36603
S/126/62/013/003/019/023
E039/E135

AUTHOR: Chechernikov, V.I.

TITLE: The magnetic susceptibility of the rare-earth metals
            Ho, Dy, Tb and Gd

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.3, 1962,
            458-460

TEXT: The study of the magnetic properties of the rare
earth metals is of interest inasmuch as the magnetic effects of
the electrons in the 4f-shell are well screened by external
electrons from the influence of other atoms. Previous
investigations have been limited mainly to the low temperature
region. This paper describes the results of an investigation of
the temperature dependence of the magnetic susceptibility of the
polycrystalline metals Ho, Dy, Tb and Gd in the temperature
range 300-1500 $^{\circ}$K. The metals were 99.5% pure and their magnetic
susceptibility was measured in an apparatus based on the
Faraday—Sixsmith method. The apparatus was calibrated by means
of electrolytic Ni and a Ni-Al alloy (5 wt.% Al) for which the

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The magnetic susceptibility of ...   S/126/62/013/003/019/023
E039/E135

data are well known. It is shown that the metal Ho follows the
Curie-Weiss law over the whole temperature range investigated.
This agrees with the results of other authors. From this are
obtained values for the Curie temperature (88 °K) and the
effective magnetic moment ($P_p = 10.6$ μ_B). In the case of Dy
there is a slight deviation from the Curie-Weiss law at
temperatures over 900 °C. Its Curie temperature is 148 °K.
Gd, which is ferromagnetic, is studied near to its Curie
temperature (17 °C) and it is found that there is no transition
region at the ferromagnetic transformation point.   Gd obeys the
Curie-Weiss law for temperatures between 300 and 650 °K. Of the
metals investigated only Ho followed the Curie-Weiss law over
the whole temperature range 300-1300 °K; the others deviated at
high temperatures. This may be qualitatively explained by the
theory of Van-Fleck which suggests that the magnetic
susceptibility has two components, one of which is temperature
dependent and the other, a high frequency term, which is not.
There are 3 figures.

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The magnetic susceptibility of ...   S/126/62/013/003/019/023
                                       E039/E135

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni
             M.V. Lomonosova
             (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: July 8, 1961

Card 3/3

CHECHERNIKOV, V.I.

Investigation of nickel-cadmium ferrites in the transition region. Vest.Mosk.un.Ser.3.Fiz.,astron. 17 no.2:20-23 Mr-Ap '62.   (MIRA 16:2)

1. Kafedra magnetizma Moskovskogo universiteta.
            (Ferrates—Magnetic properties)

37099/056/62/042/004/005/037
B102/B104

AUTHOR: Chechernikov, V. I.

TITLE: Antiferromagnetism of iron-nickel alloys

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 4, 1962, 956-958

TEXT: The temperature dependence of the paramagnetic susceptibility χ of Fe-Ni alloys was measured at $T > \theta_f$ (θ_f - ferromagnetic Curie point) with specimens containing 4.7, 9.6, 14.4, 19.3, 27, 29, 30.9, 34.9, and 38.8 at% Ni. Special attention was paid to the γ-phase of these alloys. The susceptibility measurements were made in the range 300-1500°K by the Faraday-Sucksmith method in an argon atmosphere. The curves $1/\chi = f(T)$ of the specimens with 27, 29, and 30.9% show a step which is indicative of an $\alpha \rightleftarrows \gamma$ transition. The 27% alloy has the highest step (at 820°K). χ of the 34.9 and 38.8% alloys satisfies the Curie-Weiß law in the whole temperature range (no phase transition). Of the lower alloyed specimens only the γ-phase was investigated; $1/\chi = f(T)$ is a straight line. Also the magnetic moments P_p and the paramagnetic Curie points θ_p of the

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Antiferromagnetism of iron-nickel ... S/056/62/042/004/005/037
B102/B104

γ-phases were measured, depending on the Ni-content. P_p of alloys with more than 50% Ni decreases linearly with increasing Ni-content. θ_p is a non-linear function of the Ni-content. It has a broad maximum at about 60% Ni; in the range 30-40% it decreases rapidly, and at 20% Ni it changes its sign, i.e. the γ-phase of the alloys with less than 20% Ni and also the phase of iron have a negative paramagnetic Curie point. This is due to the fact that, because of the negative exchange interaction between the iron atoms in the γ-phase, the number of antiparallel spins increases. By extrapolating to pure iron, P_p = 7.4 and θ_p = -3000°K is obtained.

This agrees with the Sucksmith-Pearce results (Proc. Roy. Soc. A167, 189, 1938). The result that, in the γ-phase at < 20% Ni, negative exchange interaction occurs is in agreement with the theory of Ye. I. Kondorskiy. There are 3 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: November 4, 1961

Card 2/2

39480

S/056/62/043/002/010/053
B102/B104

$24.2L00$

AUTHORS: Chechernikov, V. I., Afonina, L. N.

TITLE: Antiferromagnetic properties of the gamma phase of Fe-Pt and
             Fe-Co alloys

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
             no. 2(8), 1962, 429-431

TEXT: The temperature dependence $\chi(T)$ of the paramagnetic susceptibility
of Fe-Pt, and Fe-Co containing 3.08, 4.80, 6.66, 8.71, 10.90, 13.30, 22.70,
and 30.00 at% Pt, and 5.1, 16.2, 25.0, and 34.9 at% Co was investigated to
prove the presence of a "latent" antiferromagnetism in the gamma phases
assumed by Ye. I. Kondorskiy and V. L. Sedov (ZhETF, 35, 1579, 1958) in
Fe-Ni alloys. $\chi(T)$ of each of the alloys was measured in the range
850-1500°K where both groups of alloys show a linear course of $1/\chi = f(T)$.
The paramagnetic Curie point (θ_p) and the effective magnetic moment P_p were
also measured in each case. In alloys containing Pt < 14 at% and Co < 16 at%,
θ_p is less than 0. P_p drops slightly with increasing percentage of Pt or

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Antiferromagnetic properties of the...   S/056/62/043/002/010/053
B102/B104

Co. For e.g. Fe+3.08 at% Pt, P_p=6.26 μ_B and Θ_p= -1500°K.[†] There are

3 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: March 14, 1962

[†] ABSTRACTED PROPERLY, SHOULD READ + 1500 °K

Card 2/2

CHECHERNIKOV, Viktor Ivanovich; KONDORSKIY, Ye.I., prof., red.;
DOZORTSEVA, Ch.I., red.; CHISTYAKOVA, K.S., tekhn.red.

[Magnetic measurements] Magnitnye izmereniia. Pod red.
E.I.Kondorskogo. Moskva, Izd-vo Mosk. univ., 1963. 284 p.
(MIRA 17:3)

45162

S/188/63/000/001/003/014
B104/B102

24.2200

AUTHORS: Chechernikov, V. I., Lyubutin, I. S.

TITLE: The temperature dependence of the magnetic susceptibility and
             of resonance absorption in Cr_2O_3, MnO and NiO

PERIODICAL: Moscow. Universitet. Vestnik. Seriya III. Fizika,
             astronomiya, no. 1, 1963, 20 - 23

TEXT: A study was made of the temperature dependence of the magnetic sus-
ceptibility (100 - 1300°K) and of the resonance absorption (3-cm range) in
the polycrystalline antiferromagnetic compounds Cr_2O_3, MnO, and NiO. The
samples made available by R. Z. Levitin were of 1 mm diameter and 3 mm
high. Measurements were made in an argon atmosphere. The magnetic sus-
ceptibility of Cr_2O_3 has a sharp maximum at 314°K; that of NiO a broad
maximum at 640 °K. The lower the temperature lies under the antiferro-
magnetic Curie point (Θ_{af} - 314 °K) the stronger is the dependence of the
susceptibility of Cr_2O_3 on the magnetic field. For $T > \Theta_{af}$ the suscepti-
bility decreases with increasing temperature; this dependence is less

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The temperature dependence of the ...

pronounced in the ferromagnetic region. The susceptibility of NiO decreases with increasing field strength. This is explained as due to the existence of ferromagnetic impurities. The susceptibility is independent of the field strength only above 1040 $^{\circ}$K. It is assumed that Θ_{af} of Cr_2O_3 is independent of the magnetic field strength and that Θ_{af} of NiO becomes lower with increasing field strength. Study of the temperature dependence of the susceptibility in the paramagnetic region shows that the Curie-Weiss law is valid. The paramagnetic Curie point, the Curie-Weiss constant and the magnetic moment (Table) are determined. For temperatures below Θ_{af} the resonance absorption of Cr_2O_3 falls steeply to a constant value. The decrease of the resonance absorption of MnO begins already in the paramagnetic region. The half-width of the resonance absorption in CrO_3 remains constant in the paramagnetic region; it rises steeply at Θ_{af}. MnO shows similar behavior. The following values were obtained for the g-factors: $g = 1.87$ (Cr_2O_3) and $g = 1.90$ (MnO). There are 4 figures and 1 table.

The temperature dependence of the ...   S/188/63/000/001/003/014
B104/B102

ASSOCIATION: Kafedra magnetizma (Department of Magnetism)

SUBMITTED: May 8, 1962

Table. Paramagnetic Curie point (Θ_p, $^\circ K$); Θ_{af}, $^\circ K$; Curie-Weiss constant; magnetic moment.

Table

	Θ_p°, K	Θ_{af}°, K	C, град.	P_p, μ_B
Cr_2O_3	— 450	314	3.4	5.2
NiO	—2270	640	2.82	4.75
MnO	— 227	122°	3.06	4.98

Card 3/3

L 18527-63   EWP(q)/EWT(m)/BDS   AFFTC/ASD   JD/JG   S/0126/63/015/006/0934/0936

ACCESSION NR: AP3002854   57

AUTHORS: Chechernikov, V. I.; Pop, Iuliu   56

TITLE: Relation of temperature to paramagnetic susceptibility of Gd-Y alloys

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 6, 1963, 934-936

TOPIC TAGS: Gd-Y alloy, magnetic property, electron structure

ABSTRACT: The Gd-Y alloys with a general composition: 25, 50, 65, 75 and 90 at.%
Gd were studied at temperatures of 300-1500K. These samples were chosen because
they form a continuous series of solid solutions in the whole interval of concentra-
tion, and they have the same hexagonal close-spaced lattice. The purpose was to
investigate the magnetic properties, the electron structure and the nature of the
interaction between these rare-earth metals which have an open $4f$-shell. The
results showed that the reciprocal of the specific susceptibility followed the
Curie-Weiss law along the whole temperature interval of the investigation, i.e., it
had a linear relation to temperature. The effective magnetic moments per alloy-
atom and per Gd-atom as well as the paramagnetic Curie points were calculated on the
basis of these data. The increase in yttrium content caused a sudden drop in the
Curie point and a decrease in the effective moment of the alloy. The authors

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L 18527-63
ACCESSION NR: AP3002854

conclude that a gradual change in Gd-Y magnetic properties occurs with the increase in yttrium content. The gadolinium atom may be regarded as being in a free state in the alloy. Its magnetic properties are determined basically by the spins of electrons located in the 4f-shell. Orig. art. has: 2 figures

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 27Nov62   DATE ACQ: 23Jul63   ENCL: 00

SUB CODE: ML   NO REF SOV: 001   OTHER: 006

Card 2/2

CHECHERNIKOV, V.I.; BUROV, I.V. ; SAVITSKIY, Ye.M.

