

Pz - ³Zn, Cd, Hg

$Me_2 X, Me X_3, Me_2 X_3$ (Tur)

$M = Pr, Ce, La$

$X = Sn$

$M'Y, M'Y_2, M'Y_3$

E. J. J. J. J.

(Tur)

$M' = Pr, La, Ce$

$Y = Ag, Au$

$Pr Pb, Pr Pb_3, Pr_2 Pb, Pr Cu_2, Pr Cu_6, Pr Al_2, Ce, La,$
 $Pr Tl, Pr Tl_3, Ce_2 Pb, Ce Pb_3, Ce Tl, Ce Tl_3, Ce Cu_2,$
 $Ce Cu_6, Ce Al_2, La Pb, La Pb_3, La_2 Pb, La Tl, La Tl_3,$
 $La Cu_2, La Cu_6, La Al_2$ (Tur)

Rolla L., Tandelli A., Canneri G., Vogel R.,

Z. Metallkunde, 1943; 35, 29-42

Соединения в смесевых 1963
РЗ-7-Т. VIII 4131

IT = $\sqrt{Hg, Zn, Al, Fe, Cu}$

(кр. смр-ра)

Гладышевский Е. И., Крип'якевич
П. И., Черкашин В. В., Заренюк
О. С., Замуцкий И. И., Ефодименков
В. Сб., "Редкоземельные элементы",
М., АН СССР, 1963, 67-70

РХ. 1966 25263 МД есб ф-к

TRu₂ / TR - різкозмелений 1963
меленний)
(кросин: сеп-ра) VIII 4365

Storm A.R., Benson K.E.,

Acta. crystallogr.,
1963, 16, n7, 401-403.

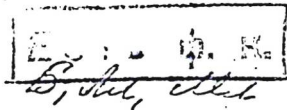
1963 16 7 401-403
lll

PX, 1964, 16 B 234

Med, W = Y, Ce, Pr, Nd, Sm, Eu,
Gd, Tb, Dy, Ho, Er, Tm, Yb,
Lu).

VIII 4262
Johnson I, Schabla R,
Tani B, Anderson K,
Trans. Metallurg. Soc. AIME,
1964, 220, 1485-1486

PM, 1965, 321.41



MLX (U = P33, кроме Ca и Pm; 1965
X = Ce, Mg, Zn, Cd, Hg и Tl)
(присоединяется к адр-ра)

Tandelli A; Palenikova A;

Y. Less - Common Metals,
1965, 9, N1, 1-6

ЕСТЬ Ф. Н.

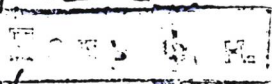
Улс

PX, 1966, БТ348

$\text{La}_2\text{Cd}_{17}$; CeCd_6 ; PrCd_6 ; NdCd_6 ; VIII 119
 SmCd_6 ; LaCd_{11} ; CeCd_{11} ; PrCd_{11} ; 1966
 NdCd_{11} Кривен. сѣр-па Тм

Johnson J., Anderson K. G.,
Blomquist R. A., Trans. Amer.
Metals, 1966, 59, 352-5

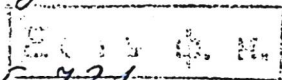
Б, А, М



Y Hg_4 , La Hg_4 , Ce Hg_4 , Pr Hg_4 , Nd Hg_4 , Sm Hg_4 ,
 Eu Hg_4 , Y Hg_3 , La Hg_3 , Ce Hg_3 , Pr Hg_3 , Nd Hg_3 , Sm Hg_3 ,
 Eu Hg_3 , Y Hg_2 , La Hg_2 , Ce Hg_2 , Pr Hg_2 , Nd Hg_2 , Sm Hg_2 , Eu Hg_2 ,
 Y Hg , La Hg , Ce Hg , Pr Hg , Nd Hg , Sm Hg , Eu Hg ,
 Ho Hg . (Tm)

VIII 4278

Kirchmayer H. R., Leuzscheider W.,
 Z. Metallkunde
 1966, 57, 10, 425-431



PM, 1967, 3210 6, 42.

