) under uniform conditions, and they assert that they have done this. /Abstracter's note: No experimental details are given, nor any description of the techniques employed./ The interest in measurements of this sort arises from the fact that, although the rare earths all have the same valence electron structure, the electric and galvanomagnetic properties vary greatly from one to another. Some of the results of the

Card 1/3

ACCESSION NR: AP4023404

measurements are discussed in the present paper. With respect to temperature dependence of resistivity, the rare earths divide themselves into two groups. In La,Ce, Pr,Nd and Yb there is no region in which the resistivity is a linear function of temperature. The curve for Nd is given; it is smooth and concave to the temperature axis. In Sm,Gd,Tb,Dy,Ho,Er and Tu the resistivity depends linearly on temperature throughout the paramagnetic region, and the curve has a sharp bend at the paramagnetic-antiferromagnetic transition point. The behavior of Eu (curve given) is very peculiar: there is no linear region (up to 300°K), and the peculiarity at the transition point is very marked, there being even a small region in which the resistivity decreases with increasing temperature. This behavior is tentatively ascribed to changes in the conditions of scattering and in the energy spectrum of the current carriers. The Hall emf in all the rare earths is proportional to the induction throughout the paramagnetic and antiferromagnetic regions. In some of the metals the current carriers are holes, and in others they are electrons. The number of carriers per atom varies widely, from 0.17 (holes) in Eu to 3.5 (electrons) in Lu. The behavior of the Hall emf in the ferromagnetic region is very complex. Orig.art.has: 7 figures and 1 table.

Card 2/3

ACCESSION NR: AP4023404

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Instituto of Physics of Metals, Academy of Sciences, SSSR)

SUBMITTED: 00 DATE ACQ: 10Apr64 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 006

Card 3/3

ACCESSION NR: AP4019206 S/0056/64/046/002/0457/0459

AUTHORS: Volkenshteyn, N. V.; Startsev, V. Ye.

TITLE: Some features of the temperature dependence of electrical resistance of gadolinium and ytterbium at low temperatures

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 457-459

TOPIC TAGS: gadolinium, ytterbium, electric resistance, low temperature electric resistance, electric resistance temperature dependence, electron electron interaction, conduction electron scattering, spin wave scattering, phonon scattering

ABSTRACT: In order to find how the special electron structure of rare earth metals affects the nature of the temperature dependence of their electric resistivity, the resistance of gadolinium in the magnetically ordered state was measured and compared with that of ytterbium, which did not undergo a magnetic-ordering transition over

Card 1/2

ACCESSION NR: AP4019206

the entire investigated temperature range (1.5--20.3K). The empirical formula fitting the experimental curve is

$$R(T)/R(0°C) = R_0/R(0°C) + aT + bT^2 + cT^5$$

with different values of the constants for the two metals in two temperature ranges (1.5--4.2 and 12--20.3K). The terms proportional to the different powers of the temperature correspond to conduction-electron scattering by electrons, phonons, and spin waves. It is concluded that at helium temperatures the conduction electrons are scattered in ferromagnetic gadolinium by spin waves, this type of scattering being absent in nonferromagnetic ytterbium at the same temperature. "The authors are grateful to S. V. Vonsovskiy for his constant interest in this work and to Ye. A. Turov for useful discussions. Orig. art. has: 2 figures and 1 formula.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics

Card 2/5 2

SEMENENKO, Ye.Ye.; SUDOVTSOV, A.I.; VOLKENSHTEYN, N.V.

Temperature variation of the electric resistance of cobalt in the region 1.3° to 4.2°K. Zhur. eksp. i teor. fiz. 45 no.5: 1387-1388 N '63. (MIRA 17:1)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

BORISOV, B.S.; VOLKENSHTEYN, N.V.; ZYRYANOV, P.S.; TALUTS, G.G.

Volt-ampere characteristics of bismuth at low temperatures in a magnetic field. Fiz. met. i metalloved. 16 no.4:624-626 O '63. (MIRA 16:12)

1. Institut fiziki metallov AN SSSR.

VOLKENSHTEYN, N.V.; KACHINSKIY, V.N.; STAROSTINA, L.S.