Magnetic properties in the system iron - gadolinium. Fiz. met.
i metalloved. 16 no.3:324-328 S '63.   (MIRA 16:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova i
Institut metallurgii imeni A.A.Baykova.

CHECHERNIKOV, V.I.; KASHLINSKIY, A.I.

Temperature dependence of resonance absorption in nickel-zinc ferrites. Vest. Mosk. un. Ser. 3:Fiz., astron. 18 no.5:49-53
(MIRA 16:10)
S-O '63.

1. Kafedra magnetizma Moskovskogo gosudarstvennogo universiteta.

CHECHERNIKOV, V.I.; IULIU POP; NAUMKIN, O.P.; TEREKHOVA, V.F.

Magnetic properties of scandium. Zhur. eksp. i teor. fiz. 44
no.1:387-389 Ja '63.   (MIRA 16:5)

1. Moskovskiy gosudarstvennyy universitet i Institut metallurgii
AN SSSR.   (Scandium—Magnetic properties)

L 11119-63   EWT(1)/EWP(q)/EWT(m)/BDS   AFFTC/ASD   IJP(C)/JD

S/0056/63/044/006/1826/1828

ACCESSION NR: AP3003105

AUTHOR: Chechernikov, V. I.; Pop, Iuliu; Neumkin, O. P.

TITLE: Magnetic properties of scandium single crystals

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 1826-1828

TOPIC TAGS: scandium, single crystal, scandium single crystal, magnetic susceptibility, temperature dependence, recrystallization annealing, Curie temperature, magnetic field, orientation

ABSTRACT: Magnetic properties of scandium single crystals and their temperature dependence have been studied. The scandium metal, obtained by reduction of scandium fluoride with distilled calcium, contained a maximum 0.11% of oxygen, 0.015% carbon, 0.006% molybdenum, 0.04% nitrogen, 0.02% calcium, and 0.0089% hydrogen. A single crystal 6 x 9 x 14 mm was obtained by recrystallization annealing of an arc-melted ingot. The recrystallization annealing was performed in a vacuum of 10^-5—10^-6 mm Hg at 1350C for 8 hr. The magnitude of magnetic susceptibility of a single crystal at temperatures from 77 to 1100K was found to depend on the orientation of the magnetic field and was greater with the magnetic

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L 11119-63
ACCESSION NR: AP3003105

4

field parallel to the c axis of the crystal than with the field perpendicular to this axis (see Fig. 1 of Enclosure). The temperature of the paramagnetic Curie point determined from the magnetic susceptibility—temperature dependence was found to be 1300K for parallel orientation and 900K for perpendicular orientation of the magnetic field. "The authors express their thanks to Professor Ye. I. Kondorskiy for discussing the results of the work and for his valuable comments and to Professor Ye. M. Savitskiy and V. F. Terekhova for their assistance." Orig. art. has: 1 figure and 1 formula.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State University); Institut metallurgii Akademii nauk SSSR (Institute of Metallurgy of the Academy of Sciences SSSR)

SUBMITTED: 12Jan63   DATE ACQ: 23Jul63   ENCL: 01

SUB CODE: EL;PH   NO REF SOV: 002   OTHER: 001

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CHECHERNIKOV, V.I.;

Some magnetic properties of gadolinium single crystals. Zhur.
eksp. i teor. fiz. 45 no.4 :867-869 O '63.   (MIRA 16:11)

1. Moskovskiy gosudarstvennyy universitet.

CHE
CHERNIKOV, V. I., and POP, I.,

"Magnetic Properties of Some d- and f-Metals."

report presented at the Symposium on Ferroelectricity and Ferromagnetism,
Leningrad, 30 May-5 June 1963.

L 32213-65   EPA(s)-2/EWT(m)/EWA(d)/EWP(t)/EPA(bb)-2/EWP(b)   Pt-10   IJP(c)
JD/JG/GS

ACCESSION NR: AT4048693   S/0000/64/000/000/0055/0059

AUTHOR: Chechernikov, V. I.

TITLE: The magnetic properties of gadolinium-iron, gadolinium-cerium, and gadolinium-yttrium alloys

SOURCE: Vsesoyuznoye soveshchaniye po splavam redkikh metallov, 1963. Voprosy teorii i primeneniya redkozeml'nykh metallov (Problems in the theory and use of rare-earth metals); materialy soveshchaniya. Moscow, Izd-vo Nauka, 1964, 30-41

TOPIC TAGS: alloy magnetic property, gadolinium alloy, iron alloy, cerium alloy, yttrium alloy, paramagnetism, rare earth alloy, transition element

ABSTRACT: The magnetic properties of Gd-Fe, Gd-Ce, and Gd-Y alloys were studied in the entire concentration range and over a wide temperature range, from the temperature of liquid nitrogen to the melting points. The alloy systems were selected in such a way that it was possible to study the alloys containing rare-earth metals, as well as alloys in which the second component was a transitional metal of the d-group. Such a combination of systems made it possible to resolve problems which pertain not only the the f-metals. It was possible to obtain additional information on the degree of localization of d-electrons and the role of s-electrons.

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L 32213-65

ACCESSION NR: AT4048692

The results of this study show that there is an antiferromagnetic exchange inter-
action in these systems. In Gd-Fe alloys, there is a sublattice magnetic struc-
ture. In Gd-Ce alloys, there is the possible presence of a helicoid or more com-
plex spin configuration in combination with the magnetic sublattices. The behav-
ior of the Gd-Fe and Gd-Y alloys in the paramagnetic region is explained essential-
ly by paramagnetism of the Curie-Weiss type. Orig. art. has: 6 figures.

ASSOCIATION: None

SUBMITTED: 13Jun64   ENCL: 00   SUB CODE: MM, EM

NO REF SOV: 002   OTHER: 002

Card 2/2

L 14963-65   EWT(m)/EWP(w)/EWA(d)/EWP(t)/EWP(b)   AFWL/SSD/ESD(gs)/ESD(t)   JD/JG/MLK
ACCESSION NR: AT4048695   S/0000/64/000/000/0067/0070

AUTHOR: Chechernikov, V. I.; Pop, I.; Naumkin, O. P.

TITLE: Magnetic properties of monocrystalline and polycrystalline scandium

SOURCE: Vsesoyuznoye soveshchaniye po splavam redkikh metallov, 1963. Voprosy*
teorii i primeneniya redkozemel'ny*kh metallov (Problems in the theory and use of
rare-earth metals); materialy* soveshchaniya. Moscow, Izd-vo Nauka, 1964, 67-70

TOPIC TAGS: scandium, neodymium, scandium single crystal, polycrystalline scandium,
scandium magnetic property

ABSTRACT: The magnetic properties of most paramagnetic transition metals have been
studied in detail over a wide temperature range. Scandium, however, has not been
tested for magnetic properties, due to the difficulty of obtaining pure scandium.
Investigations of the magnetic properties of scandium will provide important in-
formation on the degree of localization of d-electrons and the distribution of
electron density in the lattice. In the present work, the magnetic susceptibility
was measured in a vacuum between 77 and 1100K by the Faraday-Seksmit method, in
which the force acting on the sample is measured by a thin elastic ring made of
beryllium bronze. Two reflectors are placed on the ring and a light beam is re-
flected from the first reflector onto the second and into a cathetometer. Deflec-
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L 14963-65
ACCESSION NR: AT4048695

tion of the ray is determined with an accuracy of 0.001 mm. Since scandium is a weakly magnetic metal, admixtures play an important role. Tests show that increasing the metal purity changes the magnetic moment from 1.65 to 1.42, while the paramagnetic Curie point changes from -1180 to -700K. The Curie point was negative for all samples. It is possible, therefore, that scandium shows an antiferrite exchange interaction. However, this requires further testing at lower temperatures. No investigations have been reported on the magnetic properties of monocrystalline scandium, especially since it is very difficult to obtain scandium single crystals. In the present work, this was done by recrystallization annealing in a high vacuum. This method results in the lowest quantity of admixtures. The sample of monocrystalline scandium was placed in a holder in such a way that the magnetic field was directed either parallel or perpendicular to the c axis. The temperature dependence of magnetic susceptibility was investigated in both of these directions. The tests showed that the magnetic susceptibility was higher in a parallel field than in a perpendicular field. This shows that the magnetic moments are oriented along the c axis. The Curie point was -1300K in the parallel magnetic field and -900K in the perpendicular field. Similar relationships between the Curie points of monocrystalline and polycrystalline scandium were obtained with neodymium by D. R. Behrend, S. Legvold and F. H. Spedding. They also found that neodymium was antiferromagnetic at low temperatures. Orig. art. has: 3 figures and 1 table.

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L 14963-65

ACCESSION NR: AT4048695

ASSOCIATION: none

SUBMITTED: 13Jun64   ENCL: 00   SUB CODE: MM, EM

NO REF SOV: 002   OTHER: 003

Card 3/3

L 15684-65
ACCESSION NR: AP4047483   S/0120/64/000/005/0180/0182

AUTHOR: Pop, Iuliu; Chechernikov, V. I.

TITLE: Pendulous magnetic weigher with a mechanical compensation   /3

SOURCE: Pribory* i tekhnika eksperimenta, no. 5, 1964, 180-182

TOPIC TAGS: magnetic weigher, magnetic susceptibility, pendulous magnetic weigher

ABSTRACT: A sensitive pendulous weigher with a mechanical compensation is described; it is intended for measuring the magnetic susceptibility of slightly magnetic substances. A sketch of the instrument shows that its fundamental part is a quartz-rod pendulum suspended on 20-cm-long filaments. The pendulum carries a little quartz cap (for specimen) on one end and a mirror on the other. A heater or a cryostat provides a test temperature between liquid nitrogen and

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L 15684-65
ACCESSION NR: AP4047483

1,500K. The sensitivity of susceptibility measurements is $10^{-7}g^{-1}$ cm^5 for a
10-mg specimen. The instrument error is 2% or less. Orig. art. has: 1 figure
and 4 formulas.

ASSOCIATION: Fizicheskiy fakul'tet MGU (Physics Department, MGU)

SUBMITTED: 01Oct63   ENCL: 00   SUB CODE: EM, ME

NO REF SOV: 001   OTHER: 003

Card 2/2

L 6986-65   EWT(m)/EWP(q)/EWP(b)   IJP(c)/AFWL/AFETR/ASD(m)-3/ESD(t)   JD
ACCESSION NR: AP4044976   S/0181/64/006/009/2876/2877

AUTHORS: Pop, Iuliu; Checherhikov, V. I.

