

1.3.3.3 Ternary actinide pnictides and chalcogenides containing s- and p-electron elements (A = Li, Na, K, Rb, Cs; B = Mg, Ca, Sr, Ba; M = Si, Ge, Sn, Pb; Z = Cl, Br, I)

1.3.3.3.1 Survey

Compound	State	Crystal structure, magnetic and related properties		Figs.	Tab.	Ref.	
1 : 1 : 1 compounds							
AnNY							
ThNSe		Heat capacity	C_p vs. T	<u>5</u>	<u>C</u>	86ABBG	
			C_p/T vs. T^2 (4...14 K)	<u>7</u>		86ABBG	
ThNTe		Heat capacity	C_p vs. T	<u>6</u>	<u>C</u>	86ABBG	
UNSe		Lattice parameters			<u>A</u>	86ABBG	
		Inverse magnetic susceptibility	χ_m^{-1} vs. T up to 900 K	<u>1</u>	<u>E</u>	79TZ , 87T	
		Magnetization	σ vs. B	<u>2</u>		87T	
		Heat capacity	C_p vs. T	<u>5</u>	<u>C</u>	86ABBG	
			C_p/T vs. T^2 (4...14 K)	<u>7</u>		86ABBG	
		CEF model			<u>D</u>	86ABBG	
		Lattice parameters			<u>A</u>	75TD , 86ABBG	
UNTe		Inverse magnetic susceptibility	χ_m^{-1} vs. T up to 900 K	<u>1</u>	<u>E</u>	79TZ , 87T	
		Magnetization	σ vs. B	<u>2</u>		87T	
			σ vs. T	<u>3</u>		87T	
		Neutron diffraction	p_o vs. T	<u>4</u>		86ABBG	
		Heat capacity	C_p vs. T	<u>6</u>	<u>C</u>	86ABBG	
			C_p/T vs. T^2 (4...14 K)	<u>7</u>		86ABBG	
		Crystal field model			<u>D</u>	86ABBG	
	AnNZ						
	ThNCl	sc	Lattice parameters			<u>A</u>	74F
ThNBr	sc	Lattice parameters			<u>A</u>	74F	
ThNI	sc	Lattice parameters			<u>A</u>	74F	
UNCl	sc	Lattice parameters			<u>A</u>	87B	
UNBr	sc	Lattice parameters			<u>A</u>	87B	
UNI	sc	Lattice parameters			<u>A</u>	87B	
AnOY							
ThOS		Lattice parameters			<u>A</u>	67AD , 74F	
	sc	Crystal structure under pressure up to 43.3 GPa	V/V_0 vs. p	<u>8</u>		91GGBG , 92BDDG , 93GSBD	
ThOSe		Heat capacity	C_p vs. T	<u>15</u>	<u>F</u>	84ABCH	
		Lattice parameters			<u>A</u>	67AD , 74F	
ThOTe	sc	Heat capacity	C_p vs. T	<u>32</u>	<u>F</u>	84ABCH	
		Lattice parameters			<u>A</u>	54DS , 74F	

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tab.	Ref.
PaOS		Lattice parameters		A	54SFEZ , 67AD
UOS		Lattice parameters		A	58PF , 67AD , 74F , 70PA , 86LCB , 98SMWY
	sc				
		Inverse magnetic susceptibility χ_m^{-1} vs. T (2.5...1100K)	9	B	63BBP , 68BH
	sc	Inverse magnetic susceptibility χ_m^{-1} vs. T up to 800 K	10	E	79TZ , 87T
		Magnetic susceptibility χ_m vs. T for $B \parallel c$ and $B \perp c$	11		95ABBC
		Magnetic structure by neutron diffraction	12		63BBP
		Stability diagram of magnetic structures	13 14		65MN , 67PS
		Heat capacity C_p vs. T	15(a)	F	84ABCH
		C_{magn} vs. T	15(b)		84ABCH
		INS spectra for $E_0 = 290$ meV	16		88ABFC
		for $E_0 = 110$ meV	17		89ABCF , 88ABFC
		for $E_0 = 15$ meV	18		95ABBC
		Magnetic INS spectra	19		95ABBC
		CEF models	20 21 22,23	G L M,N H L,J O,K	84ABCH 89ABCF 95ABBC 95G 00G
	sintered	Electrical conductivity σ vs. T (125...300 K)	24		98SMWY
	sintered	Hall effect at 300 K $R_H = 1.18 \cdot 10^{-4} \text{ m}^3 \text{C}^{-1}$, $n_h = 5.29 \cdot 10^{22} \text{ m}^{-3}$, $\mu_h = 1.77 \cdot 10^{-5} \text{ m}^2 \text{V}^{-1} \text{s}^{-1}$			98SMWY
		Thermoelectric power S vs. T	25		64WP
	sintered	Electrical conductivity σ at 300 K $\sigma = 60 (\Omega \text{cm})^{-1}$			64WP
	sintered	Thermal conductivity κ at 300 K $\kappa = 0.0042 \text{ cal}/(\text{cm s K})$			64WP
UOSe		Lattice parameters		A	54F , 57K , 67AD , 68MSTL , 74F , 93KPGZ
	sc			A	93KPGZ
	sc	Crystal structure and coordination spheres	26		93KPGZ
		Crystal structure under pressure up to 47.5 GPa V/V_0 vs. p	27		91GGBG , 92BDDG , 93GSBD