Fermi surface of tungsten. Zhur. eksp. i teor. fiz. 45 (MIRA 16:9)
no.2:43-45 Ag '63.

1. Institut kristallografii AN SSSR i Institut fiziki metallov AN SSSR.
(Fermi surfaces) (Tungsten crystals--Galvanomagnetic properties)

VOLKENSHTEYN, N.V.; TURCHINSKAYA, M.I.

Unidirectional anisotropy. Izv. AN SSSR. Ser. fiz. 27 no.12: 1505-1509 D '63. (MIRA 17:1)

1. Institut fiziki metallov AN SSSR.

VOLKENSHTEYN, N.V.; STAROSTINA, L.S.; STARTSEV, V.Ye.; ROMANOV, Ye.P.

Study of the temperature relationship of the electric conductivity of single crystals of molybdenum and tungsten in the low temperature range. Fiz. met. i metalloved. 18 no.6:888-894 D '64. (MIRA 18:3)

1. Institut kristallografii AN SSSR i Institut fiziki metallov AN SSSR.

TSIOVKIN, Yu.N.; VOLKENSHTEYN, N.V.

Magnetic moment of Ni, Co, Mn, Fe, Cr, Cd, dissolved in platinum. Fiz. met. i metalloved. 19 no.3:367-370 Mr '65. (MIRA 18:4)

1. Institut fiziki metallov AN SSSR.

L 53961-65 EWT(d)/EWT(l)/EWT(m)/EPF(c)/EEC(k)-2/EPF(n)-2/EPR/T/EWP(t)/EWG(c)/EWP(z)/EWP(b) Pr-4/Pad/Pu-4 IJP(c) JD/

ACCESSION NR: AP5011758 UR/0126/65/019/004/0633/0634
539.292.538.63

AUTHOR: Volkenshteyn, N. V.; Fedorov, G. V.; Grigorova, I. K.

TITLE: Spontaneous Hall coefficient of pure Ni at low temperatures

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 4, 1965, 633-634

TOPIC TAGS: Hall coefficient, ferromagnetic material, nickel, low temperature phenomenon

ABSTRACT: The Hall coefficient R_s of ferromagnetics was studied as a function of temperature in the region below 124°K. The temperature relationship for R_s in ferromagnetics at low temperatures was first calculated by Voloshinskiy [A. N. Voloshinskiy, *FMM*, 1964, 18, 4, 492] taking account of spin wave scattering of conduction electrons and spin-orbit interaction of the "spin magnetic electron-conduction electron orbit" type. His calculations showed that the spontaneous Hall efficient in the temperature region of the order of 0.1 θ_K varies with temperature according to the law $R_s \sim (T \log T)^2$. The authors of the present article measured

Card 1/4

the Hall effect in pure nickel ($\rho_{293}/\rho_{4.2} = 280$) in the 57.5-124°K range. The spontaneous Hall coefficient is found from the formula $eX(B) = R_0^* B + R_s 4\pi M(HT)$.

where $eX(B) = Ed/I$ is the Hall emf per unit of current density; B is the induction in the specimen; $M(H, T)$ is the magnetization intensity in a given magnetic field at a given temperature; R_0^* is the effective normal Hall coefficient. The linear part of the curve $eX(B)$ above saturation induction, obtained by averaging 3-4 series of measurements at a given temperature, was approximated by an equation for a straight line using the method of least squares. The value of $eX(0)$ was found from the straight line equation and the spontaneous Hall coefficient R_s was calculated from the formula $R_s = e_x(0)/4\pi M_s(0, T)$, where $M_s(0, T)$ is the spontaneous magnetization at the measurement temperature. The curve for R_s as a function of $(T \log T)^2$ (see fig. 1 of the Enclosure) was plotted from these data. It is evident from the curve that this relationship in the 57.5-95°K range (ten points) is nearly linear. The same relationship for R_s in nickel is given by Huguenin and Rivier (R. Huguenin, D. Rivier, *Helv. phys. acta*, 1960, 23, 9, 973) but for only four points. This work confirms Voloshinskiy's calculations in the 50-100°K range. Orig. art. has: 1 figure and 2 formulas.