TITLE: Resonance paramagnetic absorption in Gd-Ce alloys

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2876-2877

TOPIC TAGS: gadolinium alloy, cerium alloy, paramagnetic absorption,
resonance absorption, microwave spectrometry

ABSTRACT: The alloys tested contained 65, 73.8, 80, 90, and 95% Gd
by weight. The resonance absorption was investigated in the 3-cm
band using a reflected-wave spectrometer, in the temperature range
20--100C; i.e., with all samples in the paramagnetic state. The
g-factor and the line width exhibited similar variations with respect
to the composition, with a minimum at 95% Gd by weight and a maximum
at 73.8% Gd by weight. The line width increases with temperature,
while the g-factor decreases. The curve showing the dependence of

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L 6986-65
ACCESSION NR: AP4044976

the first derivative of the absorption on the field has an asymmetri-
cal form for all samples, and is similar in shape to the analogous
curve obtained for gadolinium by A. F. Kip (Rev. Mod. Phys. v. 25,
229, 1953). The swing of the line width from minimum to maximum is
from approximately 900 to 1900 Oersted, while the g-factor varies in
a narrow range 1.83--1.93. Orig. art. has: 2 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M. V.
Lomonosova (Moscow State University)

SUBMITTED: 25Mar64

SUB CODE: EM, MM   NR REF SOV: 000

ENCL: 00

OTHER: 001

Card 2/2

L 16127-65   EWT(1)/EWT(m)/EEC(t)/EWP(t)/EWP(b)   Peb   IJP(c)   JD/JG/GG
ACCESSION NR: AP5000698   S/0181/64/006/012/3751/3753

AUTHORS: Iuliu Pop; Chechernikov, V. I.

TITLE: Resonant paramagnetic absorption in alloys based on gado-
linium

SOURCE: Fizika tverdogo tela, v. 6, no. 12, 1964, 3751-3753

TOPIC TAGS: gadolinium alloy, resonance line width, spectroscopic
splitting factor, paramagnetic absorption

ABSTRACT: The investigation was made with a spectrometer operating
in the 3-cm band and in the temperature interval 20--200C. The com-
positions of the alloys were: 90, 75, 65, 50, and 25 at.% Gd in
Gd-Y alloys, 90, 80, and 70 wt.% Gd in Gd-Er alloys, and 90 and
70 wt.% Gd in Gd-Tb alloys. The preparation of the alloys is de-
scribed in the book by Sanitskiy et al. (Splavy* redkozemel'ny*kh
[Rare Earth Metal Alloys], AN SSSR, 1962). The samples were in the

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L 16127-65
ACCESSION NR: AP5000698

form of small particles several microns in size and spheres with
diameter up to 1 mm. The variation of the absorption line width
and of the spectroscopic splitting factor with the concentration of
the second metal was qualitatively the same for Y and for Er, the
former reaching a maximum and the latter a minimum near 20 wt.%.
The increase of the splitting factor with increasing content of the
second component can be attributed to the influence of the spin-
orbit interaction. Other effects of alloy concentration on the
paramagnetic resonance signal are also discussed. Orig. art. has:
1 figure.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M. V.
Lomonosova (Moscow State University)

SUBMITTED: 22Jul64   ENCL: 00

SUB CODE: SS, EM   NR REF SOV: 001   OTHER: 000

Card 2/2

POP, Iuliu; CHECHERNIKOV, V.I.

Pendulum type magnetic balance with mechanical compensation.
Prib. i tekh. eksp. 9 no.5:180-182 S-O '64.

(MIRA 17:12)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo
universiteta.

AUTHOR: Burov, I. V.; Chechernikov, V. I.; Savitskiy, Ye. M.; Pop Iuliu

TITLE: The cerium-gadolinium system

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 11, 1964, 2594-2598

TOPIC TAGS: cerium, gadolinium, cerium gadolinium alloy, paramagnetic suscepti-
bility, alloy susceptibility temperature dependence, alloy phase diagram

ABSTRACT: To determine the suitability of the thermomagnetic method for purposes
of physiochemical analysis of substances, the paramagnetic susceptibility (χ) of
Ce-Gd alloys containing from 5 to 95 wt % Gd was investigated. The experimental
data on the temperature dependence of $1/\chi$ showed that the properties of the in-
vestigated alloys do not follow the Curie-Weiss rule. The thermomagnetic data
agreed well with the data obtained from differential thermal analysis of the al-
loys, and were found to be very useful in plotting the phase diagram of the Ce-Gd
system. Thermomagnetic data were particularly useful for exact delineation of the
boundaries of solid solutions on an α-Gd base. This is because the thermal analy-
sis data are not stable in this region of the phase diagram, whereas the paramagnetic

Card 1/2

L 15295-65
ACCESSION NR: AP4048304 O

susceptibility of α-Gd is appreciably higher than that of γ-Ce. Orig. art. has:
3 figures and 3 tables.

ASSOCIATION: none

SUBMITTED: 28Mar63   ENCL: 00   SUB CODE: MM, IC

NO REF SOV: 002   OTHER: 001   ATD PRESS: 3138

Card 2/2

ACCESSION NR: AP4034069   S/0126/64/017/004/0636/0638

AUTHORS: Chechernikov, V. I.; Pop, Iuliu

TITLE: Antiferromagnetism in Ni-Cr alloys

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 4, 1964, 636-638

TOPIC TAGS: antiferromagnetism, nickel alloy, chromium alloy, magnetic
susceptibility, temperature dependence

ABSTRACT: An experimental study was carried out on the temperature dependence of
the paramagnetic susceptibility χ of Ni-Cr alloys, which contained 3.4, 5.0, 8.75,
and 11.1 at. % of Cr (hereafter referred to as 1, 2, 3, and 4 respectively). For
cast samples the curves of $1/\chi$ as a function of temperature T for 1 and 2 increased
linearly up to about 1000K and satisfied the Curie-Weiss law in the form
$$\chi = \chi_\lambda + \frac{C}{T - \theta_p}$$
where χ_k is the temperature-independent part of the susceptibility,
C is the Curie-Weiss constant, and θ_p is the temperature of the paramagnetic Curie
point. Curves for the cast samples of 3 and 4 were definitely nonlinear and
followed more closely the Néel law $\dfrac{1}{\chi} = \dfrac{1}{\chi_0} + \dfrac{T}{C_a} - \dfrac{\cdot}{T-\theta}$ For annealed samples all

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ACCESSION NR: AP4034069

the curves satisfied the Néel law for T above 500-650K. At lower temperatures the dependence of the susceptibility on the magnetic field intensity predominated. Experimental values for the parameters occurring in the above equations are given for each curve. Neutron diffraction studies show that for Ni-Cr alloys in this region of Cr concentration the magnetic moments of the chromium and nickel atoms are oriented antiparallel. Consequently, it is concluded that strong antiferromagnetic exchange interactions exist for this system. Orig. art. has: 2 equations, 3 diagrams, and 1 table.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. Lomonosova (Moscow State University)

SUBMITTED: 24May63   ENCL: 00

SUB CODE: EM, MM   NO REF SOV: 004   OTHER: 002

Card 2/2

L 35026-65   EPA(s)-2/EWA(c)/EWT(l)/EWT(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(t)   Pt-10
              IJP(c)   GG/JD/JG

ACCESSION NR: AP4046089   S/0126/64/018/003/0363/0367

AUTHOR: Chechernikov, V. I.; Pop, Iuliu

TITLE: Magnetic properties of gadolinium-cerium alloys

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 3, 1964, 363-367

TOPIC TAGS: magnetic property, gadolinium cerium alloy, antiferromagnetism, paramagnetism, crystal structure, magnetic susceptibility, Curie Weiss law

ABSTRACT: The authors have investigated the magnetic properties of alloys of the gadolinium-cerium system. The crystalline structure of these alloys depends on the relative amounts of Gd and Ce, and their magnetic properties could be expected to vary accordingly. The magnetic susceptibility was measured as a function of temperature up to 1000 K, for alloy with Gd and Ce in various proportions. It appears from the results that the alloys with more than 60% of gadolinium by weight are in the ferro-anti- and paramagnetic states. The rest of the alloys are antiferromagnetic at low temperatures, and at higher temperatures there is

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L 35026-65

ACCESSION NR: AP4046089   2

a transition into the paramagnetic state. This variation in the magnetic structure can perhaps be explained by the presence in the Gd-Ce alloys of a complex spin configuration of the spiral-type, as it was observed in pure rare-earth metals. The authors are grateful to professor E. I. Kondorsky for helpful discussion. Orig. art. has: 5 figures.

ASSOCIATION: Moskovskiy gosuniversitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 14Oct63   ENCL: 00   SUB CODE: EM, EM

NR REF SOV: 005   OTHER:006

Card 2/2

ACCESSION NR: AP4030656   S/0048/64/028/004/0748/0750

AUTHOR: Checheraikov, V.I.; Pop, Iuliu

TITLE: Magnetic properties of some d and f metals (single crystals and polycrystal)
/Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May
to 5 June 1963/

SOURCE: AN SSSR. Izv. Ser.fiz., v.28, no.4, 1964, 748-750

TOPIC TAGS: magnetic susceptibility, temperature variation of susceptibility, mag-
netization isotherms, scandium, yttrium, gadolinium, d transition metal, f transi-
tion metal

ABSTRACT: Whereas the magnetic properties of most transition d metals have by now
been thoroughly studied in a wide temperature range, little is known regarding the
magnetic properties of metallic scandium and yttrium, particularly in the form of
single crystals. This is due partly to the difficulties of preparing high purity
Sc and Yt. Yet their properties are of particular interest in view of the fact that
Sc and Yt have one uncompensated electron spin in the 3d and 4f shells, respective-
ly. In the present work there was determined the temperature dependence of the re-

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ACCESSION NR: AP4030656

ciprocal susceptibility for several polycrystalline specimens of scandium of diffe-
rent degrees of purity. The results are shown in the figure (Enclosure). However,
primary attention was given to investigation of the magnetic properties of Sc and
Yt single crystals. After considerable experimentation, cubic crystals suitable for
measurement were finally prepared by the method of "recrystallizational anneal" un-
der high vacuum. For susceptibility measurements these were mounted in the holder
with the c axis either parallel or perpendicular to the field. It was found that in
Sc the susceptibility in the parallel field is greater than in the perpendicular
one; the opposite is true for Yt. The temperature dependences of the reciprocal sus-
ceptibility were obtained /Abstracter's note: The results are described only in ve-
ry general terms./ In view of the fact that in Sc and Yt, as in many rare earth me-
tals, there may obtain antiferromagnetic exchange interaction in a certain tempera-
ture range, it was deemed of interest to investigate the magnetic properties of ga-
dolinium; measurements of the magnetization isotherms were carried out on single
crystals (c axis parallel and perpendicular to the field) and polycrystalline sam-
ples in the range from 17 to 1000°C. The magnetization isotherms are presented in
figures. The breaks evinced in the curves are analogous to those reported for other
rare earth metals in the region of existence of a helicoid spin configuration. It

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ACCESSION NR: AP4030656

is concluded on the basis of the experimental results obtained for Sc, Yt and Gd that a complex antiferromagnetic structure obtains in these metals. Orig.art.has: 4 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: OO   . DATE ACQ: 30Apr64   ENCL: 01

SUB CODE: PH   NR REF SOV: 000   OTHER: 004

Card 3/4

ACCESSION NR: AP4019204

S/0056/64/046/002/0444/0446

AUTHORS: Chechernikov, V. I.; Pop, Iuliu; Terekhova, V. F.; Kolesnichenko, V. Ye.