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tabs.	Ref.
UOSe (cont.)	sc	Inverse magnetic susceptibility χ_m^{-1} vs. T		B	68BH
		χ_m^{-1} vs. T up to 900 K	28	E	79TZ
		χ_g^{-1} vs. T (77...1150 K)	29	B	68MSTL
		Magnetic susceptibility χ_m vs. T for $B \parallel c$ and $B \perp c$	30		93KPGZ
		Magnetic structure by neutron diffraction	31		68MSTL
		Stability diagram of magnetic structures	14		67PS
		Heat capacity C_p vs. T	32	F	84ABCH
	sintered sintered sintered sintered	Crystal field models		G	84ABCH
			33	P,R	93KPGZ
			22	H	95G
				I,J,K	00G
		Electrical resistivity $\log \rho$ vs. T^{-1}	34		68MSTL
		Thermoelectric power S vs. T	25		64WP
		Electrical conductivity σ at 300 K $\sigma = 45 (\Omega\text{cm})^{-1}$			64WP
		Thermal conductivity κ at 300 K			64WP
		$\kappa = 0.0031 \text{ cal}/(\text{cm s K})$			
UOTe		Lattice parameters		A	61TNS, 64KJ, 71BBW
		Magnetic susceptibility χ_m vs. T (85...370 K)	35	B	61TNS
		Inverse magnetic susceptibility χ_m^{-1} vs. T			68BH
		χ_m^{-1} vs. T up to 900 K		E	79TZ
		Magnetic structure by neutron diffraction	36(a)		65MN,
		Magnetic form factor	36(b)		69MSL
		Stability diagram of magnetic structure	13		65MN
	sintered sintered		14		67PS
		Heat capacity C_p vs. T (20...370 K)	37		63SNB
		Crystal field models		G	84ABCH
				H	95G
			22	I,J,K	00G
		Electrical conductivity σ at 300 K $\sigma = 37 (\Omega\text{cm})^{-1}$			64WP
		Thermal conductivity κ at 300 K			64WP
		$\kappa = 0.0030 \text{ cal}/(\text{cm s K})$			
NpOS		Lattice parameters		A	49Z2, 67AD, 85TJP1, 86CBBB, 86LCB, 89ABBB
		Inverse magnetic susceptibility χ_m^{-1} vs. T	38 39	B	86CBBB 89ABBB
		Neutron diffraction			86CBBB, 89ABBB
		^{237}Np Mössbauer resonance spectra at 4.2 and 77 K	40	S	85TJP1
		at 2, 4.2 and 6 K	41		86CBBB
	Hyperfine field B_{hf} vs. T	at 1.4...4.2 K and 0...10 T	42		89ABBB
			43		89ABBB

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tab.	Ref.
NpOS (cont.)		Crystal field models		TUV	89ABBB
		calculated ratio p_o/p_s vs. T/T_N	44(a)		
		calculated susceptibility χ_m^{-1} vs. T	44(b)		
NpOSe		Lattice parameters		A	85TJP1 , 86LCB , 89ABBB
		Inverse magnetic susceptibility χ_m^{-1} vs. T	39		89ABBB
		Crystal and magnetic structure by neutron diffraction			89ABBB
		AFI, $T_N = 11$ K, $p \parallel c$, $p_o(4K) = 1.64 \mu_B$			
		^{237}Np Mössbauer resonance spectra at 4.2 and 77 K	40	S	85TJP1
		at 4.2 and 13 K	45		89ABBB
		Hyperfine field B_{hf} vs. T	43		89ABBB
		Crystal field models		TUV	89ABBB
		calculated ratio p_o/p_s vs. T/T_N	46(a)		
		calculated susceptibility χ_m^{-1} vs. T	46(b)		
$\text{U}_{0.5}\text{Pu}_{0.5}\text{OS}$		Lattice parameters		A	69M
PuOS		Lattice parameters		A	67M1
PuOSe		Lattice parameters		A	57G
AnXX'					
UPAs		Inverse magnetic susceptibility χ_m^{-1} vs. T up to 900 K	47	E	79TZ
$\text{UP}_{1.8}\text{As}_{0.2}$	sc	Crystal structure refinement		A	98HCPF
	sc	Electrical resistivity ρ vs. T	48		98HCPF
	sc	Magnetoresistivity $\Delta\rho/\rho$ vs. B at 4.2 K for $i \parallel a$	49		98HCPF
$\text{UP}_{1.7}\text{As}_{0.3}$	sc	Thermoelectric power S vs. T for $\nabla T \parallel a$ and $\nabla T \parallel c$	50		01HWWK
UAsSb		Crystal structure refinement		A	77TD
USbBi		Inverse magnetic susceptibility χ_m^{-1} vs. T up to 900 K	47	E	79TZ
AnYY'					
USSe		Lattice parameters		A	71PCS , 77ZSM
	sc	Crystal structure refinement		A	94TKSP
		Inverse magnetic susceptibility χ_m^{-1} vs. T (100...300 K)		B	71PCS
		χ_m^{-1} vs. T	51	B	77ZSM
	sc	χ_m^{-1} vs. T	52	B	94TKSP
		Magnetization σ vs. T at various fields	53		77ZSM
	sc	at 0.2 T	54		94TKSP
		Magnetization σ vs. B	55		77ZSM
	sc		56		94TKSP
	sc	Normalized electrical resistivity $\rho/\rho(300\text{ K})$ vs. T	57		94TKSP
USTe		Lattice parameters		A	71PCS , 75ES , 77ZSM
	sc	Crystal structure refinement	58	A	73RN
	sc	Crystal structure refinement		A	94TKSP
		Inverse magnetic susceptibility χ_m^{-1} vs. T (100...300 K)		B	71PCS
		χ_m^{-1} vs. T	51	B	77ZSM
	sc	χ_m^{-1} vs. T	52	B	94TKSP
		Magnetization σ vs. T at various fields	59		77ZSM
	sc	at 0.2 T	54		94TKSP