L 53961-65
ACCESSION NR: AP5011758

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals AN SSSR)

SUBMITTED: 13Jul64 ENCL: 01 SUB CODE: EM

NO REF SOV: 003 OTHER: 002

Card 3/4

L 53961-65
ACCESSION NR: AP5011758

ENCLOSURE: 01

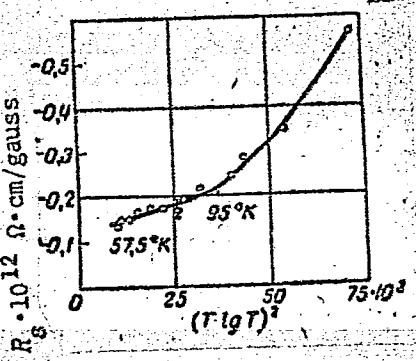
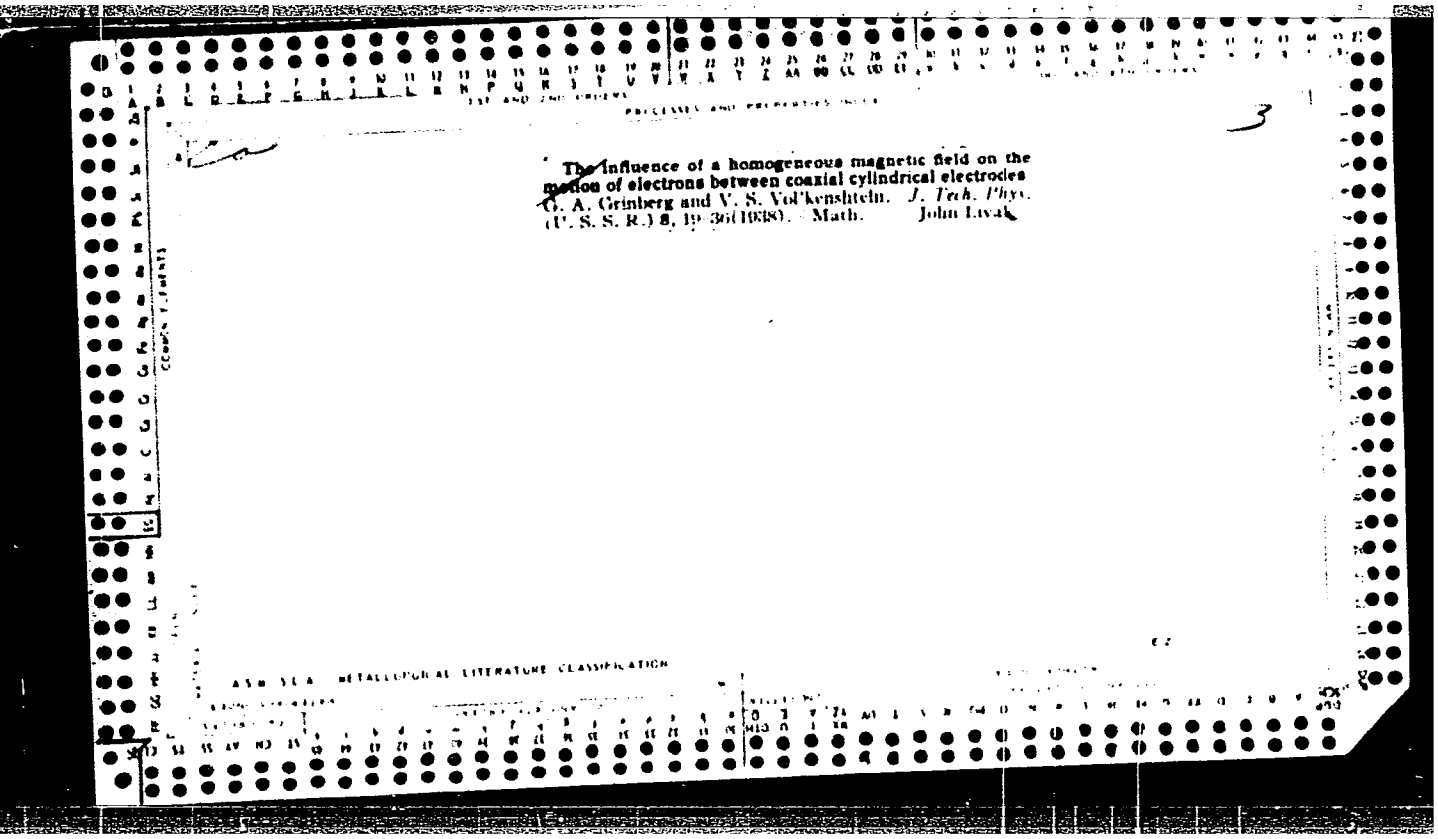