TITLE: Magnetic properties of single-crystal and polycrystalline yttrium

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 444-446

TOPIC TAGS: yttrium, single crystal yttrium, polycrystalline yttrium, Curie Weiss law, paramagnetic Curie temperature, magnetic susceptibility, susceptibility temperature dependence, transition metal, d band electron, s band electron

ABSTRACT: The magnetic susceptibility of yttrium was studied for the purpose of obtaining new information on the role of d- and s-electrons in the magnetic properties of weakly magnetic transition metals. The temperature dependence of the magnetic susceptibility,

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ACCESSION NR: AP4019204

was measured between 77 and 1000K by the Sucksmith method. In the single-crystal yttrium the magnetic susceptibility was higher when measured at right angles to the c-axis than parallel to this axis. The temperature dependence of the susceptibility is attributed to the presence of collective-state electrons of the d-s band and electrons of the d-band, subjected to spatial localization. Use of the Curie-Weiss law yields for the paramagnetic Curie point values $\Theta_{P||} = -510K$, $\Theta_{P\perp} = -330K$, and $\Theta_{p.polycr.} = -390K$. It is suggested that in view of the below-zero Curie temperature an antiferromagnetic interaction may exist in metallic yttrium. "In conclusion, the authors express their gratitude to Prof. Ye. I. Kondorskiy for valuable remarks." Orig. art. has: 1 figure and 3 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University,

SUBMITTED: 05Jul63   DATE ACQ: 27Mar64   ENCL: 01

SUB CODE: PH   NO REF SOV: 002   OTHER: 004

Card 2/2

AUTHORS: Chechernikov, V. I.; Pop, Iuliu

TITLE: Magnetic properties of lutecium

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1226-1227

TOPIC TAGS: lutecium, magnetic susceptibility, paramagnetic Curie
temperature, Curie Weiss constant, effective magnetic moment, elec-
tronic state density, electronic specific heat

ABSTRACT: Continuing similar studies on scandium and yttrium
(ZhETF v. 44, 387, 1963 and v. 46, 444, 1964), the authors measured
for the first time the temperature dependence of the magnetic sus-
ceptibility of metallic lutecium in the range from 77 to 1000K.
Other magnetic characteristics (effective magnetic moment P_p, Curie-
Weiss constant C_A, and the paramagnetic Curie temperature θ_p) were

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ACCESSION NR: AP4031143

calculated from the experimental data by using the Curie-Weiss law.
It is concluded from the similarity in the properties of the three
metals and the near equality of the electronic specific heats that
the additional electron in the d-band results in an increased den-
sity of the electronic states in these metals. "We are grateful to
Professor Ye. I. Kondorskiy for useful remarks." Orig. art. has: 1
figure.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State
University)

SUBMITTED: 05Nov63   DATE ACQ: 07May64   ENCL: 00

SUB CODE: PH, EL   NO REF SOV: 002   OTHER: 004

Card 2/2

AUTHORS: Chechernikov, V. I.; Iuliu Pop; Burov, I. V.

TITLE: Magnetic properties of gadolinium-terbium and gadolinium-
erbium alloys

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47,
no. 4, 1964, 1257-1261

TOPIC TAGS: gadolinium base alloy, terbium containing alloy, erbium
containing alloy, magnetic property, paramagnetic susceptibility,
Curie point

ABSTRACT: The authors investigated five Gd-Tb alloys containing 10,
30, 50, 70 and 90% Tb by weight, and eight Gd-Er alloys containing
5, 20, 30, 50, 60, 70, 80, and 90 at. % Er. The primary metals were
99.2% pure. The main impurities were Ca, Nd, Sn, Ho, Tm, Th, and
gas inclusions. The alloys were prepared in an arc furnace and re-

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ACCESSION NR: AP4047892

melted three times to ensure maximum uniformity of composition.
After remelting, the alloys were annealed in vacuum for 50 hours at
800C. The magnetic properties were investigated by the standard
ponderomotive method using a pendulum balance and a balance ring.
The Gd-Tb alloys and the Gd-Er alloys were investigated in the ranges
from 77 to 300 and from 77 to 1100K, respectively, i.e., in both the
ferromagnetic and paramagnetic regions. Maxima were observed on the
conductivity vs. temperature curve, and were found to be dependent
on the concentration and magnetic field intensity. The temperature
dependence of the paramagnetic susceptibility of Gd-Er alloys was
also investigated to determine the effective magnetic moment and
the paramagnetic Curie point. The magnetic moments of the Gd-Er
alloys increase from 7.95 Bohr magnetons for pure Gd to 9.52 Bohr
magnetons for Er. The paramagnetic Curie point shifts to lower
temperatures when the erbium content is increased but remains posi-
tive at all erbium concentrations. It is concluded that the de-
pendence of the magnetic properties of these alloys on the tempera-

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ACCESSION NR: AP4047892

ture is complex, especially in the ferromagnetic region where fer-
romagnetic and antiferromagnetic structures coexist. "In conclusion
the authors thank Professor Ye. I. Kondorskiy for discussing the re-
sults and for valuable comments." Orig. art. has: 4 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State
University)

SUBMITTED: 14May64   ENCL: 00

SUB CODE: MM, EM   NR REF SOV: 000   OTHER: 002

Card 3/3

L 15203-66   EWT(m)/EWP(w)/ETC(F)/EWG(m)/T/EWP(t)/EWP(b)   IJP(c)   RDW/JD/JG

ACC NR: AP6001230   SOURCE CODE: UR/0363/65/001/012/2138/2139

AUTHOR: Chechernikov, V. I.; Pechennikov, A. V.; Yarembash, Ye. I.; Kalitin, V. I.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy univers-itet); Institute of General and Inorganic Chemistry im. N. S. Kurnakov, Academy of Sciences, SSSR (Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR)

TITLE: Magnetic properties of praseodymium selenides

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 12, 1965, 2138-2139

TOPIC TAGS: praseodymium compound, selenide, magnetic moment, magnetic susceptibility, Curie point

ABSTRACT: The magnetic properties of the selenides PrSe, Pr_2Se_4, Pr_3Se_3, and Pr_4Se_7 were studied. The magnetic susceptibility was measured in the 80 — 800K range. Above room temperature, the measurements were made in a 10^{-4} mm Hg vacuum to prevent oxidation. Fig. 1 shows the reciprocal magnetic susceptibility versus temperature. The Curie-Weiss law $X = C/(T - \theta_p)$ was obeyed by all the samples. If the paramagnetic Curie point θ_p is determined from the experimental data, and the effective atomic magnetic moment P_p is then calculated, it is found that these values change in proportion to the praseodymium content. The magnetic moments correspond to the magnetic moment of Pr^{3+} ion, i.e., $3.3_{\mu B}$. The Curie point θ_p is positive in Pr_2Se_4, Pr_2Se_3, and Pr_4Se_7, and negative in PrSe and $PrSe_2$; this is due to the appearance of antiferromagnetic interaction in the latter two compounds. It is

Card 1/2   UDC: 546.656'231:538.11

L 15203-66

ACC NR: AP6001230
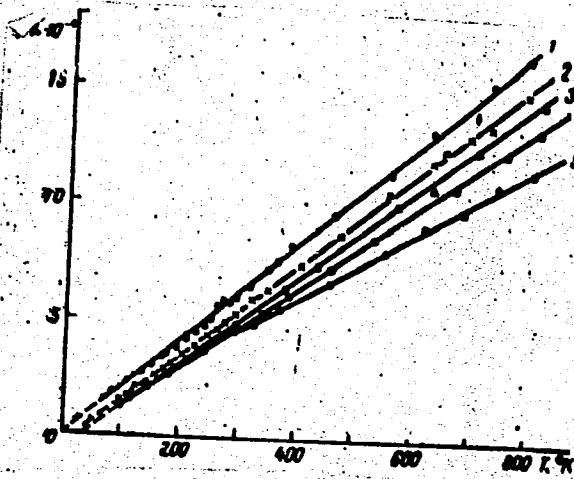
Fig. 1. Temperature dependence of $1/X$ of praseodymium selenides:
1 – $PrSe_2$; 2 – Pr_4Se_7; 3 – Pr_2Se_3;
4 – Pr_3Se_4; 5 – PrSe

concluded that the magnetic properties of praseodymium selenides are chiefly determined by the 4f electrons, which are in a localized state. Orig. art. has: 1 figure and 1 table.

SUB CODE: 07,11,20 / SUBM DATE: 12Jul65 / ORIG REF: 003 / OTH REF: 003

Card   2/2

L 39712-65   EPF(c)/EWT(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(t)   Pr-4 IJP(c)   JD/JW/JG

AUTHOR: Chechernikov, V. I.; Iuliu Pop; Markova, I. A.

TITLE: Magnetic properties of Er-Y alloys

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 2, 1965, 290-293

TOPIC TAGS: rare earth compound, yttrium compound, erbium compound, magnetic property, antiferromagnetism

ABSTRACT: Alloys were fused from 99.6% pure distilled yttrium and erbium containing the following impurities: $Ca \leq 0.04$, $Cu \leq 0.035$, $Fe \leq 0.06$, $Tu \leq 0.2$ and $Ho \leq 0.2$ wt %. The alloys were prepared in an arc furnace in a helium atmosphere. Before measurement they were annealed for 60 hours at 800° C. The results of micro-structural, x-ray, and thermal analyses as well as the measurements of the hardness and electrical resistance indicate that erbium and α-yttrium form continuous series of solid solutions. Eight alloys of the Er-Y system were studied containing: 70.21, 64.67, 58.84, 38.14, 31.6, 9.81, 3.96 and 2 at. % yttrium and the remainder erbium. The results of the study indicate that alloys with a high Er content display paramagnetism of the Curie-Weiss type, associated with localized f-

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L 39712-65

ACCESSION NR: AP5006336   3

electrons. The collective s-d electron system becomes more important as the Y content increases. In alloys with a high Y content the paramagnetic Curie point falls below zero which indicates possible antiferromagnetism. This assumption agrees with the results of other workers who in diluted alloys of Y with the rare earth metals (Nd, Gd, Tb, Er, Ho, Dy) established the presence of antiferromagnetism. "In conclusion we thank Professor Ye. I. Kondorskiy for useful comments." Orig. art. has: 3 figures.