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tabs.	Ref.
USTe	sc	Magnetization σ vs. B	55		77ZSM
(cont.)	sc	σ vs. B	56		94TKSP
		Electrical resistivity ρ vs. T	57		94TKSP
US _{0.75} Te _{1.25}		Lattice parameters		A	75KG
US _{1-x} Te _{1+x}		Lattice parameters			75ES
-0.2 ≤ x ≤ 0.1					
USETe		Lattice parameters		A	74ES
					77ZSM
	sc	Crystal structure refinement		A	94TKSP
		Inverse magnetic susceptibility χ_m^{-1} vs. T	51	B	77ZSM
	sc	χ_m^{-1} vs. T	52	B	94TKSP
		Magnetization σ vs. T at various fields	60		77ZSM
	sc	at 0.2 T	54		94TKSP
		Magnetization σ vs. B	55		77ZSM
	sc	σ vs. B	56		94TKSP
	sc	Electrical resistivity ρ vs. T	57		94TKSP
AnXY					
ThPS		Lattice parameters		A	68H
		Magnetic susceptibility χ at 300 K $\chi_m = -17 \cdot 10^{-6}$ emu/mol			68H
ThPSe		Lattice parameters		A	68H
ThAsS		Lattice parameters		A	68H
		Magnetic susceptibility χ at 300 K $\chi_m = -31 \cdot 10^{-6}$ emu/mol			68H
ThAs _{1.23} S _{0.77}	sc	Crystal structure refinement		A	01HPWK
	sc	Electrical resistivity for $i \perp c$ ρ vs. T (2...320 K)	61		01WWMC
					02HW
	sc	Thermoelectric power for $\nabla T \parallel a$ S vs. T	62		01WWMC
					02HW
	sc	Hall coefficient R_H vs. T (107...336 K)	63(a)		02HW
	sc	Hall coefficient R_H vs. Kondo resistivity ρ_K over T	63(b)		01WWMC
					02HW
ThAsSe	sc	Lattice parameters		A	68H
	sc	Crystal structure refinement		A	01HPWK
	sc	Electron microscopy examination	64,65		01HPWK
		Magnetic susceptibility χ at 300 K $\chi_m = -38 \cdot 10^{-6}$ emu/mol			68H
	sc	Electrical resistivity ρ vs. T (2...1000 K)	117		88SBH
	sc	Hall effect	66		88SBH
	sc	Thermoelectric power S at 300 K $S = 10$ μ V/K (n)			68H
	sc	Optical conductivity at 300 K	133		86R
	sc	Empirically derived band structure	135		86R
ThAsTe	sc	Lattice parameters		A	68H
		Magnetic susceptibility χ at 300 K $\chi_m = -51 \cdot 10^{-6}$ emu/mol			68H
	sc	Thermoelectric power S at 300 K $S = 20$ μ V/K (n)			68H
ThSbSe		Lattice parameters		A	68H
ThSbTe		Lattice parameters		A	68H
					77CDW
ThBiTe		Lattice parameters		A	68H
UPS	sc	Lattice parameters		A	68H
	sc	Crystal structure refinement		A	94KNPZ

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tab.	Ref.
UPS (cont.)	sc	Magnetic characteristics Θ and p_{eff}		B	68H
	sc	Inverse magnetic susceptibility χ_m^{-1} vs. T	67(a)	B	94KNPZ
	sc	Magnetization σ vs. T for $B \parallel c$	67(a)		94KNPZ
	sc	Magnetization σ vs. B for $B \parallel c$	67(b)		94KNPZ
	sc	Heat capacity C_p vs. T	68		02WCWH
	sc	Electrical resistivity ρ vs. T for $i \perp c$	69		94KNPZ
	sc	Norm. electrical resistivity $\rho/\rho(300 \text{ K})$ vs. T	70		01WWH
		Thermoelectric power S vs. T	71		01WWH
UPSe		^{31}P NMR study	72		82ZZ
	sc	Lattice parameters		A	68H
		Magnetic characteristics Θ and p_{eff}		B	68H
	sc	Inverse magnetic susceptibility χ_m^{-1} vs. T	73(a)	B	95KNZ
	sc	Magnetization σ vs. T for $B \parallel c$	73(a)		95KNZ
	sc	Magnetization σ vs. B for $B \parallel c$	73(b)		95KNZ
		Magnetic structure by neutron diffraction F , $T_C = 110(3) \text{ K}$, $p \parallel c$, $p_o(4 \text{ K}) = 1.35(1) \mu_B$			74ZLPL
	sc	Thermoelectric power S at 300 K $S = 2 \mu\text{V/K (n)}$			68H
UPTe		^{31}P NMR study	74		82ZZ
	sc		75		82ZZ
	sc	Lattice parameters		A	73ZC
		Inverse magnetic susceptibility χ_g^{-1} vs. T up to 1000 K	76	B	73ZC
	sc	χ_m^{-1} vs. T for $B \parallel c$ and $B \perp c$	79(a)	B	95KNZ
		Magnetization σ vs. T	76		73ZC
	sc	σ vs. T for $B \parallel c$ and $B \perp c$	77		73ZC
	sc	σ vs. B	78		73ZC
	sc	σ vs. T for $B \parallel c$	79(a)		95KNZ
	sc	σ vs. B for $B \parallel c$	79(b)		95KNZ
		Magnetic structure by neutron diffraction	80		74ZMLL
		Stability diagram of magnetic structures	81		74LPZ
		^{31}P NMR study	82		82ZZ
		Theoretical study of phase transition			77KLPS
	sc	Lattice parameters		A	68H
	sc				72ZD
UAsS					74ZLPL
	sc	Crystal structure refinement	83	A	75PL
	sc	Crystal structure refinement			98HCPF
					01HPWK
		Crystal structure under pressure up to 60 GPa V/V_0 vs. p	84	A	90GSBD
					92BDDG
					93GSBD
		Magnetic characteristics Θ and p_{eff}		B	68H
		Inverse magnetic susceptibility χ_g^{-1} vs. T (77...950 K)	85	B	72ZD
	sc	χ_g^{-1} vs. T for $B \parallel c$ and $B \perp c$	88		73BDZL
	sc	Magnetization σ vs. T above 77 K	86		72ZD
	sc	σ vs. T for $B \parallel c$	87		72BZ
	sc	σ vs. T for $B \parallel c$ and $B \perp c$	88		73BDZL
		σ vs. B at 77 K	89		72ZD
	sc	σ vs. B at 77 K for $B \parallel c$ and $B \perp c$	90		72ZD
	sc	σ vs. B up to 20 T at 78 K	91		73BDZL

