Registered sample for BL14B2 XAFS Standard Sample Database

Periodic table with highlighted elements:

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	L	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	A															

L	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
A	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Legend:
- K Edge (pink)
- K&L Edge (green)
- L Edge (cyan)
- unavailable (gray)

● Ca

Absorption edge：K-edge、Net plane：Si(111)

Sample name	Notation in the database
$Ca(CH_3COO)_2 \cdot xH_2O$	Ca(CH3COO)2_xH2O
$Ca(H_2PO_4)_2$	Ca(H2PO4)2
$Ca(NO_3)_2 \cdot xH_2O$	Ca(NO3)2_xH2O
$Ca(OH)_2$	Ca(OH)2
$Ca_2Fe_2O_5$	Ca2Fe2O5
$Ca_3(PO_4)_2 \cdot xH_2O$	Ca3(PO4)2_xH2O
Ca_3N_2	Ca3N2
$Ca_5(OH)(PO_4)_3$	Ca5(OH)(PO4)3
$CaAl_2O_4$	CaAl2O4
$CaBr_2$	CaBr2
CaC_2	CaC2
CaC_2O_4	CaC2O4
$CaCO_3$	CaCO3
$CaCl_2$	CaCl2
$CaCl_2 \cdot 2H_2O$	CaCl2_2H2O
CaF_2	CaF2
CaH_2	CaH2
CaI_2	CaI2
$CaMoO_4$	CaMoO4
CaO	CaO
CaO_2	CaO2
CaS	CaS
$CaSO_4$	CaSO4
$CaSO4\_1/2H_2O$	CaSO4_1_2H2O
$CaSiO_3$	CaSiO3
$CaSnO_3$	CaSnO3

CaTiO$_3$	CaTiO3
CaWO$_4$	CaWO4
CaZrO$_3$	CaZrO3
	29 species (as of 2.1.2022)

● Sc

Absorption edge：K-edge、 Net plane：Si(111)

Sample name	Notation in the database
Sc(NO₃)₃ ・ xH₂O	Sc(NO3)3_xH2O
Sc-foil	Sc-foil
Sc₂(SO₄)₃ ・ xH₂O	Sc2(SO4)3_xH2O
Sc₂O₃	Sc2O3
ScCl₃	ScCl3
	5 species (as of 2.27.2026)

- Ti

Absorption edge：K-edge、Net plane：Si(111)

Sample name	Notation in the database
$BaTiO_3$	BaTiO3
$Bi_4Ti_3O_{12}$	Bi4Ti3O12
$CaTiO_3$	CaTiO3
$K_2Ti_4O_9$	K2Ti4O9
$La_2Ti_2O_7$	La2Ti2O7
Li_2TiO_3	Li2TiO3
$Li_4Ti_5O_{12}$	Li4Ti5O12
$MgTiO_3$	MgTiO3
$Na_2Ti_3O_7$	Na2Ti3O7
Na_2TiO_3	Na2TiO3
$PbTiO_3$	PbTiO3
$SrTiO_3$	SrTiO3
Ti-foil	Ti-foil
Ti_2O_3(metal base)	Ti2O3(metal_base)
TiB_2	TiB2
TiC	TiC
TiH_2(metal base)	TiH2(metal_base)
TiN	TiN
TiO_2(anatase)	TiO2(anatase)
TiO_2(brookie)	TiO2(brookite)
TiO_2(rutile)	TiO2(rutile)
TiO(metal base)	TiO(metal_base)
TiS_2	TiS2
$TiSe_2$	TiSe2
$TiSi_2$	TiSi2
approx. $Cs_2Ti_4O_9$	approx_Cs2Ti4O9

● V

Absorption edge：K-edge、Net plane：Si(111)

Sample name	Notation in the database
$CsVO_3$	CsVO3
$LiVO_3$	LiVO3
NH_4VO_3	NH4VO3
SrV_2O_6	SrV2O6
V-foil	V-foil
V_2O_3	V2O3
V_2O_5	V2O5
V_3Ga	V3Ga
V_3Si	V3Si
VB_2	VB2
VC	VC
VN	VN
VO_2	VO2
$VOSO_4 \cdot xH_2O$	VOSO4_xH2O
VSi_2	VSi2
approx. V_2S_3	approx_V2S3
	16 species (as of 1.23.2023)

- Cr

Absorption edge：K-edge、Net plane：Si(111)