ASSOCIATION: Moskovskiy gosuniversitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 29Jul64   ENCL: 03   SUB CODE: MM

NO REF SOV: 002   OTHER: 004

Card 2/5

L 39712-65

ACCESSION NR: AP5006336   ENCLOSURE: 01
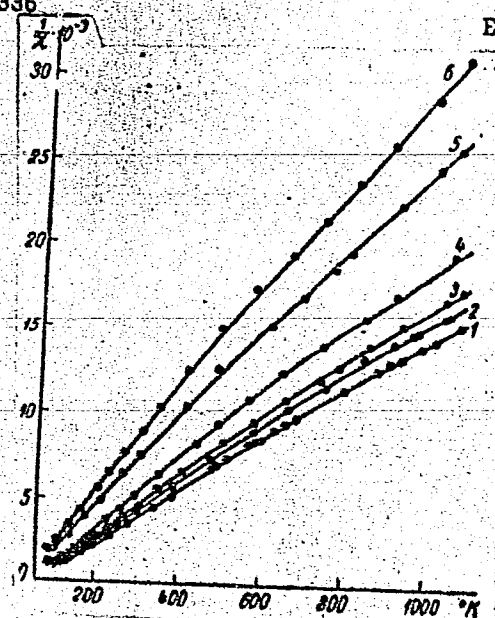
Fig. 1. Inverse susceptibility as a function of temperature for erbium (1) and alloys: 2--2; 3--3.96; 4--9.81; 5--31.6; 6--38.14 at. % Y.

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L 39712-65

ACCESSION NR: AP5006336

ENCLOSURE: 02
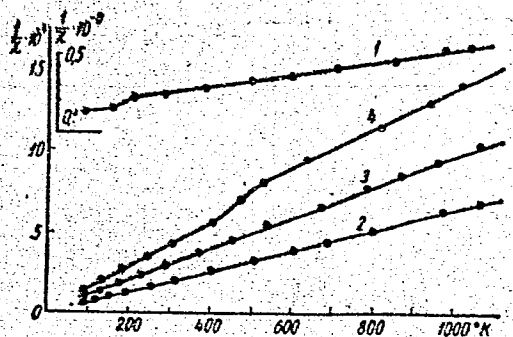
Fig. 2. Inverse susceptibility as a function of temperature for yttrium (1) and alloys: 2--58.84; 3--64.67; 4--70.21 at. % Y.

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L 39712-65

ACCESSION NR: AP5006336

ENCLOSURE: 03
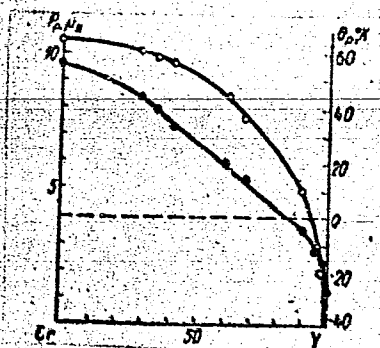
Fig. 3. Effective magnetic moment (•) and paramagnetic Curie point (○) as functions of the alloy composition.

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L 57813-65   EWT(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(t)   IJP(c)   JD/JG

ACCESSION NR: AP5008796   S/0126/65/019/003/0466/0468   34
                                                 539.292; 548.0:538   33
                                                                                  B

AUTHOR: Pop, I.;   Checheruikov, V. I.; Naumkin, O. P.; Savitskiy, Ye. M.

TITLE: Magnetic properties of Er-Sc alloys

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 3, 1965, 466-468

TOPIC TAGS: nonferrous metal alloy, antiferromagnetic material, metal magnetic property

ABSTRACT: Procedures employed in the preparation of test specimens of Er-Sc alloys are described. An investigation of the temperature dependence of the magnetic permeability indicated it is possible that an antiferromagnetic exchange reaction occurs in these alloys as in alloys of Er-Yt. In alloys with a high content of erbium, antiferromagnetism is basically conditioned by the properties of erbium among which there is a complex spin-spiral structure in which antiferromagnetic reactions occur in addition to the positive reactions. The paramagnetic properties of these alloys are basically conditioned by the localized f-electrons whereby the change of permeability follows the Curie-Weiss law, with a term independent of temperature. This

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ACCESSION NR: AP5008796

causes a sharp reduction in the slope of $1/\chi$-to-T curves. Any conclusions concern-
ing the existence of antiferromagnetism in alloys with high contents of scandium
would be premature even though the Curie paramagnetic point is less than zero.
Orig. art. has: 2 figures, 1 table.

ASSOCIATION: Moskovskiy gosuniversitet im. M. V. Lomonosova (Moscow State Uni-
versity)

SUBMITTED: 20Apr64   ENCL: 00   SUB CODE: MM, EM

NO REF SOV: 003   OTHER: 002

Card 2/2

L 1358-66   EWT(m)/EWP(w)/EWG(m)/T/EWP(t)/EWP(b)   IJP(c)   RDW/JD

ACCESSION NR: AP5021942   UR/0126/65/020/002/0299/0301
                                                     546.657:538.214

AUTHOR: Chechernikov, V.I.; Speranskiy, N.M.; Maslova, E.V.; Terekhova, V.F.

TITLE: Magnetic properties of iron-neodymium alloys

SOURCE: Fizika metallov i metallovedeniye, v. 20, nO. 2, 1965, 299-301

TOPIC TAGS: iron containing alloy, neodymium containing alloy, magnetic properties, constitution diagram, ferromagnetic region, paramagnetic region, Curie point, antiferromagnetic interaction, three sublattice structure

ABSTRACT: Pure carbonyl iron (99.9%) and neodymium metal (99.5%) were smelted together in an arc furnace with a nonconsumable tungsten electrode in a purified helium atmosphere under a pressure of 300-400 mm Hg. The resulting alloys containing different proportions of Fe to Nd were remelted several times to assure homogeneity and annealed in evacuated quartz ampoules at 600 and 900°C for 130 hr. Subsequent microstructural and X-ray analyses of the sphere- and rod-shaped specimens showed that most of the obtained alloys are of two-phase kind and represent mechanical mixtures of solid solutions (based on pure components) with chemical compounds ($Fe_{17}N_2$ and Fe_2Nd). Such a type of constitution diagram largely deter-

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L 1358-66
ACCESSION NR: AP5021942

authors wish to express their gratitude to Professor Ye. I. Kondorskiy for discussion of the findings and constructive advice." Orig. art. has: 3 figures, 1 table.

ASSOCIATION: Moskovskiy gosuniversitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 21Jul64   ENCL: 00   SUB CODE: EM, MM

NO REF SOV: 002   OTHER: 001

Pure metal

Card 3/3

L 1358-66

ACCESSION NR: AP5021942

mines the magnetic properties of these alloys. The magnetic properties were inves-
tigated with the aid of the magnetic scale described by V. I. Chechernikov (Vestnik
MGU, ser. fiz., 1957, no 1, 47), at first in the ferromagnetic region. It turned
out that in alloys containing from 10.52 to 85 at.% Nd, below the ferromagnetic
Curie point θ_f there exists a temperature range in which magnetization decreases to
a minimum whereupon it again rises, and then again drops to zero at $T = \theta_f$. The
investigations were also carried out in the paramagnetic region, where they made it
possible to calculate the effective magnetic moment P_p and the temperature of the
paramagnetic Curie point. The temperature range of investigations in both the fer-
romagnetic and the paramagnetic regions was 300-1300°K. It is concluded from the
findings that in the Fe-Nd alloy system there exists, along with the ferromagnetic,
also an antiferromagnetic interaction which is most clearly manifested in the case
of the one-phase compound $Fe_{17}Nd_2$. As the experiments revealed, in the region of
existence of this compound the magnetic moment of alloy reaches a minimum and the
paramagnetic Curie point is much lower than in pure iron. It is possible that a
three-sublattice structure exists in the Fe-Nd system, with positive interaction
existing between homogeneous atoms and negative interaction between the atoms of Fe
and Nd. The magnetization of Fe-Nd alloys throughout the temperature range inves-
tigated is conditioned by the Fe atoms; it is not completely compensated, since the
magnetic moment of the Fe atom exceeds that of the Nd atom. "In conclusion the

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L 1718-66   EWT(m)/EWP(t)/EWP(b)   IJP(c)   JD/JG
ACCESSION NR: AP5021943   UR/0126/65/020/002/0302/0303
                                            539.292; 538

AUTHOR: Chechernikov, V. I.; Nefedov, A. P.; Sokolovskaya, Ye. M.

TITLE: Magnetic properties of V-Ta alloys

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 2, 1965, 302-303

TOPIC TAGS: magnetic susceptibility, vanadium containing alloy, tantalum containing alloy, homogenized alloy, electron system, sigma phase

ABSTRACT: The authors present the results of an investigation of the temperature dependence of the magnetic susceptibility of V-Ta alloys made of 99.63% pure vanadium and 99.7% pure tantalum along with small percentages of Fe, Al, Si, S, N_2, C, O_2, Nb, Ti, W, and Mo. Physicochemical investigations of the annealed specimens (microstructural examination, determination of electrical resistivity, X-ray structural analysis) revealed that the homogenized alloys form monophase systems, while alloys subjected to additional annealing are two-phase. The magnetic susceptibility of the alloys was measured at temperatures of from 77 to 1100°K with the aid of a pendulum balance. It was found that at room temperature

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L 1718-66

ACCESSION NR: AP5021943

the susceptibility of the homogenized alloys varies smoothly throughout the range of concentrations. For pure vanadium it is maximal ($4 \cdot 10^{-6}$ g·cm^{-3}), and it decreases with increasing Ta content until, in the case of pure Ta, it drops to $0.95 \cdot 10^{-6}$ g·cm^{-3}. At different temperatures, throughout the entire temperature range investigated, for homogenized alloys, the temperature dependence of specific susceptibility $1/\chi$ is linear (Fig. 2). The slope of the curves, which is nearly independent of alloy composition, indicates a certain localization of d-electrons in the alloys investigated. The most interesting results were obtained for alloys containing 34 at.% Ta (curves 6, 7).Thus while the susceptibility of a specimen subjected to a single heat treatment operation varies markedly with temperature, the susceptibility of the compound TaV$_2$ is nearly independent of T (curve 7). This indicates that, in this compound, the principal part of the d-electrons undergoes a considerable collectivization, forming together with s-electrons a common electron system. It is this electron system that largely determines the magnetic properties of the compound TaV$_2$. It may be assumed that this compound is an σ-phase, which, as is known, exists in many vanadium alloys and is by nature an electron compound. Furthermore, these findings confirm the phase diagram obtained by Nefedov et al. (Zhurnal neorg. khimii, 1964, 9, 4, 883). Orig. art. has: 2 figures.