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tab.	Ref.
UAsS (cont.)	sc	σ vs. B for $B \parallel c$ at various T	92		72BZ
	sc	Angular magnetization in the (a,b) plane σ vs. φ at 105 K	93		73BDZL
		Neutron diffraction intensity of M(101) peak vs. T	94		74ZLPL
		Heat capacity C_p vs. T	95	W	80BLWZ
		C_p/T vs. T^2 (2...16 K)	96(a)		80BLWZ
	sc	Norm. electrical resistivity $\rho/\rho(T_C)$ vs. T up to 700 K	97(a)		72WHK
	sc	$\rho/\rho(T_C)$ vs. $(T/T_C)^{2.5}$	97(b)		72WHK
	sc	$\rho/\rho(T_C)$ vs. T for $i \perp c$ and $i \parallel c$	98		87WMHL
	sc	$\rho/\rho(T_C)$ vs. T below T_C	48		98HCPF
	sc	Magnetoresistivity $\Delta\rho/\rho$ vs. B at 4.2 K for $i \parallel a$	99		98HCPF
		Thermoelectric power S at 300 K $S = 25 \mu\text{V/K}$ (p)			68H
	sc	Thermoelectric power S vs. T	100		02HWWK
	poly	Positron annihilation spectra	101		77RDHW , 77DR
UAsSe		Fermi surface model	102		80DR
	sc	Lattice parameters		A	68H , 72LZ , 72ZD
	sc	Crystal structure refinement	83	A	75PL
	sc	Crystal struct. refinement from X-ray and neutron data	103	A	98HCPF
	sc	Electron microscopy examination	104		98HCPF
	sc	Thermal expansion coefficient α vs. T (5...140 K)	105		01CMKM
		Crystal structure under pressure up to 60 GPa V/V_0 vs. p	106	A	90GSBD , 92BDDG , 93GSBD
		Magnetic characteristics Θ and p_{eff}		B	68H
		Inverse magnetic susceptibility χ_g^{-1} vs. T (77...950 K)	85	B	72ZD
	sc	χ_g^{-1} vs. T for $B \parallel c$ and $B \perp c$	88		73BDZL
	sc	ac magnetic susceptibility χ_{ac} vs. T for $B \parallel c$	107		95HFWZ
	sc	χ_{ac} vs. T near T_C for $B \parallel c$ and $B \perp c$	108		95HFWZ
		Magnetization σ vs. T above 77 K	86		72ZD
	sc	σ vs. T for $B \parallel c$	109		72BZ
	sc	σ vs. T for $B \parallel c$ and $B \perp c$	88		73BDZL
		σ vs. B at 77 K	89		72ZD
	sc	σ vs. B for $B \parallel c$ at various T	110		72BZ
	sc	σ vs. B up to 20 T at 78 K	91		73BDZL
	sc	Angular magnetization in the (a,b) plane σ vs. φ at 105 K	93		73BDZL
	sc	Hysteresis loop at 4.2 K for $B \parallel c$	111		72BZ
		Magnetic structure by neutron diffraction F , $T_C = 113$ K, $p \parallel c$, $p_o(4 \text{ K}) = 1.5(1) \mu_B$			72LZ
	sc		112		99WGHW
	sc	Magnetic form factor	113		99WGHW
		^{77}Se NMR study	114		01CMKM
		Heat capacity C_p vs. T	95	W	80BLWZ
		C_p/T vs. T^2 (2...13 K)	96(b)		80BLWZ
	sc	C_p/T vs. T^2 (1.5...6 K)	115		01CHGL
	sc	C_p/T vs. T (0.4...7 K)	116		01CMKM , 02CHWP