Fig. 1.

Card 4/4



The influence of a homogeneous magnetic field on the motion of electrons between coaxial cylindrical electrodes. G. A. Grinberg and V. S. Vol'kenshtein. *J. Tech. Phys.* (U. S. S. R.) **8**, 19–36 (1938). Math. John Livak

VOL'KENSHTEIN, V. S.

Collection of exercises and problems in physics; mechanics, gas, liquids, solids Leningrad Izd. Leningradskogo gos. univ,1940. 201 p. (54-48361)

QC32.V6

VOLKENSHTEYN, V.S.

USSR/Physics - Heat Conductivity Jun 52

Rapid Method for Determining Thermal Characteristics of Poor Heat Conductors," V. S. Volkenshteyn, Chair of Phys, Leningrad Technol Inst imeni Lensovet

"Zhur Tekh Fiz" Vol XXII, No 6, pp 1043-1049

Method for detg heat cond of materials requires knowledge of thermal characteristics of the medium. Author presents method revealing all thermal characteristics of materials in 1 - 3 minutes and describes used equipment. Perfection of these methods is under way. Received 10 Feb 52.

219T92

USSR/Physics - Thermodynamics

FD-592

Card 1/1 : Pub 153-4/22

Author : Volkenshteyn, V. S.

Title : Method for determining the thermal characteristics of materials. II

Periodical : Zhur. tekh. fiz., 24, 200-204, Feb 1954

Abstract : Described in his previous work ("Rapid method for determining the thermal characteristics of poor heat conductors," Zhur. tekn. fiz., 22, No 6, 1952) a method requiring a certain time interval. Generalizes previous method to measure thin layers and good heat conductors. One quoted reference.

Institution :

Submitted : December 11, 1952

VOL'KENSHTEYN, V.S.

USSR/Atomic and Molecular Physics - Heat, D-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34391

Author: Vol'kenshteyn, V. S.

Institution: None

Title: Measurement of Heat Characteristics of Solid and Liquid Bodies Using the Method of 2 Temperature-Time Points

Original Periodical: Tr. Leningr. tekhnolog. in-ta imeni Lensoveta, 1955, 32, 32-41

Abstract: A method is proposed for measuring the heat characteristics of solid and liquid bodies having a wide range of heat conductivity and temperature conductivity. All the thermal characteristics are found simultaneously in a single experiment and the measurements, as well as the processing of the experimental results, take little time. The method proposed consists of placing a plane-parallel plate A of thickness R of the material under investigation (or a plane layer of liquid) between a heater, the temperature t_h of which remains constant during the entire time of the experiment, and a standard medium B, the temperature characteristics of which are known. The initial temperature of both media A and B is the same. If one of the junctions of a thermocouple is located in medium B sufficiently far away from the heater, and

USSR/Atomic and Molecular Physics - Heat, D-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34391

Author: Vol'kenshteyn, V. S.