Card 2/4

L 1718-66

ACCESSION NR: AP5021943

ASSOCIATION: Moskovskiy gosuniversitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 03Aug64   ENCL: 01   SUB CODE: MM, EM

NO REF SOV: 001   OTHER: 000

Card 3/4

L 1718-66
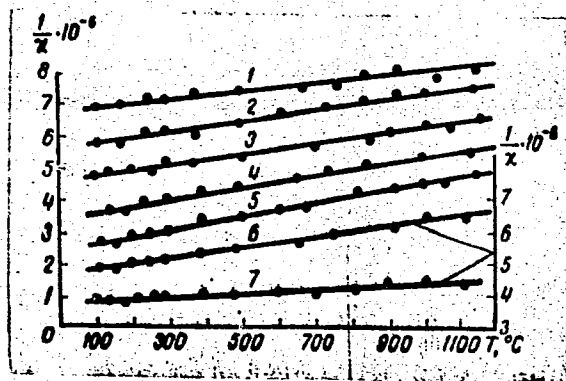
Fig. 2. $1/\chi$ as a function of T for V-Ta alloy containing the following at.% of Ta:

1 - 70; 2 - 50; 3 - 36; 4 - 20; 5 - 11 at.% and TaV_2 alloy (34 at.% Ta) after homogenization (6) and additional annealing (7)

Card 4/4

L 7932-66   EWT(m)/T/EWP(t)/EWP(b)/EWA(c)   IJP(c)   JD/JG

ACC NR: AP5027907   SOURCE CODE: UR/0189/65/000/005/0042/0047

AUTHOR: Nefedov, A. P.; Sokolovskaya, Ye. M.; Grigor'yev, A. T.; Chechernikov, V. I.;
Sokolova, I. G.; Guzey, L. S.

ORG: Moscow State University (Moskovskiy gosudarstvennyy universitet)

TITLE: Solid-state phase transformations in vanadium-tantalum alloys

SOURCE: Moscow, Universitet. Vestnik. Seriya II. Khimiya, no. 5, 1965, 42-47

TOPIC TAGS: phase transition, vanadium alloy, tantalum alloy, vanadium compound,
tantalum compound

ABSTRACT: The paper is devoted to the determination of the nature of the intermediate
phase of TaV_2 and boundaries of its existence in V-Ta system. The magnetic
susceptibility was measured as a function of composition and temperature. The
temperatures of the start of fusion (solidus temperatures) were determined. Data were
obtained on the differential thermal analysis of alloys of the V-Ta system, and on the
microstructure, hardness, and crystal structure. The results were used to plot a phase
diagram of the system (see Fig. 1).

Card   1/2   UDC: 536.7

L 7932-66

ACC NR: AP5027907

Fig. 1. Phase diagram of the V-Ta system based on data of this study
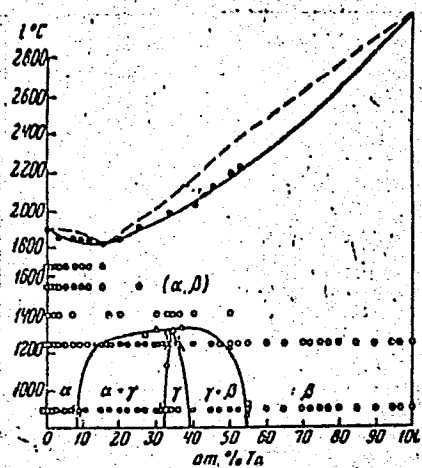
It is found that in the region of the stoichiometric composition where the ratio of the components (at. %) V : Ta= 2 : 1, prolonged stepwise annealing (lasting over 1600 hr) induces transformations which may be regarded as a process of ordering with the formation of the intermetallic compound TaV_2. X-ray analysis showed that TaV_2 has a hexagonal structure similar to that of an $MgZn_2$-type Laves phase, and lattice parameters $\underline{a} = 5.058 \pm 0.005$ A; $c = 8.250 \pm 0.005$ A; $c/\underline{a} = 1.631$, with four formula units per unit cell. Orig. art. has: 7 figures and 3 tables.

SUB CODE: MM,SS / SUBM DATE: 07Jan65 / ORIG REF: 005 / OTH REF: 002

Card 2/2

L 6975-66   EWP(s)/EWT(m)/EWP(b)/EWP(t) IJP(o) JD/HW/JG/WJW(ol)

ACC NR: AP5018871

SOURCE CODE: UR/0126/65/020/001/0157/0159

AUTHOR: Chechernikov, V. I.; Speranskiy, N. M.; Terekhova, V. F.; Rozhkova, R. S.

ORG: Moscow State University im. M. V. Lomonosova (Moskovskiy gosuniversitet)

TITLE: Several magnetic properties of Ni-Eu alloys

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 1, 1965, 157-159

TOPIC TAGS: Europium compound, nickel containing alloy, magnetic property, paramagnetic susceptibility

ABSTRACT: Temperature dependence (300-1000°C) of paramagnetic susceptibility using the Faraday method at 10^{-3} to 10^{-4} mm Hg was studied for specimens containing 0.77, 2.0, 3.26, 3.6 and 6.38% Eu. Samples of electrolytic Ni of 99.9% purity and Eu not containing more than .2% total impurities were cast and remelted under 15 atm of helium 3-4 times in a tungsten-arc furnace and then homogenized for 100 hrs at 1100°C. Microstructural examination showed the presence of a eutectic Ni(α) + $Ni_{17}Eu_2$, which increased with increasing Eu. The eutectic transformation temperature was 1190 $\pm$ 10°C. The solubility of Eu in Ni does not exceed 0.77% at.% Eu.

Card 1/3

UDC: 546.661 : 538.214

L 6975-66

ACC NR: AP5018871

The compound Eu_2Ni_{17} (Th_2Ni_{17} type) was indexed at c/a = 0.968 giving lattice parameters a = 8.36 Å and c = 8.09 Å and intensity measurements indicate an hexagonal structure. The hardness of the compound was 271 kg/mm^2 as compared with 70 kg/mm^2 for pure Ni. The variation of the reciprocal of the susceptibility $1/\chi$ with temperature is shown in fig. 1. The Curie-Weiss equation gives the susceptibility where χ_k is the temperature insensitive susceptibility. The susceptibility of Ni - 6.38% Eu is almost an order of magnitude greater than for pure nickel. The magnetic moment R_R is almost independent of the composition - a small increase in R_R takes place at 6.38% Eu. The paramagnetic Curie point θ_R drops initially with increasing Eu and then from 3.0 to 6.38% Eu remains constant. Orig. art. has: 1 figure and 1 formula.

SUB CODE: MM/ SUBM DATE: 24Oct64/ ORIG REF: 000/ OTH REF: 000

Card 2/3

L 6975-66
ACC NR: AP5018871
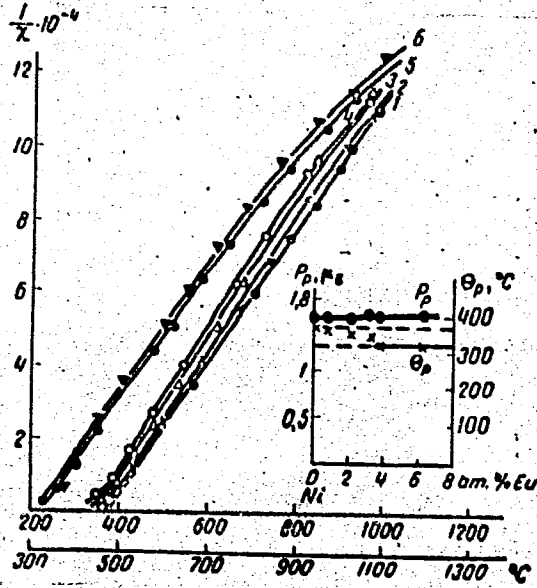
Fig. 1. Dependence of $1/\chi$ on T for specimens with varying Eu content. 1 - Ni; 2 - 0.77; 3 - 2.0; 4 - 3.2 at. % - (upper temperature scale); 5 - 3.6; 6 - 6.8 at. % - (lower temperature scale). Lower right shows the dependence of R_R and θ_R on Eu content.

Card 3/3

CHECHERNIKOV, V.I.; SPERANSKIY, N.M.; MASLOVA, E.V.; TEREKHOVA, V.F.

Magnetic properties of iron-neodymium alloys. Fiz.met.i metalloved.
20 no.2:299-301 Ag '65.   (MIRA 18:9)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.

CHECHERNIKOV, V.I.; NEFEDOV, A.P.; SOKOLOVSKAYA, Ye.M.

Magnetic properties of V-Ta alloys. Fiz.met.i metalloved. 20
no.2:302-303 Ag '65.   (MIRA 18:9)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.

CHECHERNIKOV, V.I.; PECHENNIKOV, A.V.; YAREMBASH, Ye.I.; KALITIN, V.I.

BALANEVSKAYA, A.E.; BERGER, L.I.; PECHENNIKOV, A.V.; CHECHERNIKOV, V.I.

Magnetic properties of a series of ternary semiconductor
compounds of the $A^I B^{III} C^{VI}_2$ type with chalcopyrite structure.
Izv. AN SSSR. Neorg. mat. 1 no.12:2165-2166 D '65.
(MIRA 18:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh
reaktivov i osobo chistykh khimicheskikh veshchestv. Submitted
July 8, 1965.

NEFEDOV, A.P.; SOKOLOVSKAYA, Ye.M.; GRIGOR'YEV, A.T.; CHECHERNIKOV, V.I.; SOKOLOVA, I.G.; GUZEY, L.S.

Phase transitions in the solid state in alloys of vanadium with tantalum. Vest. Mosk. un. Ser. 2:Khim. 20 no. 5:42-47 S-O '65. (MIRA 18:12)

1. Kafedra obshchey khimii Moskovskogo gosudarstvennogo universiteta. Submitted Jan. 7, 1965.

CHECHERNIKOV, V.I.; SPERANSKIY, N.M.; MALYSHEV, N.I.

Electric, thermal and some magnetic properties of nickel-
cadmium ferrites. Vest. Mosk. un. Ser. 3: Fiz., astron. 20
no.5:45-48 S-O '65.   (MIRA 18:11)

1. Kafedra magnetizma Moskovskogo universiteta. Submitted May
12, 1964.

CHECHERNIKOV, V.I.; PECHENNIKOV, A.V.; KALITIN, V.I.; YAREMBASH, Ye.I.