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tabs.	Ref.
UAsSe (cont.)	sc	Norm. electrical resistivity $\rho/\rho(T_C)$ vs. T up to 700 K	97(a)		72WHK
	sc	$\rho/\rho(T_C)$ vs. $(T/T_C)^2$	97(c)		72WHK
	sc	Electrical resistivity ρ vs. T (2...750 K)	117		88SBH
	sc	ρ vs. T for $i \perp c$ and $i \parallel c$	118(a)		94HFW
		Quantitative analysis of the resistivity components	118(b)		95HFW
	sc	Normalized electrical resistivity $\rho/\rho(T_C)$ vs. T below T_C	48		98HCPF
	sc	Normalized electrical resistance $R/R(300\text{ K})$ vs. T for $i \perp c$	119		01CHGL
	sc	$R/R(300\text{ K})$ vs. T for $B = 0, 7, 13.5\text{ T}$	120		02CHWP
	sc	Transverse magnetoresistivity $\Delta\rho/\rho$ vs. B at 77 and 90 K	121,122		77WH
	sc	$\Delta\rho/\rho$ vs. B at 4.2 K	123		00HCFW
	sc	$\Delta\rho/\rho$ vs. B at 4.2 K for $i \parallel a$	124		98HCPF
	sc	Angular dependence of magnetoresistivity $\Delta\rho/\rho$ at 90 K	125		77WH
	sc	Transverse magnetoresistivity $\Delta\rho/\rho$ vs. T near T_C	126		77WH
	sc	Thermoelectric power S at 300 K $S = 15\text{ }\mu\text{V/K}$ (p)			68H
	sc	$S(\parallel c\text{-axis}) = 4\text{ }\mu\text{V/K}$; $S(\perp c\text{-axis}) = 17\text{ }\mu\text{V/K}$			72WHK
	sc	Thermoelectric power S vs. T for $\nabla T \perp c$	127		94HFW
	sc	S vs. T for $i \parallel c$ and $i \perp c$	128		00HCFW
	sc	Hall coefficient R_H vs. effect. magnetic susceptibility χ^*	129		94HFW
	sc	R_H vs. T for $B \parallel c$ and $B \perp c$	130(a)		95HFW
	sc	R_H vs. χ^* for $B \parallel c$ and $B \perp c$	130(b)		95HFW
	sc	Hall coefficient R_0 vs. $T^{1/2}$	131		00HCFW
	sc	Hall voltage hysteresis loop	132		98HCPF
	sc	Optical conductivity σ_{xx} vs. $\hbar\omega$ at 300 K	133		85RSH , 86R , 90RS
	sc	Complex polar Kerr effect θ_K and ε_K vs. $\hbar\omega$	134(a)		85RSH , 86R , 90RS
		Off-diagonal optical conductivity σ_{xy} vs. $\hbar\omega$	134(b)		
		Empirically derived energy band structure	135		86R
		Calculated complex polar Kerr effect θ_K and ε_K vs. $\hbar\omega$	136,137		96OBAK , 97OAPY
	poly	Positron annihilation spectra	101		77RDHW
	sc	XPS spectra	138		81BEH
	sc	4f core level spectrum	139		81BEH
	sc	ARPES spectra	140		99AJST
UAs _{2-x} Se _x $x = 0.5, 0.6,$ $0.65, 0.75$		Lattice parameters		A	73LMZL
		Magnetic structure by neutron diffraction		X	73LMZL
UAs _{1-x} Se _{1+x} $-0.006 \leq x \leq 0.06$	sc	Crystal structure refinements			01HPWK
	sc	Normalized electrical resistivity $\rho/\rho(T_C)$ vs. T below T_C	48		98HCPF
	sc	Normalized electrical resistivity ρ/ρ^{\max} vs. T for $i \perp c$	141		95HFWZ
	sc	Non-stoichiometry vs. T_C	142		95HFWZ
	sc	Thermoelectric power S vs. T	143		01HWWK
UAsTe $x = -0.006,$ $0.021, 0.038$	sc	Lattice parameters		A	68H , 72ZD
	sc				
	sc	Crystal structure refinement	83	A	75PL
		Magnetic characteristics Θ and p_{eff}		B	68H
		Inverse magnetic susceptibility χ_g^{-1} vs. T (77...850 K)	85	B	72ZD

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tabs.	Ref.
UAsTe (cont.)		Magnetization σ vs. T above 77 K	86		72ZD
		σ vs. T (4.2...80 K)	144		72BZ
		σ vs. B at 77 K	89		72ZD
		σ vs. B at 4.2 K	145		72BZ
		Magnetic structure by neutron diffraction	80		74ZMLL
		Stability diagram of magnetic structures	81		74LPZ
		Theoretical study of phase transition			77KLPS
		Heat capacity C_p vs. T	95	W	80BLWZ
		C_p/T vs. T^2 (2...13 K)	96(c)		80BLWZ
	sc	Norm. electrical resistivity $\rho/\rho(T_C)$ vs. T up to 700 K	97(a)		72WHK
		$\rho/\rho(T_C)$ vs. $(T/T_C)^2$	97(c)		72WHK
	sc	Thermoelectric power S at 300 K			72WHK
		$S(\parallel c\text{-axis}) = 3 \mu\text{V/K}$; $S(\perp c\text{-axis}) = 10 \mu\text{V/K}$			
	poly	Positron annihilation spectra	101		77RDHW
USbS		Lattice parameters		A	68H , 69KJ
USbSe		Lattice parameters		A	68H , 69KJ , 72LZ
		Magnetic characteristics Θ and p_{eff}		B	68H
	sc	Inverse magnetic susceptibility χ_g^{-1} vs. T	146	B	72LZ
		χ_m^{-1} vs. T for $B \parallel c$ and $B \perp c$	147(a)	B	95KNZ
	sc	Magnetization σ vs. T above 77 K	146		72LZ
	sc	σ vs. T for $B \parallel c$	147(a)		95KNZ
	sc	σ vs. B for $B \parallel c$ at $T = 5$ K			95KNZ
		Magnetic structure by neutron diffraction			72LZ
		$F, T_C = 127$ K, $p \parallel c, p_o(4 \text{ K}) = 1.5(1) \mu_B$			
USbTe		Lattice parameters		A	68H , 69KJ
		Magnetic characteristics Θ and p_{eff}		B	68H
	sc	Inverse magnetic susceptibility χ_m^{-1} vs. T	148(a)	B	95KNZ
		Magnetization σ vs. T for $B \parallel c$	148(a)		95KNZ
		σ vs. B for $B \parallel c$ at $T = 5$ K	148(b)		95KNZ
UBiTe		Lattice parameters		A	68H
		Magnetic characteristics Θ and p_{eff}		B	68H
NpPS		Lattice parameters		A	87B
NpPSe		Lattice parameters		A	87B
NpPTe		Lattice parameters		A	87B
NpAsS		Lattice parameters		A	85W
		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	149		77BCSW
		Magnetization σ vs. B	150		77BCSW
	pressed	Reduced electrical resistivity $\rho/\rho(300 \text{ K})$ vs. T	151		85W
NpAsSe		Lattice parameters		A	85W
		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	149		77BCSW
		Magnetization σ vs. B	150		77BCSW
	pressed	Reduced electrical resistivity $\rho/\rho(300 \text{ K})$ vs. T	151		85W
NpAsTe		Lattice parameters		A	85W
		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	149		77BCSW
		χ_m^{-1} vs. T	152	B	84BCFC