$Z_{n6} Z_{n73}$ ($Z_n = Yd, Dy, Sm, Ln$) 1966
 $Z_{n2} Z_{n17}$ ($Z_n = Pr, Nd, Sm, Eu, Yb, Zn$)
 $Z_{n1} Z_{n12}$ ($Z_n = Sm, Yd, Ho, Tm, Lu$)
 $Z_{n1} Z_{n13}$ ($Z_n = La, Eu, Yb$)
(Кривой. сир-ра)
Юрийякевич Н.И. Юрин. И.С.,
Изв. АН ССР. неорган. ма
териялов, 1966, 2, № 630.

РХ, 1966, 205377

М

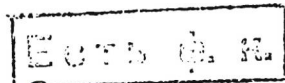
R Zn₂ / R - редкозем. метал. (1966)
(14)

Michel D.J., Ryba E., VIII 345

Жинивал Р.К.,

J. Less-Common Metals,

1966, 11, n1, 67-69



Б. И. М.

РХ, 1967, 25600

A B₂ / A - Sc, Y, P3M; B - Cu, Ag, Al⁹⁶⁷
(красив. сир-р^а) VIII 4440

Dwight A.E., Downey J. W.,
Conner R. A., Jr.,
Acta crystallogr.,
1967, 22, v5, 445.

PM, 1967, 102131 etc

VIII M Zn₂ M = La, Pr, Nd, Sm, Gd, Tb, Dy,
Ho, Er, Tm, Lu.

1968.
(1967)

abc

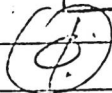
VIII 718

Fornasini Maria L., Mezzo Franco.

Atti Accad. naz. Lincei. Rend. Cl. sci. fis., mat. e
natur., 1967 (1968), 43, 15, 357-363.

Sui composti di formula MX_2 formati dalle
terze rare con lo zinco.

E . Φ . H.



15

PNX, 1969, 4B860.

LaZn_{13} ; Zn_{12}Y , LaZn_{11} ; CeZn_{11} , CeZn_{11} , VIII 4896
 PrZn_{11} , NdZn_{11} , $\text{La}_2\text{Zn}_{17}$, $\text{Ce}_2\text{Zn}_{17}$, $\text{Pr}_2\text{Zn}_{17}$, $\text{Nd}_2\text{Zn}_{17}$, 1967
 $\text{LaZn}_{7,3}$; CeZn_7 , PrZn_7 ; $\text{NdZn}_{6,5}$, $\text{LaZn}_{5,2}$, $\text{CeZn}_{5,1}$
 $\text{PrZn}_{5,3}$; YZn_5 ; $\text{CeZn}_{4,5}$; $\text{PrZn}_{4,5}$; $\text{NdZn}_{4,5}$, LaZn_4 ,
 $\text{YZn}_{4,5}$; CeZn_3 ; PrZn_3 ; NdZn_3 ; YZn_3 ; Y_3Zn_{11} ;
 $\text{Ce}_3\text{Zn}_{11}$, $\text{Pr}_3\text{Zn}_{11}$, $\text{Nd}_3\text{Zn}_{11}$, LaZn_2 , CeZn_2 ; PrZn_2 ;
 NdZn_2 ; YZn_2 ; LaZn , CeZn , PrZn , NdZn , YZn ,
 Кмет. стр-ра

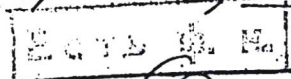
Veleckis G., Schablaške R.V., Johnson I.,
 Feder H.M., Trans. Metallurg. Soc. AIME,
 1967, 239, N1, 58-63

PM 70

Mu

¹⁹⁶⁸
LuHg₄, LuHg₃, LuHg₂, LuHg

^{VIII 4280}
Peschmayer H.R., Zugscheider W.
Z. Metallkunde, 1968, 59, 4,
296-297.



B.H., (95) ver.

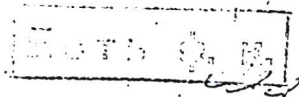
РЖХим, 205854 (1968)

1968
RX₂, (R = P3 M; X = Cu, Ag, Au, Fe, Co, Zn,
Pb, Sn, Pb)
(specimen. exp-pa)

VIII 4231

Jandelli A, Palenková A.