Magnetic properties of single and polycrystalline praseodymium diselenide $PrSe_2$. Zhur.eksp. i teor.fiz. 49 no.5:1399-1401 N '65.

(MIRA 19:1)

1. Moskovskiy gosudarstvennyy universitet.

ACC NR: AT6020976   SOURCE CODE: UR/0000/66/000/000/0071/0075

AUTHORS: Chochornikov, V. I.; Speranskiy, N. M.; Malyshev, N. I.

ORG: none

TITLE: Magnetic, thermal, and electrical properties of nickel-cadmium ferrites

SOURCE: Vsesoyuznoye soveshchaniye po ferritam. 4th, Minsk. Fizicheskiye i fizikokhimicheskiye svoystva ferritov (Physical and physicochemical properties of ferrites); doklady soveshchaniya. Minsk, Nauka i tekhnika, 1966, 71-75

TOPIC TAGS: ferrite, electric resistance, magnetic susceptibility, heat conductivity, nickel compound, cadmium compound

ABSTRACT: Specific electrical resistance, heat conductivity, and magnetic suscepti-bility of nickel-cadmium ferrites have been studied as functions of temperature within a temperature range up to 500C. The chemical composition of the specimens is listed in Table 1

Specimen	Chemical analysis, wt.%		
	Fe_2O_3	NiO	CdO
1	65.2	24.4	10.4
2	63.9	20.8	15.3
3	61.8	17.5	20.7
4	61.4	14.3	24.3
5	57.6	5.4	37.0
6	55.4	0	44.6

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T 10764 67

ACC NR: AT6028976

At these conditions it is possible to observe the variations of physical properties
in ferrites changing from a normal spinel structure to mixed and reversed structure.
The effect of temperature upon the heat conductivity λ and upon specific
electrical conductivity ρ of various compositions of this ferrite system is
illustrated in Figs. 1 and 2. A definite correlation was established between the
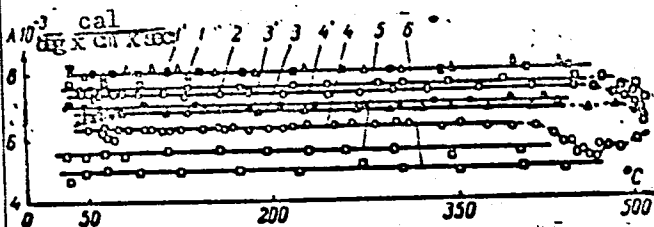
Fig. 1. Coefficient of thermal
conductivity for Ni-Cd ferrites
as a function of temperature
(see Table for composition)
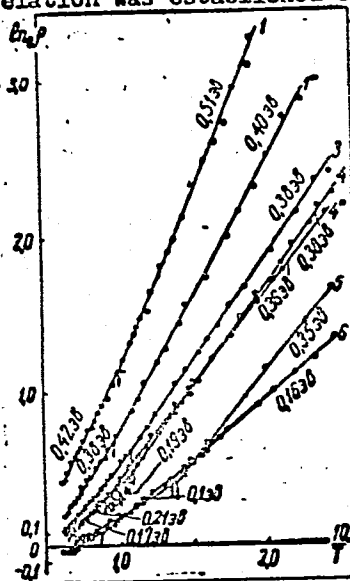
Fig. 2. $\ln_e \rho$
for Ni-Cd
ferrites as
a function of
ℓ/T (see
Table for
composition)

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ACC NR: AT6028976

investigated properties, especially a regularity between the temperature and composition of the ferrite, on one hand, and the specific electrical resistivity and heat conductivity, on the other. The obtained data indicate that the decisive role in determining these properties is played by the electrons located in apices of the crystal lattice. Orig. art. has: 1 table and 4 figures.

SUB CODE: 11, 20/   SUBM DATE: 22Dec65/   ORIG REF: 003

Card 3/3

L 07113-67   EWT(1)/EWT(m)/EWP(t)/ETI   IJP(c)   JD/HW/GG

ACC NR: AP6029107   SOURCE CODE: UR/0048/66/030/006/0957/0961

48
B

AUTHOR: Zhdanov,G.S.; Ibraimov,N.S.; Kuz'min,R.N.; Chechernikov,V.I.

ORG: Physics Department, Moscow State University im. M.V.Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: The Mossbauer effect in the intermetallic compounds $Co_{1.4}Sn$ and $Ni_{1.4}Sn$ /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, 957-961

TOPIC TAGS: Mossbauer spectrum, Mossbauer effect, magnetic susceptibility, cobalt alloy, nickel alloy, intermetallic compound

ABSTRACT: The present study was undertaken in conjunction with the growing interest in nuclear resonance observation in intermetallic compounds, in particular those containing ferromagnetic elements. Specifically, there was studied the Mossbauer effect in $Co_{1.4}Sn$ and $Ni_{1.4}Sn$. The compound specimens were prepared by vacuum melting of the components, followed by homogenizing anneal in sealed tubes (50 hours at about 800°C) and then slow cooling to room temperature. In the same manner there were prepared specimens of mixtures of the two above-mentioned compounds, i.e., representatives of the $Co-Ni-Sn$ system. Among the last only samples with the NiAs structure were selected for the Mossbauer measurements. The Mossbauer effect was studied on the Sn^{119} nuclei

Card   1/2

L 07113-67

ACC NR: AP6029107

in specimens with a "tin" thickness of 9 mg/cm^2. The source of the 23.8 keV gamma rays was a 5 mg/cm^2 thick sample of Mg_2Sn. The measurements were performed with the source at liquid nitrogen temperature. The Mossbauer spectra obtained for $Co_{1.4}Sn$ at different temperatures of the absorber and for a series of $Co_{1.4}Sn$-$Ni_{1.4}Sn$ solid solutions (0,9,25,50 and 100% $Co_{1.4}Sn$) are reproduced in figures. Also presented in graphics are the temperature dependences of the reciprocal susceptibility as obtained by the authors and taken from the literature (M.Asanuma, J.Phys.Japan, 17, 300, 1962); the agreement for $Co_{1.4}Sn$ is better than for $Ni_{1.4}Sn$. The temperature variation of the Mossbauer spectra shows that quadrupole splitting persists up to the temperature of the phase transition, that is, up to the temperature of the break in the reciprocal susceptibility versus temperature curve; above the transition point there is observed only the singlet Mossbauer line. The results are discussed briefly and reasons are hypothesized for the absence of ferromagnetism in the studied intermetallic compounds. Further investigations must be made before a full interpretation of the present results can be offered. Orig. art. has: 4 figures.

SUB CODE: 20,07   SUBM DATE: 00   ORIG. REF: 005   OTH REF: 004

Card 2/2

L 01052-67   EWT(m)/T/EWP(t)/ETI   IJP(c)· JD

ACC NR: AP6030956   SOURCE CODE: UR/0181/66/008/009/2594/2597   44

AUTHOR: Kashlinskiy, A. I. ; Chechernikov, V. I. ; Venevtsev, Yu. N.   B

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Investigation of electron resonance and magnetic properties in solid solutions of the system

SOURCE: Fizika tverdogo tela, v. 8, no. 9, 1966, 2594-2597

TOPIC TAGS: electron spin resonance, electron spectrum, EPR spectrum, solid solution, bismuth ferrate, barium titanate

ABSTRACT: The spectra of electronic resonance in solid solutions of the system bismuth ferrate barium titanate have been investigated. The clearly defined anomalies in the spectra are determined, corresponding to the dielectric and magnetic transitions in solid solutions in conformity with tetragonal and rhombo-hedral modifications. The data on changes in the EPR spectra are analyzed in relation to the properties of solid solutions under study. Orig. art. has: 2 figures. [Based on authors' abstract]   [NT]

SUB CODE: 20/ SUBM DATE: 14Jan66/ ORIG REF: 009/

Card 1/1 avm

ACC NR: AP6018950   (A,N)   SOURCE CODE: UR/0126/66/021/006/0937/0939

AUTHORS: Chechernikov, V. I.; Pechennikov, A. V.; Iuliu Pop

ORG: Moscow State University im M. V. Lomonosov (Moskovskiy gosuniversitet)

TITLE: Magnetic properties of cerium-scandium alloys

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 6, 1966, 937-939

TOPIC TAGS: magnetic alloy, magnetic susceptibility, cerium base alloy, scandium
ferromagnetism, antiferromagnetism

ABSTRACT: The magnetic susceptibilities of seven cerium-scandium alloys are
investigated as functions of temperature. The subject is of interest as it was
noticed earlier by V. I. Chechernikov and Iuliu Pop (FMM, 1964, 18, 363) that, at
certain temperatures, cerium alloys exhibit coexistence of ferro- as well as
antiferromagnetism. The temperature interval chosen for the study was 77 to 1100K
which includes the region of polymorphic transformation. Before measurements were
taken, the alloys were annealed at 500C for 240 hours. The magnetic susceptibility
was measured by balanced scales with mechanical compensation described by Iuliu Pop
and V. I. Chechernikov (PTE, 1964, No. 5, 180). The results of the investigation
are shown in Fig. 1. Apparently, the magnetic properties of alloys with high

Card 1/2   UDC: 538.22:546.65+546.631

ACC NR: AP6018950
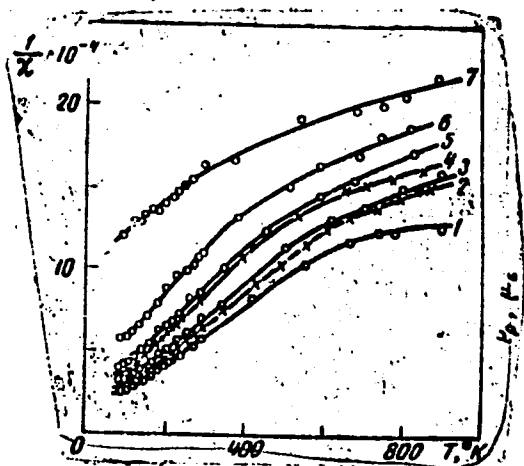
Fig. 1. $1/\chi$ as function of T for Ce-Sc alloys: 1 - 9; 2 - 17; 3 - 41; 4 - 49; 5 - 65; 6 - 80; 7 - 90 at. % of Sc; remainder consists of Co.

cerium content are determined by localised 4f electrons. Orig. art. has: 2 figures.