Institution: None

Title: Measurement of Heat Characteristics of Solid and Liquid Bodies Using the Method of 2 Temperature-Time Points

Original Periodical: Tr. Leningr. tekhnolog. in-ta imeni Lensoveta, 1955, 32, 32-41

Abstract: the second junction is placed at the boundary between media A and B, it is possible to measure the increment in temperature t of a specimen in the layer AB as a function of the time τ of its heating. The measurement of thermal characteristics of the specimen reduces to obtaining 2 instants of time τ_1 and τ_2, corresponding to the place of contact between the specimen and standard reaching the 2 temperatures $t_1 = k_1 t_h$ and $t_2 = k_2 t_h$. After t_1 and t_2 are found, the quantities a_A, λ_A and the specific heat of the specimen C_A can be calculated from the following equations: $a_A = R^2/4Z_2^2\tau_2$, $\lambda_A = b \epsilon a_A^{1/2}$, and $C_A = \frac{\lambda_A}{a_A \delta_A}$, where $b = \lambda a^{-1/2}$, λ and a are respectively the coefficient of heat conductivity and of temperature conductivity

USSR/Atomic and Molecular Physics - Heat, D-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34391

Author: Vol'kenshteyn, V. S.

Institution: None

Title: Measurement of Heat Characteristics of Solid and Liquid Bodies Using the Method of 2 Temperature-Time Points

Original Periodical: Tr. Leningr. tekhnolog. in-ta imeni Lensoveta, 1955, 32, 32-41

Abstract: of the standard medium, and the quantities Z_2 and ξ are taken from tables or from graphs, obtained by solving the heat conduction equation, giving the dependence of Z_2 and ξ on the ratio τ_2/τ_1 obtained as a result of the experiment at definite values of k_1 and k_2. A check on the method, carried out with rubber and distilled water, has shown good agreement with the results obtained by other methods.

VOL'KENSHTEYN, V. S.

USSR/Atomic and Molecular Physics - Heat, D-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34392

Author: Vol'kenshteyn, V. S., Gorfman, A. I.

Institution: None

Title: Choice of Optimum Conditions for Measuring Thermal Characteristics Using 2 Temperature-Time Points

Original Periodical: Tr. Leningrad. tekhnolog. in-ta imeni Lensoveta, 1955, 32, 42-45

Abstract: An analysis is made of the accuracy of the method of measuring the thermal characteristics, described in the preceding work of the author (see the preceding abstract). The optimum conditions for the measurement of the coefficient of heat conductivity and of other thermal characteristics are determined.

1 of 1

VOL'KENSHTEYN, Valentina Sergeyevna; ORLOVA, L.I., red.; POL'SKAYA, P.G., tekhn. red.

[Collection of problems in the general physics course] Sbornik zadach po obshchemu kursu fiziki. Moskva, Gos. izd-vo fiziko-matematicheskoi lit-ry, 1958. 333 p. (MIRA 11:10)
(Physics--Problems, exercises, etc.)

VOL'KENSHTEYN, V. S.

"Temperature field for a system of four bodies which are in mutual thermal contact."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Leningrad Technological Inst.

VOL'KENSHTEYN, V.S.; MEDVEDEV, N.N.

Determining the coefficients of diffusivity and thermal conductivity of solid and fluid bodies. Inzh.-fiz.zhur. no.10: 26-32 O '59. (MIRA 13:2)

1. Tekhnologicheskiy institut im.Lensoveta, Leningrad.
(Heat--Transmission)

VOL'KENSHTEYN, V. S.

"QUICK Method of Measurements of Thermal Properties of Materials."

Report submitted for the Conference on Heat and Mass Transfer Minsk, BSSR, June, 1961

VOL'KENSHTEYN, V. S.

A fast method for measuring the thermophysical characteristics of materials. Teplo- i massoper. 1:65-69 '62. (MIRA 16:1)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta.

(Materials—Thermal properties)
(Materials—Testing)

VOL'KENSHTEYN, V.S.; GAL'BRAYKH, I.Ye.; GEL'MAN, A.A.; MEDVEDEV, N.N.; NIKIFOROVA, T.F.; RAVDEL', A.A.