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tab.	Ref.
NpAsTe (cont.)	pressed pressed	Magnetization σ vs. T	153		84BCFC
		σ vs. B	150		77BCSW
		Reduced electrical resistivity $\rho/\rho(300\text{ K})$ vs. T	151		85W
		Electrical resistivity ρ vs. T	154		84BCFC
NpSbSe		Lattice parameters		A	87B
NpSbTe		Lattice parameters		A	77CDW
					77CWD
		Inverse magnetic susceptibility χ_m^{-1} vs. T	155	B	84BCFC
NpBiTe		Lattice parameters		A	87B
PuPSe		Lattice parameters		A	87B
PuPTe		Lattice parameters		A	87B
PuAsS		Lattice parameters		A	87B
PuAsSe		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	156	B	77BCSW
		Magnetization σ vs. B at 4.2 and 77.4 K	157		77BCSW
PuAsTe		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	156	B	77BCSW
		Magnetization σ vs. B at 4.2 and 77.4 K	157		77BCSW
PuSbSe		Lattice parameters		A	87B
PuSbTe		Lattice parameters		A	77CDW
PuBiTe		Lattice parameters		A	87B
AmPTe		Lattice parameters		A	86DDT
AmAsTe		Lattice parameters		A	86DDT
AmSbTe		Lattice parameters		A	77CDW
AnMY					
USiS		Lattice parameters		A	69KJ
USiSe		Lattice parameters		A	69KJ
UGeS		Lattice parameters		A	69KJ
					77Z
					78PLZ
		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	158	B	77Z
		Magnetization σ vs. B	159		77Z
		Neutron diffraction intensity I of $M(10\frac{1}{2})$ vs. T	160		78PLZ
		Magnetic structure by neutron diffraction	161		78PLZ
		Lattice parameters		A	69KJ , 77Z
					78PLZ
					77Z
UGeTe		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	162	B	77Z
		Magnetic structure by neutron diffraction	161		78PLZ
		Lattice parameters		A	69KJ
					77Z
USnTe					78PLZ
		Magnetic susceptibility χ_g vs. T and χ_g^{-1} vs. T	163	B	77Z
		Magnetization σ vs. B	164		77Z
		Neutron diffraction intensity I of $M(102)$ vs. T	165		78PLZ
		Magnetic structure by neutron diffraction	161		78PLZ
		Stability diagram of magnetic structures	81		74LPZ
		Lattice parameters		A	69KJ
		Inverse magnetic susceptibility χ_m^{-1} vs. T up to 800 K	166	E	79TZ , 87T
		Magnetic susceptibility χ_g vs. T up to 150 K	167		87T
		Magnetization σ vs. B	168		87T
		Magnetic moment m_0 vs. T	169		87T

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tabs.	Ref.
2 : 2 : 1 compounds					
An₂N₂O					
Th ₂ N ₂ O		Lattice parameters		A	67AD , 67B
An₂(N,O)₂X					
Th ₂ (N,O) ₂ P		Lattice parameters		A	69BZ
Th ₂ (N,O) ₂ As		Lattice parameters		A	69BZ
Th ₂ N ₂ Sb		Lattice parameters		A	70BZ
Th ₂ (N _{0.75} O _{0.25}) ₂ Sb		Lattice parameters		A	70BZ
Th ₂ (N _{0.5} O _{0.5}) ₂ Sb		Lattice parameters		A	70BZ
Th ₂ N ₂ Bi		Lattice parameters		A	70BZ
Th ₂ (N,O) ₂ Bi		Lattice parameters		A	70BZ
U ₂ N ₂ P		Lattice parameters		A	69BZ , 67AD , 75LZLT
U ₂ N ₂ As		Inverse magnetic susceptibility χ_m^{-1} vs. T up to 1000 K	170(a)		74TZ
		Magnetic susceptibility χ_m vs. T up to 500 K	170(b)		76ZT
		Neutron diffraction intensity I of M(10½) vs. T	171(a)		75LZLT
		Magnetic structure by neutron diffraction	172		75LZLT
		Stability diagram of magnetic structures	173		76ZT
		Lattice parameters		A	69BZ , 75LZLT
U ₂ N ₂ Sb		Inverse magnetic susceptibility χ_m^{-1} vs. T up to 1000 K	170(a)		74TZ
		Magnetic susceptibility χ_m vs. T up to 500 K	170(b)		76ZT
		Neutron diffraction intensity I of M(10½) vs. T	171(b)		75LZLT
		Magnetic structure by neutron diffraction	172		75LZLT
		Stability diagram of magnetic structures	173		76ZT
		Lattice parameters		A	70BZ , 78ZT
U ₂ N ₂ Bi		Inverse magnetic susceptibility χ_m^{-1} vs. T		B	74TZ
		χ_m^{-1} vs. T up to 1000 K	174	Y	78ZT
		Magnetic moment p_U vs. B at 4.2 K	175		78ZT
		Arrott's plots B/σ vs. σ^2	176		78ZT
		Reduced spontaneous magnetization $\sigma_s/\sigma_s(0\text{ K})$ vs. T/T_C	177		78ZT
		Crystal field model	178		78ZT
		Theoretical study of phase transition			77KLPS
		Lattice parameters		A	70BZ , 78ZT
Pu ₂ (N,O) ₂ Sb		Inverse magnetic susceptibility χ_m^{-1} vs. T		B	74TZ
		χ_m^{-1} vs. T up to 1000 K	174	Y	78ZT
		Magnetization σ vs. T in various fields	179		78ZT
		Magnetic moment p_U vs. B at 4.2 K	175		78ZT
		Arrott's plots B/σ vs. σ^2	176		78ZT
		Crystal field model	178		78ZT
		Theoretical study of phase transition			77KLPS
		Lattice parameters		A	87B
Am ₂ O ₂ Bi		Lattice parameters		A	87B
Cm ₂ O ₂ Sb		Lattice parameters		A	87B
Cm ₂ O ₂ Bi		Lattice parameters		A	87B