Y-Fe - Common Metals,
1968, 15, 13, 275-284



PM, 1968, 122164

Col₃Zn₁₁, Pr₃Zn₁₁, Nd₃Zn₁₁, 8 6 VII 5026/1970
Y₃Zn₁₁, Tb₃Zn₁₁, Sm₃Zn₁₁, Dy₃Zn₁₁ Types. Cf-p₂

Brizzzone G., Fornasini M.L., Merlo F.

Colloq. int. C.N.R.S., 1970, 180/1, 125-133 (pp.).

As unrefined samples. calcium. 93 M C
Zn.

PM, 1971, 12445

⊙ Mi 14

LaCd₁₁, CeCd₉, PrCd₁₁, LaZn₁₁. 1970
CeZn₁₁, PrZn₁₁ (OGF) 8 VIII 3735

Johnson Irving, Yonco Robert & M.
Met. Trans., 1970, 1, N4, 905-910 (9min)
Thermodynamics of cadmium- and zinc-rich
alloys in the Cd-Co, Cd-Ce, Cd-Pr, Zn-Co
Zn-Ce and Zn-Pr systems.

PMH/Kon, 1970

225847

10

EC - 4.5

M(9)

VIII - 3495

1970

Pr ZnPr Zn₂Pr₂ Zn₁₇T_m

(70804w) Phase relations and crystallographic data for the praseodymium-zinc system. Mason, John T.; Chiotti, Premo (Ames Lab., U.S. At. Energy Comm., Ames, Iowa). *Met. Trans.* 1970, 1, 2119-23 (Eng). Metallographic, thermal, x-ray, and resistivity data were employed in establishing the phase diagram of the Pr-Zn system. Eight compds., 3 eutectics, and 1 eutectoid were obsd. The compds. PrZn, PrZn₂, and Pr₂Zn₁₇ melt congruently at 882, 896, and 978°, resp. The compds. PrZn₃, Pr₃Zn₁₁, PrZn_{4.46}, PrZn₂₂, and PrZn₁₁ undergo peritectic decompn. at 833, 855, 891, 956, and 743°, resp. The eutectic temps. and compns. in wt. % Zn are 576° at 11.9, 833° at 39.0, and 830° at 56.8%. The eutectoid reaction occurs at 558°, and 5.2% Zn. The lattice parameters of the compds. in the system were detd. by x-ray powder-diffraction methods. Single-crystal x-ray techniques were used to show that PrZn₃ has the YZn₃ (space group *Pnma*)-type structure. Nat L. Shepard

C.A. 1970. 73. 14

Pr Zn

VII-4438

1971

115001w Thermodynamic properties of praseodymium-zinc alloys. Chiotti, Premo; Mason, John T. (Ames Lab., Iowa State Univ., Ames, Iowa). *Met. Trans.* 1971, 2(4), 967-73 (Eng). Zn vapor pressure data obtained by the dewpoint method were employed in calcg. the thermodynamic properties of both liq. alloys and solid compds. The liq. alloy data were fitted to a relation which was then transformed into a 2nd expression by integration of the Gibbs-Duhem equation. The std. free energy changes for the reactions $\text{Pr}(\alpha) + x\text{Zn}(l) \rightarrow \text{PrZn}_x(s)$ are: $\Delta F^\circ(\text{PrZn}) = -17,210 + 3.80T$; $\Delta F^\circ(\text{PrZn}_2) = -29,160 + 7.56T$; $\Delta F^\circ(\text{PrZn}_3) = -38,580 + 12.34T$; $\Delta F^\circ(\text{PrZn}_{3.67}) = -44,600 + 15.30T$; $\Delta F^\circ(\text{PrZn}_{4.46}) = -51,200 + 18.75T$; $\Delta F^\circ(\text{PrZn}_{7.33}) = -72,830 + 31.72T$; $\Delta F^\circ(\text{PrZn}_{8.5}) = -80,340 + 36.65T$; and, $\Delta F^\circ(\text{PrZn}_{11}) = -89,350 + 45.48T$.

Nat L. Shepard

C.A. 1971. 44. 2d

(P3M) Zn₅ - крист. стр. ~~№ 394~~ 1973
"J. Less - Common Metals", 1973, 32, N3,
391-394 (англ.), Green M. L.