Development and application of the method of express-control of moisture in crude rubber mixtures under production conditions. Kauch.i rez. 21 no.5:55-57 My '62. (MIRA 15:5)

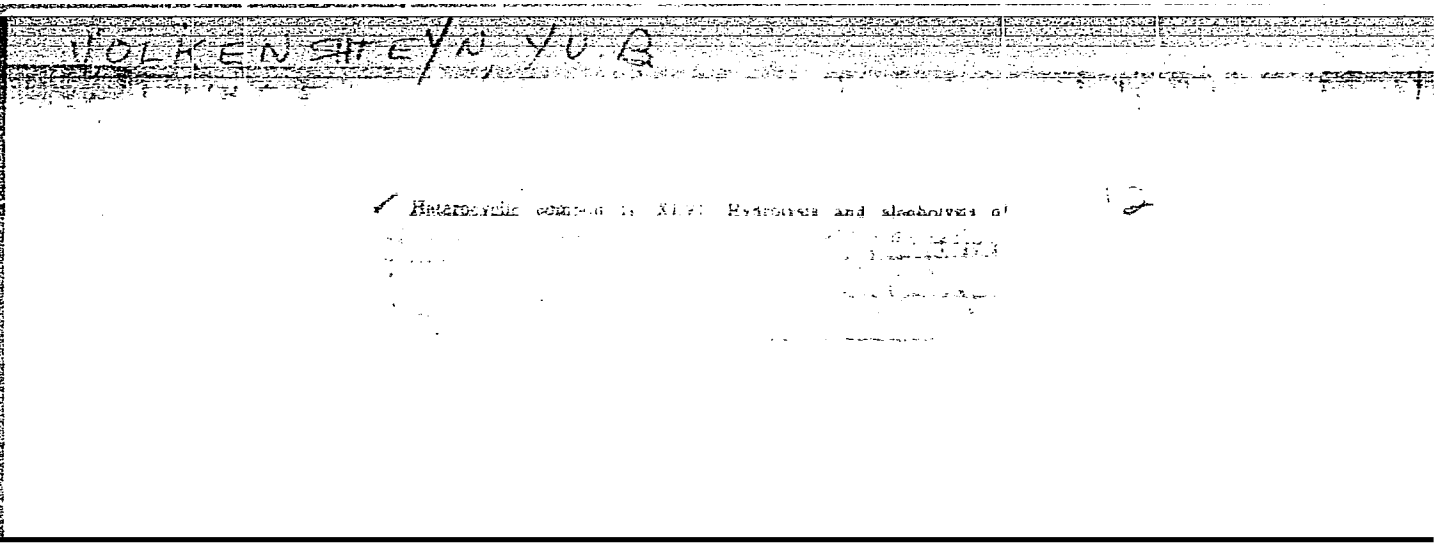
1. Zavod "Krasnyy treugol'nik" i Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Rubber--Moisture)

VOL'KENSHTEYN, Valentina Sergeyevna; RAYSKAYA, N.A., red.; CHEBOTAREVA, A.V., red.

[Collection of problems for a general physics course] Sbornik zadach po obshchemu kursu fiziki. Moskva, Nauka, 1965. 464 p. (MIRA 18:11)

VOL'KENSHTEYN, Valentina Sergeyevna; ORLOVA, L.I., red.; LUK'YANOV, A.A., tekhn. red.

[Problems for the general physics course]Sbornik zadach po obshchemu kursu fiziki. Izd.3., perer. i dop. Moskva, Fizmatgiz, 1962. 455 p. (MIRA 16:3)
(Physics--Problems, exercises, etc.)



III

III

IV

V

quent prep. in hydrochloric acid of the [illegible] ate, phenylacetate, cinnamic ester, β-phenylpropionate, phenoxyacetate and β-nitrobenzoate. The hydrochloride of β-nitrobenzoate by hydrogenation with skeleton Ni catalyst converted to the monochloride of β-aminobenzoate and the cinnamic ester into β-phenylpropionate. In order to establish the anaesthetic and toxic power of the prep., a series of [illegible] of IV [illegible] and by reaction of [illegible] VI [illegible] in the form of hydrochlorides. During the synthesis of benzoates of V, difficulties were encountered because of the unusually easy