Th–Ci

$In_2O_3 - Y_2O_3 - CeO_2 - ThO_2$ VIII 4038 1953

a б c

Padurow N.N., Schusterius C.
Ber. Dtsch. keram. Ges., 1953, 30, N11, 251-253 (нем.)

Рентгенографическое исследования в системе $In_2O_3-Y_2O_3-CeO_2-ThO_2$

РЖХ, 1955, N13461 Мл. ⌀

$In_2O_3 - Y_2O_3 - CeO_2 - ThO_2$ VIII 4038 1953

a б с

Padurow N.N., Schusterius C.
Ber. Dtsch. keram. Ges., 1953, 30,
N 11, 251-253 (нем.)

Рентгенографическое исследование в системе $In_2O_3-Y_2O_3-CeO_2-ThO_2$

РЖХ, 1955, N 13461 Мл. Ф

Ce-Th
Q

Tuchti I.M.N. and ...
Philips Res. Repts, 1957, 12, N 4, 357-354.

Some data about the system cerium-thorium

PX, 1958, N 13576

ML Ф

VIII 4093 1957

Th Ce | Th, Ce. VIII 3956 1962

cr. Str.

Evans D. S., Raynor G. V.

J. Less-Common Metals, 1962, 4, N2, 181-190

The electronic state of cerium in thorium-cerium alloys.

IX 1963

N 36169

Ml

Th | Ce   VIII 440 / 1964

a, b, c

Waker F.T., Harris I.R., Raynor G.V.

Trans. Metallurg. Soc. AIME, 1964, 230, N 1, 148-156

Low-temperature lattice ~~coeeda~~ parameters of thorium-cerium alloys

PX, 1965
N 2 Б 471

Me Ф

$Sc_{1-x}Th_xFe_3$, $Y_{1-x}Th_xFe_3$, $Ce_{1-x}Th_xFe_3$, XVIII-1113 1974

$Pr_{1-x}Th_xFe_3$, $Gd_{1-x}Th_xFe_3$, $Dy_{1-x}Th_xFe_3$,

$Lu_{1-x}Th_xFe_3$ (термомагн. св-ва)

Kunesh C. J., Хог, АЛ Ф

Diss. Abstr. Int. B, 1974, 34 (10), 4899

(10) Magnetic Moessbauer, structural and thermal studies of some lanthanide-thorium-iron intermetalic compounds

1975

La_xCe, Th_xCe (Ttr) XVIII-533

Luengo C.A., Huber J.G., Maple M.B., Roth M.,

J. Low. Temp. Phys., 1975, 21 (1-2), 129-51.

Demagnetization of cerium impurities in superconducting..

Ал(Ф)

$Ce_{1-x}Th_x$ 1976

85: 68451h **Equation of state for the cerium-thorium ($Ce_{1-x}Th_x$) valence transition.** Lawrence, J. M.; Croft, M. C.; Markovics, J. M.; Parks, R. D. (Univ. Rochester, Rochester, N. Y.). *AIP Conf. Proc.* 1976, 29(Magn. Magn. Mater., Annu. Conf., 21st, 1975), 429–30 (Eng). For $Ce_{1-x}Th_x$, in the crit. region, $x-T$ phase boundary is nearly parallel to the x axis. The data for resistivity R fit a Landau equation of state of the approx. form $0.35(\Delta R/R_0)^3 + 0.67(\Delta x/X_0)(\Delta R/R_0) = \Delta T/T_0 - 0.07\Delta X/X_0$. Magnetic susceptibility and sp. heat measurements reveal that both the av. magnetic moment and entropy couple linearly to the order parameter.

(Ttr)

C.A. 1976. 85 N10

$Ce_{1-x}Th_x$ 1976

85: 68452j Thermodynamic behavior near valence instabil= ities. Parks, R. D.; Lawrence, J. M. (Univ. Rochester, Rochester, N. Y.). *AIP Conf. Proc.* 1976, 29(Magn. Magn. Mater., Annu. Conf., 21st, 1975), 479–83 (Eng). The 2nd-order mean-field valence transition in $Ce_{1-x}Th_x$ is described by a Landau free energy function. Lattice coupling, spin entropy, and the effect of alloying are discussed. Resistivity, susceptibility, thermopower, and sp. heat results indicate that the integral valence state has a moment and acts like a spin-fluctuation system due to the proximity of the *f*-level to the Fermi surface.