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tab.	Ref.
An₂N₂Y					
Th ₂ N ₂ S		Lattice parameters		A	69BZ
Th ₂ N ₂ Se		Lattice parameters		A	69BZ
Th ₂ N ₂ Te		Lattice parameters		A	70BZ
U ₂ N ₂ S		Lattice parameters		A	67AD , 69BZ , 75LZLT
		Inverse magnetic susceptibility χ_m^{-1} vs. T up to 1000 K	170(a)		74TZ
		Magnetic susceptibility χ_m vs. T up to 300 K	170(b)		76ZT
		Magnetic structure by neutron diffraction	172		75LZLT
		Stability diagram of magnetic structures	173		76ZT
U ₂ N ₂ Se		Lattice parameters		A	69BZ , 75LZLT
		Inverse magnetic susceptibility χ_m^{-1} vs. T up to 1000 K	170(a)		74TZ
		Magnetic susceptibility χ_m vs. T up to 300 K	170(b)		76ZT
		Magnetic structure by neutron diffraction	172		75LZLT
		Stability diagram of magnetic structures	173		76ZT
U ₂ N ₂ Te		Lattice parameters		A	70BZ , 75TD , 77LZT , 78ZT
		Inverse magnetic susceptibility χ_m^{-1} vs. T		B	74TZ
		χ_m^{-1} vs. T up to 1000 K	174	Y	78ZT
		Magnetization σ vs. T in various fields	180		78ZT
		Magnetic moment p_U vs. B up to 33 T	181		78SZT
		Magnetic moment p_U vs. B at 4.2 K	182		78ZT
		Crystal field model	178		78ZT , 81BMTZ
		Neutron diffraction intensity I of M(101) vs. T	183		77LZT
		Heat capacity			81BMTZ
		Theoretical study of phase transition			77KLPS
		Theory of the critical behaviour			78L
An₂O₂Y					
U ₂ O ₂ Te		Lattice parameters		A	71BB , 71BBW
Np ₂ O ₂ S		Lattice parameters		A	67M2
Np ₂ O ₂ Se		Lattice parameters		A	86DDT
Np ₂ O ₂ Te		Lattice parameters		A	85TJP2
Pu ₂ O ₂ S		Lattice parameters		A	49Z1,67AD , 69M , 83CDDb1
	sintered	Inverse magnetic susceptibility χ_m^{-1} vs. T	184(a)	B	83CDDb1
	sintered	Electrical resistivity ρ vs. $1/T$	185(a)		83CDDb1
	sintered	Electronic band structure model	186		83CDDb1
Pu ₂ O ₂ Se		Lattice parameters		A	67AJ, 70ADJ , 83CDDb1
	sintered	Inverse magnetic susceptibility χ_m^{-1} vs. T	184(b)	B	83CDDb1
	sintered	Electrical resistivity ρ vs. $1/T$	185(b)		83CDDb1
	sintered	Electronic band structure model	186		83CDDb1

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tabs.	Ref.
Pu ₂ O ₂ Te		Lattice parameters		A	67AJ , 70ADJ , 83CDDDB2
	sintered	Inverse magnetic susceptibility χ_m^{-1} vs. T	187	B	83CDDDB2
Am ₂ O ₂ S		Electrical resistivity ρ vs. $1/T$	188		83CDDDB2
		Lattice parameters		A	71D , 77HF
Am ₂ O ₂ Te		Lattice parameters		A	86DDT
Cm ₂ O ₂ S		Lattice parameters		A	69RK , 75DCM , 77HF
Cm ₂ O ₂ Te		Lattice parameters		A	86DDT
Bk ₂ O ₂ S		Lattice parameters		A	77HF
Cf ₂ O ₂ S		Lattice parameters		A	74BFH
other compounds					
An₂BY₅, An₂MY₅					
Th ₂ SrSe ₅	sc	Crystal structure refinement	189	A	98NI
U ₂ CaS ₅		Lattice parameters		A	70BPP
U ₂ CaSe ₅		Lattice parameters		A	72BPP
U ₂ SrS ₅		Lattice parameters		A	70BPP
U ₂ SrSe ₅		Lattice parameters		A	72BPP
U ₂ BaS ₅		Lattice parameters		A	70BPP
U ₂ BaSe ₅		Lattice parameters		A	72BPP
U ₂ PbS ₅		Lattice parameters		A	72BPP
	sc	Crystal structure refinement		A	75PBP
U ₂ PbSe ₅		Lattice parameters		A	72BPP
An₂AY₆					
Th ₂ KSe ₆	sc	Lattice parameters		A	97WPI
	sc	Crystal structure refinement	190	A	98CPBW
		UV-Vis optical spectrum	191		98CPBW
	sc	Raman spectrum	192		98CPBW
	sc	Electron diffraction study (TEM)			98CPBW
Th ₂ RbSe ₆	sc	Crystal structure refinement		A	98CPBW
		UV-Vis optical spectrum	191		98CPBW
	sc	Raman spectrum	192		98CPBW
	sc	Electron diffraction study (TEM)			98CPBW
	sc	Atomic Force Microscopy			98CPBW
		Magnetic susceptibility			98CPBW
		diamagnetic			
Th ₂ CsSe ₆	sc	Lattice parameters		A	97WPI
Th ₂ KTe ₆	sc	Crystal structure refinement		A	97WPI
Th ₂ CsTe ₆	sc	Crystal structure refinement	193	A	96CI
	sc	Electrical conductivity			96CI
		weak semiconducting behaviour			
An₂O₂Y₃					
Pu ₂ O ₂ S ₃		Lattice parameters		A	69M
Pu ₂ O ₂ Se ₃		Lattice parameters		A	70ADJ