XVIII - 1004
Периоды решетки соединений типа
P3M (Zn)₅, илановых структур [Типа]
Ca Cu₅ (Ddd).

Решет, 1060, 1974 (Mn.

Li₃Mg_{2.5}Ge_{2.5}O₁₂ u gp (Tm) VII 5380
3d 2Co₃; Ge₂O₁₂ muna M₃M_{2.5}Ge_{2.5}O₁₂
2ge M = pegkosen (Pr) eit. M' = Mg, Co, Ni, Zn

Bayer G.,
Naturwissenschaften, 1971, 58,
N 12, 622

6 (9) 20 C972

PrCu₂ (cp)

XVIII 280

1974

Wun M., Phillips N. E.,

Phys. Lett A 1974, 50A (3) 195-6.

Low-temperature heat
capacity of praseodymium-
copper.

C.A. 1975, 82 v20. 130045x.

6



Pr Zn,
Nd Zn

(+1)

T_{tr}

XVIII-536

1975

D 1410860 Magnetic properties, magnetic structure, and crystal field, in praseodymium-zinc and neodymium-zinc. Morin, P.; Pierre, J. (Lab. Magn., CNRS, Grenoble, Fr.). *Phys. Status Solidi A*, 1975, 30(2), 549-59 (Eng). The magnetic properties of PrZn and NdZn compds. were studied by means of magnetic measurements and neutron diffraction. Both compds. are antiferromagnetic below 52 and 70°K, resp. The ordered moments are reduced to 2.35 and 2.55 μ_B at low temps. by crystal field effects. Dilatometric measurements reveal a large tetragonal distortion, arising at the Neel temp. and reaching 1.4% at 4.2°K in PrZn. The crystal field parameters are coherent in sign with those of the heavy rare earth compds. In PrZn, the magnetstriction is sufficient to explain the 4-fold direction of the moment. The ambiguities in the magnetic structure are discussed.

C.A. 1975 83 N16



$ZnLn_4[SiO_4]_3O$ [Ln = La, Ce, Pr,
Nd, Sm, Eu Gd, Tb, Dy] (Tm)

1976

Редоров Н. В., Тунник Т. Я., XVIII - 1067

Сидоров П. М.

Ж. неорганич. химии, 1976, 21, N3, 666-669

Силикат-апатиты редкоземельных
элементов и цинка состава $ZnLn_4[SiO_4]_3O$

РЖХим, 1976

БФ ММ

PrCd

1983

(T_{tr})

/ 98: 208386m Electrical and thermal transport properties of praseodymium cadmium single crystals. Sousa, J. B.; Pinto, R. P.; Braga, M. E.; Aleonard, R.; Morin, P.; Schmitt, S. (Cent. Fis., Univ. Porto, Porto, Port. 4000). *J. Phys. F* 1983, 13(4), 827-36 (Eng). The temp. dependences of the elec. resistivity (ρ), thermopower (S), thermal cond. (K), and temp. derivs. $d\rho/dT$ and dS/dT were measured in single crystals of PrCd, with the elec. field and temp. gradient applied along the $\langle 110 \rangle$ direction. Three phase transitions were identified: a structural transition at $T_s = 125$ K, where the high-temp. CsCl structure ceases to exist, an antiferromagnetic-paramagnetic transition at $T_N = 40$ K, and an unknown phase transition at $T^* = 20$ K. Particular attention was focused on the details of the structural transition at T_s , namely on the peculiar irreversible behavior obsd. there. Different contributions to the transport coeffs. of PrCd were estd. The lattice stability in CsCl structure intermetallic compds. is discussed.

C.A. 1983, 98, v24

$CdPr_2Se_4$
 $CdPr_4Se_4$

1984

16 БЗ089. Исследование системы $CdSe-Pr_2Se_3$.
Агаев А. Б., Кулиева С. А., Кулиева У. А.
«Азерб. хим. ж.», 1984, № 6, 95—97 (рез. азерб.)