(Ttr)

C. A. 1976 85 N 10

$Ce_{1-x}Th_x$ 1977

Markovics J. M.; Parks R. D.

Valence Instab. Relat. Narrow-Band Phenom. (Proc. Int. Conf.) 1976, (Pub. 1977), 451-3. (Eng)

(C_p; T+7)

Calorimetric studies of the γ-α transition in $Ce_{1-x}Th_x$

C. A. 1978. 89 N 14. 121818 u

$Th_{65}Y_{35}Ce$

1978

88: 202052w **Calorimetric study of the magnetization of cerium impurities in superconducting thorium–yttrium and thorium–scandium alloys.** Sereni, J. G.; Huber, J. G.; Luengo, C. A.; Maple, M. B. (Cent. At. Bariloche, Inst. Fis., Rio Negro, Argent.). *J. Low Temp. Phys.* **1978**, 30(5–6), 729–37 (Eng). Sp. heat measurements are reported in detail for the Ce impurity in the superconducting matrix systems $Th_{65}Sc_{35}Ce$, $Th_{80}Y_{20}Ce$, and $Th_{65}Y_{35}Ce$. The variation of the sp. heat jump ΔC at the superconducting transition temp. T_c is indicative of the magnetic nature of an impurity. For $Th_{65}Y_{35}Ce$ a departure is found from the Bardeen Cooper Schrieffer law of corresponding states predicted for a nonmagnetic impurity. This departure is correlated with that obsd. for (La,Th)Ce systems and related to $\Delta T_c/n$ (initial slope of T_c vs. n) and Ce effective size (implied by lattice parameter data).

C_p, T_{tr}

C.A., 1978, 88, N 26

Ce$_{1-x}$Th$_x$ (сплав)

1979

92: 14521g Magnetic susceptibilities and specific heats of cerium-thorium alloys. Elenbaas, R. A.; Schinkel, C. J.; Swakman, E. (Natuurkd. Lab., Univ. Amsterdam, 1018 XE Amsterdam, Neth.). *J. Phys. F* 1979, 9(7), 1261-9 (Eng). The magnetic susceptibility and heat capacity of $Ce_{1-x}Th_x$ alloys ($0.2 \leq x \leq 1$) were detd. at 1.6-1100 and 1.3-20 K, resp. At high temps., the Ce atoms are trivalent at all compns., whereas the magnetic moment vanishes at low temps. The Stoner enhancement factor is almost independent of compn., although the d. of states per Ce atom increases by about a factor of 2 with increasing x.

(C_p)

C.A. 1980. 92 N2

$Ce_x Th_{1-x}$

1981

Sharma H.V., et al

Δ Sti;

Solid State Commun., 1981, 38, n 3, 223-26.

p-Тфаз.диан.

(см EuO) I

$Ce_{0,74}Th_{0,26}$ 1981

T_{tr};

Ф. 1982, 18, N 4.

4 Е471. Ультразвуковые измерения в $Ce_{0,74}Th_{0,26}$. Ultrasonic measurements in $Ce_{0,74}Th_{0,26}$. Wehr H., Knorr K., Feile R. «Solid State Commun.», 1981, 40, № 4, 507—508 (англ.)