SUB CODE: 11,20/ SUBM DATE: 28Dec64/   ORIG REF: 003

Card 2/2

ACC NR: AP7002734   (A)   SOURCE CODE: UR/0126/66/022/006/0839/0842

AUTHOR: Shafigullina, G. A.; Chechernikov, V. I.; Markova, I. A.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosuniversitet)

TITLE: Magnetic properties of Dy-Y alloys

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 6, 1966, 839-842

TOPIC TAGS: dysprosium compound, yttrium compound, magnetic property, magnetic susceptibility, Curie point, magnetic moment

ABSTRACT: The article presents the results of an experimental investigation of magnetic properties of Dy-Y alloys throughout the range of concentrations in the temperature interval of from 100 to 1000°K in the presence of magnetic fields of various intensity. To this end, 9 alloys of this system, containing 5.7, 11.9, 18.7, 26.6, 35, 44.8, 55.8, 68 and 83 at.% Dy (with Y as the remainder) were obtained by multiple remelting in a helium-atmosphere arc furnace and vacuum annealing at 10^{-6} mm Hg for 70 hr at 850°C. Magnetic susceptibility was measured by the conventional ponderomotive method on using a magnetic balance. Heating to high temperatures was accomplished with the aid of a platinum resistance furnace, and the temperature

Card   1/6   UDC: 669.85/86: 538.214

ACC NR: AP7002734

was measured by means of precalibrated Pt-PtRh and Cu-constantan thermocouples. The quartz cup containing the specimen and the thermocouple junction were in a uniform temperature field. The magnetic balance was calibrated in advance with respect fo pure holmium (for < 700°K) and nickel (for 700-1100°K). Findings: magnetic susceptibility χ and crystal lattice constants a and c change monotonically over the entire concentration range (Fig. 1). The pattern of temperature dependence of reverse susceptibility $1/\chi$ is linear, (Figs. 2, 3) thus making
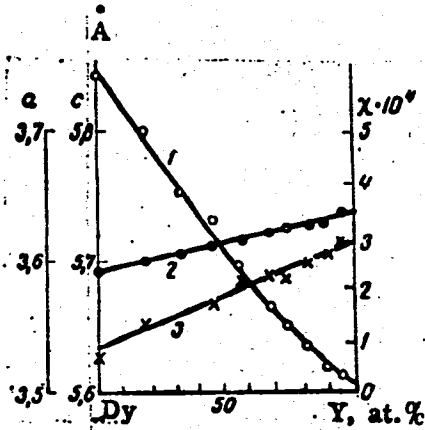
Fig. 1. Magnetic susceptibility χ (curve 1) and lattice constants a (curve 2) and c (curve 3) as functions of composition of the Dy-Y alloy at room temperature

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ACC NR: AP7002734
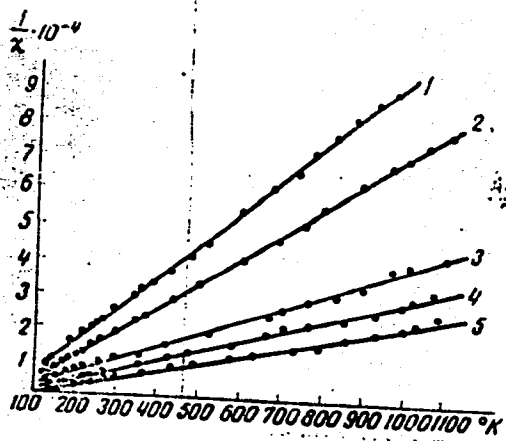
Fig. 2. Temperature dependence of reverse
         susceptibility of Dy-Y alloys:
1 - 5.7 at.% Dy; 2 - 11.9 at.% Dy; 3 - 18.7
at.% Dy; 4 - 26.6 at.% Dy; 5 - 35 at.% Dy.
(Remainder: Y)
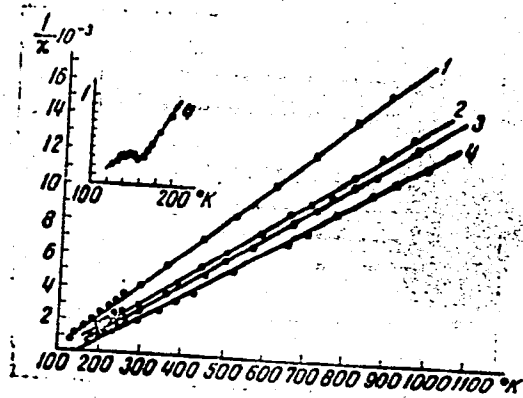
Fig. 3. Temperature dependence of re-
         verse susceptibility of Dy-Y
         alloys:
1 - 44.8 at.% Dy; 2 - 68 at.% Dy; 3 -
83 at.% Dy (Remainder: Y)

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ACC NR: AP7002734

it possible to calculate the effective atomic magnetic moment p_p of the alloys as well as to determine the paramagnetic Curie point θ_p (Fig. 4). Within the investigated temperature range
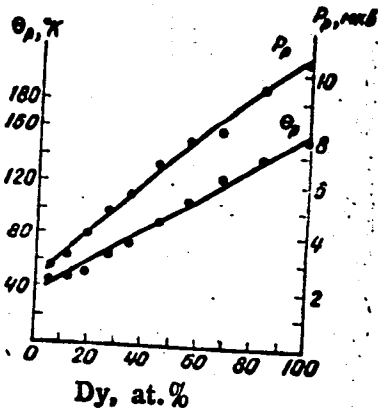
Fig. 4. Effective atomic magnetic moment p_p and paramagnetic Curie point θ_p as functions of alloy composition

the magnetic susceptibility of Dy-Y alloys follows the Curie-Weiss law. p_p and θ_p of the alloys

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ACC NR: AP7002734

vary monotonically as a function of the alloy composition, and the magnetic moment calculated per atom of dysprosium corresponds to the trivalent ion of this element in fundamental state. In the low temperature range there occurs a transtion from antiferromagnetic to paramagnetic state, which shifts in the direction of low temperatures with increase in the magnetic field intensity (Fig. 5). All this indicates that the magnetic properties of Dy-Y alloys are chiefly
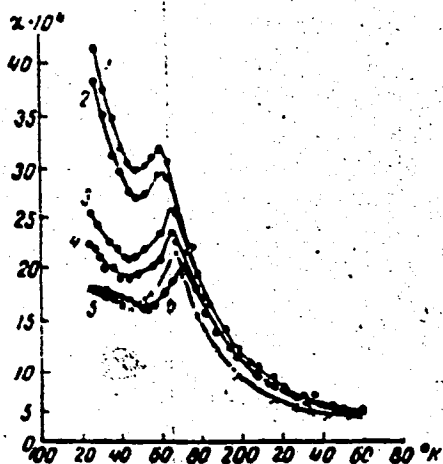
Fig. 5. Temperature dependence of suscep-
tibility of alloy no. 9 (83 at.% Dy,
remainder Y) as a function of magne-
tic field intensity H:
1 - 17,400 oe; 2 - 16,100 oe; 3 - 14,600 oe;
4 - 12,440 oe; 5 - 10,050 oe; 6 - 7550 oe

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ACC NR: AP7002734

conditioned by localized 4f-electrons, while in the antiferromagnetism region there apparently exists a spiral-like magnetic structure resembling the structure observed for pure dysprosium. "In conclusion the authors wish to express their gratitude to Professor Ye. I. Kondorskiy for his valuable comments." Orig. art. has: 5 figures.

SUB CODE: 11, 20/ SUBM DATE: 29Mar66/ OTH REF: 004

Card   6/6

TSVETKOVA, A.F., inzhener; CHECHERSKAYA, M.M., inzhener.

Good results from the use of looms without shuttles for flax weaving.
Tekst.prom. 17 no.2:34-35 F '57.
(MLRA 10:2)

1. Gosudarstvennyy proyektnyy institut-1.
    (Looms)   (Flax)

CHECHERSKIY, Aleksandr Isayevich; FILATOV, N.P., red.; KONYASHINA, A.D.,
tekhn.red.

[How to prevent fires in the home] Kak uberech' zhilizhche ot pozhara.
Moskva, Izd-vo M-va kommun. khoz.RSFSR, 1957. 32 p.   (MIRA 11:3)
(Dwellings--Fires and fire prevention)

CHERNETSKIY, V.D., inzh.; CHECHERSKIY, D.M., inzh.; ZHARSKIY, S.G., inzh.;
SOKOLOV, A.Ye., inzh.

Complex inoculant for cast iron. Mashinostroenie no.3:
25-26 My-Je '65.   (MIRA 18:6)

CHECHET, V.Z.

GORBUNOV,B.P.; CHECHET,V.Z.

Calculating the backwater of ground water under conditions of intensive evaporation. Trudy Inst.soor.AN Uz.SSR no.5:91-96 '54.   (MIRA 8:10)

(Soviet Central Asia--Water, Underground)

CHECHET, Yu.S., doktor tekhn. nauk, prof. [deceased]; LOPUKHINA, Ye.M.,
kand. tekhn. nauk, dotsent

Optimum parameters of motors with hollow rotors. Trudy MEI
no.39:55-59 '62.   (MIRA 17:6)

CHECHET, Yuriy Sergeyevich., prof.(1894-1960); TITUNIN, A.Ya.,
red.

[Miniature electrical machines of automatic systems]
Elektricheskie mikromashiny avtomaticheskikh ustroistv.
Izd.2., ispr. Moskva, Energiia, 1964. 423 p.
(MIRA 18:1)

KOSTENKO, Mikhail Poliyevktovich, akademik; PIOTROVSKIY, Lyudvik
    Mar'yanovich; CHECHET, Yu.S., prof., retsenzent;
    USSER, A.S. kand. tekhn. nauk, red.; VOL'DEK, A.I.,
    doktor tekhn. nauk, red.; PRUSS-ZHUKOVSKIY, V.V., nauchn.
    red.; ALEKSEYEVA, Ye.A., red.

[Electrical machinery] Elektricheskie mashiny. Izd.2.,
Moskva, Energiia. Pt.1. 1964. 547 p.   (MIRA 18:1)

ACC NR: AM5010318   MONOGRAPH   UR

Chechet, Yuriy Sergeyevich (Professor; Doctor of Technical Sciences; Deceased)

Electric micromotors of automatic devices (Elektricheskiye mikromashiny avtomat-
icheskikh ustroystv) 2d ed., rev. Moscow, Izd-vo "Energiya", 1964. 423 p.
illus., biblio. 15,000 copies printed.

TOPIC TAGS: automation, synchronous communication, servomotor, tachometer, trans-
former, computer technology, computer component, automatic control, SERVOMECHANISM,
ELECTRIC MOTOR

PURPOSE AND COVERAGE: This book describes the basic types of micromotors, including
servomotors, tachometer generators, rotary transformers, and synchronously operating
machines, for automatic devices. It also describes the theory and application of
micromotors in automatic control systems. The book is intended as a textbook for
students in electrical engineering and power engineering universities, as well as a
tool for engineers and technicians working in the field of automation, telemechanics,
and computing technology. The author thanks N. A. Yavlinskiy for his valuable
comments.

TABLE OF CONTENTS [abridged]:

UDC: 621.313.3:621.313.2
CH 57

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ACC NR: AM5010318

PART 1. Servomotors

PART 2. Tachometer generators

PART 3. Rotary transformers

PART 4. Micromotors for synchronously operating systems