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tab.	Ref.
An₄O₄Y₃					
U ₄ O ₄ Te ₃	sc	Crystal structure refinement	194	A	95NPSK
		AC magnetic susceptibility χ_{ac} vs. T	195	B	95KTSN
	sc	Magnetization σ vs. T	196(a)		95KTSN
	sc	σ vs. B at 5 K	196(b)		95KTSN
	sc	Electrical resistivity ρ vs. T	197		95KTSN
	sc	Transversal magnetoresistivity $\Delta\rho/\rho$ for $i \perp c$ ($B \parallel c$) $\Delta\rho/\rho = -16\%$ in $B = 1$ T at $T_C = 80$ K			95KTSN
Np ₄ O ₄ S ₃		Lattice parameters		A	67M2
U ₂ Pu ₂ O ₄ S ₃		Lattice parameters		A	67M1
Pu ₄ O ₄ S ₃		Lattice parameters		A	67M1
others					
ThN ₂ Li ₂		Crystal structure refinement	198	A	71PJ
		Lattice parameters		A	74BA
UN ₂ Li ₂		Lattice parameters		A	71PJ
ThN ₂ Be		Lattice parameters		A	71PJ
ThMgTe ₃	sc	Crystal structure refinement		A	00NI
UBaS ₃		Lattice parameters		A	70BPG , 80LI
UTl _{0.56} Te ₃	sc	Crystal structure refinement	199	A	97TDPN
		Inverse magnetic susceptibility χ_m^{-1} vs. T	200(a)	B	97TDPN
		Magnetization σ vs. B	200(b)		97TDPN
ULi ₂ S ₃		Crystal structure refinement	201	A	99MFSY1
UNa ₂ S ₃		Crystal structure refinement	201	A	99MFSY1
		Electrical conductivity $\ln\sigma$ vs. $1/T$	203		99MFSY2
		Hall coefficient R_H vs. T	204(a)		99MFSY2
		Hall carrier density n vs. T	204(b)		99MFSY2
		Hall carrier mobility $\ln\mu$ vs. $\ln T$	204(c)		99MFSY2
UK ₂ Te ₃	sc	Crystal structure refinement	202	A	99SA
UCsTe ₆	sc	Crystal structure refinement	205	A	95CI , 95CMPC
	sc	Electrical conductivity semiconductor: $\sigma(298\text{ K}) = 1.6(4) \cdot 10^{-2} \Omega^{-1}\text{cm}^{-1}$ $\sigma(77\text{ K}) = 1.5(2) \cdot 10^{-3} \Omega^{-1}\text{cm}^{-1}$			95CI
UKS ₂		Lattice parameters		A	66PLP
		Inverse magnetic susceptibility χ_m^{-1} vs. T	207	B	66PL
UK ₄ Se ₈	sc	Crystal structure refinement		A	97SK
		Far-IR spectroscopy (Se-Se stretching at 261 cm^{-1} , U-Se vibrations at 168 and 153 cm^{-1})			97SK
		Inverse magnetic susceptibility χ_m^{-1} vs. T (5...250 K)	206		97SK
Th ₂ NS ₂		Lattice parameters		A	71K
U ₂ C ₂ Te		Lattice parameters		A	71BBW
U ₈ MgSe ₁₇		Lattice parameters		A	74N
		Inverse magnetic susceptibility χ_g^{-1} vs. T	208	B	79NT
UKOS		Inverse magnetic susceptibility χ_m^{-1} vs. T	209	B	66PL
ThKSb ₂ Se ₆	sc	Crystal structure refinement	210	A	97CICK
URbSb _{0.33} Te ₆	sc	Crystal structure refinement	211	A	01CK
		Raman spectroscopy (shifts at $90, 94, 125$ and 142 cm^{-1})			01CK
		Magnetic susceptibility		B	01CK

Compound	State	Crystal structure, magnetic and related properties	Figs.	Tabs.	Ref.
URbSb _{0.33} Te ₆	sc	Electrical conductivity σ vs. $1/T$ (35...330 K)	212		01CK
(cont.)	sc	Thermoelectric power S vs. T (1000...270 K)	213		01CK
ThK ₂ P ₃ Se ₉	sc	Crystal structure refinement	214	A	00BASD
	sc	Raman spectrum	215(a)		00BASD
ThRb ₂ P ₃ Se ₉	sc	Crystal structure refinement		A	00BASD
	sc	Raman spectrum	215(b)		00BASD
Th ₂ Cs ₄ P ₃ Se ₁₇	sc	Crystal structure refinement	216	A	00BASD
	sc	Raman spectrum	215(c)		00BASD
U ₂ K ₂ O ₂ S ₃		Inverse magnetic susceptibility χ_m^{-1} vs. T	217	B	66PL
U ₂ K ₂ O ₂ S ₅		Inverse magnetic susceptibility χ_m^{-1} vs. T	218	B	66PL
U ₂ RbSbS ₈	sc	Crystal structure refinement	219	A	99CK
		Optical absorption spectrum	220		99CK
	sc	Raman spectrum	221(a)		99CK
		Inverse magnetic susceptibility χ_m^{-1} vs. T	222	B	99CK
U ₂ KSbSe ₈	sc	Crystal structure refinement	223	A	99CK
		Optical absorption spectrum	220		99CK
	sc	Raman spectrum	221(b)		99CK
		Inverse magnetic susceptibility χ_m^{-1} vs. T	222	B	99CK
Th ₄ Cs ₄ P ₄ Se ₂₆	sc	Crystal structure refinement	224	A	01BASD
		Raman spectrum	225		01BASD
U ₄ Rb ₄ P ₄ Se ₂₆	sc	Crystal structure refinement	226	A	97CK
		Mid-IR spectroscopy (f-f transition at 3900 cm ⁻¹)			97CK
		Magnetic susceptibility		B	97CK