На поликристаллических образцах сплава $Ce_{0,74}Th_{0,26}$ ультразвуковым методом измерены продольная (C_l) и поперечная (C_T) скорости звука в интервале т-р 40—280 К. Как известно, в сплавах $Ce_{1-x}Th_x$ линия равновесия между изоструктурными γ- и α-фазами оканчивается в критич. точке (T_c) с координатами $T = 149$ К, $x = 0{,}269$. Температурные зависимости C_l и $C_в$ характеризуются глубокими минимумами при T_c, причем $C_в$ обращается в нуль при T_c. При т-рах выше 100 К эксперим. величины $C_в$ согласуются с величинами, рассчитанными на модели Рамиреца и Фаликова. C_T монотонно повышается при понижении т-ры без каких-либо аномалий вблизи T_c. В узкой области т-р $T_c \pm 10$ К точность определения C_T и соответственно $C_в$ снижается за счет релаксационных эффектов. Это затрудняет определение критич. показателя для $C_в$, который равен $\approx 0{,}5$—$0{,}7$.

А. Кутсар

$Ce_{0,74}Th_{0,26}$ 1981

Wehr H., et al.

Phys. Rev. B: Condens. Matter, 1981, 24, N 7, 4041–4046.

фазов. переход.

(см.: Ce; I)

$Ce_{1-x}Th_xRhSb$ (сплав) 1994

120: 174901f **Anomalous specific heat of $Ce_{1-x}Th_xRhSb$ alloys.** Andraka, B. (Dep. Phys., Univ. Florida, Gainesville, FL 32611-2085 USA). *Phys. Rev. B: Condens. Matter* 1994, 49(1), 348-51 (Eng). Low-temp. sp. heat and magnetic susceptibility for $Ce_{1-x}Th_xRhSb$ alloys, $0 \leq x \leq 0.6$, have been investigated. The compd. CeRhSb, identified previously as a Kondo insulator, has $C/T > 30$ mJ/K^2 mol at $T \rightarrow 0$ K. Above 6 K, C/T is proportional to T^2 yielding a high-temp. γ of 90 mJ/K^2 mol. The substitution for Ce causes large, but non-Kondo-like enhancement of the sp. heat. Alloys corresponding to $0.3 \leq x \leq 0.4$ belong to the heaviest Ce-based heavy fermions.

(C_p)

C. A. 1994, 120, N14

$Ce_{1-x}Th_xCu_6$ 1994

Kim J.S., Stewart G.R.,

Phys. Rev. B: Condens. Matter 1994, <u>49</u>(1), 327–31.

(C_p).

(см. $Ce_{1-x}La_xCu_6$; I)

F: Ce-Th Th Cex

P: I

[2000?

?

132:5303 Theoretical study of the pressure-concentration diagram for the Ce-Th alloy system.

Soderlind, Per; Eriksson, Olle Lawrence Livermore National Laboratory, University of California Livermore, CA 94551, USA Phys. Rev. B: Condens. Matter Mater. Phys., 60(13), 9372-9376 (English) The high pressure and low temp. phase diagram of CeTh3, CeTh, and CeTh3 compds. ha investigated and compared to exptl. data for three CexTh1-x alloys. At h pressures, the theor. calcns. compare very well with exptl. observations at lower pressures, the agreement is less accurate. The general pressure behavior of the CexTh1-x is, however, in agreement between theory and exp Anal. of the theor. model reveals that the phase stability in these alloy systems is driven by electronic structure effects and in

C.A. 2000, 132

particular an in f-electron character with increasing pressure. D. functional theory show the Ce-Th alloy systems will undergo crystallog. phase transitions from f bct. at elevated pressures. The transition pressures are shown, in agree with expt., to increase with Th content in the Ce-Th alloy in a nonlinear fashion. At very high pressures, above 200 GPa, the CexTh1-x alloys disp unified picture with a satd. c/a axial ratio close to 1.65. Both these f are shown to be related to the increased f-band character with pressure a preference for distorted structures which comes with increasing f-electro dominance. Specifically, our first-principle calcns. show that the f-ban population sats. to about 1.5 f electron at high pressures over 200 GPa explaining the satn. of the c/a axial ratio for the Ce-Th alloys. Simple calcns., utilizing unhybridized and pure canonical f bands in conjunction Madelung energy corrections, show that an f-electron metal with about 1.5 electrons, stabilizes in the bct. structure with an axial c/a ratio close 1.65, in accordance with the first-principle calcns. and available exptl. □