Методами ДТА, РФА, микроструктурного анализа, а также измерением микротвёрдости и определением плотности исследовано взаимодействие в системе $CdSe-Pr_2Se_3$. Построена диаграмма состояния системы. Установлено, что система $CdSe-Pr_2Se_3$ является квазибинарным сечением тройной системы $Cd-Pr-Se$. Отмечено образование конгруэнтно плавящегося соединения $CdPr_2Se_4$ и инконгруэнтно плавящегося $CdPr_4Se_4$. Тройное соединение $CdPr_2Se_4$ образуется по перитектич. реакции. По резюме

X. 1985, 19, № 16

$CdPr_2Se_4$

1984

103: 28073v Study of the cadmium selenide-praseodymium selenide ($CdSe-Pr_2Se_3$) system. Agaev, A. B.; Kulieva, S. A.; Kulieva, U. A. (Azerb. Gos. Univ., Baku, USSR). *Azerb. Khim. Zh.* 1984, (6), 95-7 (Russ). The phase diagram was constructed from DTA, microhardness, x-ray phase anal., and microstructural data. The $CdSe-Pr_2Se_3$ system is a quasi-binary section of the $Cd-Pr-Se$ section. The compd. $CdPr_2Se_4$ congruently m. $\sim 1150^\circ$ and $CdPr_4Se_7$ incongruently m. $\sim 1130^\circ$ and 66.7 mol % Pr_2Se_3 . Soly. of Pr_2Se_3 in $CdSe$ is 3 mol %.

(T_m)

C. A. 1985, 103, N4.

PrCd

1987

Kadomatsu H.,

Karisu M., et al.

J. Phys. F: Met. Phys.

1987, 17 (12), L305-L309.

T_{t2} ;

(cur. LaAg; I)

$\text{Pr}_2\text{Zn}_{17}$

(Om 37236)

1993

118: 220757x Specific heats of rare earth zinc (R_2Zn_{17}) intermetallic compounds. Marquina, C.; Kim-Ngan, N. H.; Bakker, K.; Radwanski, R. J.; Jacobs, T. H.; Buschow, K. H. J.; Franse, J. J. M.; Ibarra, M. R. (Fac. Cienc., Univ. Zaragoza, Spain). *J. Phys.: Condens. Matter* 1993, 5(13), 2009-16 (Eng). Sp. heat measurements were performed on polycryst. R_2Zn_{17} compds. (R : Pr, Nd, Tb, Dy, Ho, Er, and Y) at 0.3-150 K. For all the compds., except for R : Y, magnetic anomalies in the sp. heat were obsd., which indicates the existence of magnetic order at low temps.

(Cp)



(+6)

$\text{Nd}_2\text{Zn}_{17}$, $\text{Tb}_2\text{Zn}_{17}$, $\text{Dy}_2\text{Zn}_{17}$,
 $\text{Ho}_2\text{Zn}_{17}$, $\text{Er}_2\text{Zn}_{17}$,
 Y_2Zn_{17}

C.A. 1993, 118, N22

F: Pr₃Zn₂As₆ (структура)
P: $\frac{1}{1}$ —

Структура

02.02-19Б2.32. Арсенид празеодима цинка Pr[3]Zn[2]As[6]: кристаллизующийс структурном типа HfCuSi[2], вариант с вакансиями. The praseodymium zinc arsenide Pr[3]Zn[2]As[6]: crystallizing with a vacancy variant of the HfCuSi[2] type structure / Nientiedt Andre T., Jeitschko Wolfgang // J. S State Chem. - 1999. - 142, N 2. - С. 266-272. - Англ.

Получено соединение Pr[3]Zn[2]As[6] (I) взаимодействием элементарных компонентов в расплаве NaCl-KCl. I кристаллизуется с ярко выраженной субъячейкой структурного типа HfCuSi[2] с двумя формульными единицами PrZn[2/3]As[2] в тетрагональной субъячейке с а 400,6, с 1019,7 пм. Упорядоченное распределение занятых и незанятых позиций цинка приводит к решетке в три раза большей. Определены параметры решетки: ф. гр. Pmmn, а 399,89, b 1204,2, с 1019,7 пм, Z 2, R 0,039 для 2663 отражений. Обсуждены химические связи в I.