Sample name	Notation in the database
$BaCr_2O_4$	BaCr2O4
$Cr(C_5H_7O_2)_3$	Cr(C5H7O2)3
$Cr(CH_3COO)_3 \cdot xH_2O$	Cr(CH3COO)3_xH2O
$Cr(NO_3)_3 \cdot 9H_2O$	Cr(NO3)3_9H2O
$Cr(OH)_3$	Cr(OH)3
Cr-foil	Cr-foil
$Cr_2(SO_4)_3 \cdot xH_2O$	Cr2(SO4)3_xH2O
Cr_2O_3	Cr2O3
Cr_2S_3	Cr2S3
Cr_3C_2	Cr3C2
CrB	CrB
CrB_2	CrB2
$CrBr_3 \cdot 6H_2O$	CrBr3_6H2O
$CrCl_3$	CrCl3
$CrF_3 \cdot xH_2O$	CrF3_xH2O
CrO_3	CrO3
$CrSi_2$	CrSi2
$CuCr_2O_4$	CuCr2O4
HAVAR	HAVAR
Hastelloy C-276	Hastelloy_C-276
Inconel 600	Inconel_600
Iron chromium 10(Fe90%・Cr9%・Mo1%)	Iron_chromium_10
Iron chromium type 2	Iron_chromium_2
$K_2Cr_2O_7$	K2Cr2O7
K_2CrO_4	K2CrO4

Nichrome	Nichrome
Stainless steel SUS301	SUS301
Stainless steel SUS304	SUS304
Stainless steel SUS316L	SUS316L
Stainless steel SUS430	SUS430
Stainless steel SUS631	SUS631
$ZnCr_2O_4$	ZnCr2O4
	32 species(as of 2.27.2026)

- Mn

Absorption edge：K-edge、 Net plane：Si(111)のみ

Sample name	Notation in the database
$C_{32}H_{16}MnN_8$	C32H16MnN8
$KMnO_4$	KMnO4
$Li_2Mn_3NiO_8$	Li2Mn3NiO8
Li_2MnO_3	Li2MnO3
$LiMn_2O_4$	LiMn2O4
$LiNi_{0.33}Mn_{0.33}Co_{0.33}O_2$	LiNi0_33Mn0_33Co0_33O2
Manganin	Manganin
$Mn(C_5H_7O_2)_3$	Mn(C5H7O2)3
$Mn(CH3COO)_2 \cdot 4H_2O$	Mn(CH3COO)2_4H2O
$Mn(NO_3)_2 \cdot 6H_2O$	Mn(NO3)2_6H2O
Mn-foil	Mn-foil
Mn_2O_3	Mn2O3
Mn_3O_4	Mn3O4
MnB	MnB
MnC_2O_4	MnC2O4
$MnCO_3$	MnCO3
$MnCl_2$	MnCl2
$MnCl_2 \cdot 4H_2O$	MnCl2_4H2O
$MnCr_2O_4$	MnCr2O4
MnF_2	MnF2
$MnFe_2O_4$	MnFe2O4
MnI_2	MnI2
MnO	MnO
MnO_2	MnO2
$MnSO_4 \cdot 4-5H2O$	MnSO4_4-5H2O
MnSb	MnSb

MnSi	MnSi
MnTiO$_3$	MnTiO3
YMnO$_3$	YMnO3
α-MnS	a-MnS
approx. MnBr$_2$	approx_MnBr2
	31 species(as of 9.20.2023)

- Fe

Absorption edge：K-edge、Net plane：Si(111)のみ

Sample name	Notation in the database
$(NH_4)_2Fe(SO_4)_2 \cdot xH_2O$	(NH4)2Fe(SO4)2_xH2O
$(NH_4)Fe(SO_4)_2 \cdot xH_2O$	(NH4)Fe(SO4)2_xH2O
42 Invar	42_Invar
45 Permalloy	45_Permalloy
78 Permalloy	78_Permalloy
$BaFe_{12}O_{19}$	BaFe12O19
$C_{32}H_{16}FeN_8$	C32H16FeN8
$Ca_2Fe_2O_5$	Ca2Fe2O5
$CuFe_2O_4$	CuFe2O4
$Fe(C_5H_7O_2)_3$	Fe(C5H7O2)3
$Fe(NO_3)_3 \cdot 9H_2O$	Fe(NO3)3_9H2O
Fe-foil	Fe-foil
$Fe_2(SO_4)_3 \cdot xH_2O$	Fe2(SO4)3_xH2O
$Fe_3(PO_4)_2 \cdot 8H_2O$	Fe3(PO4)2_8H2O
Fe_3N	Fe3N
Fe_3O_4	Fe3O4
Fe_3P	Fe3P
Fe_4N	Fe4N
FeB	FeB
$FeBr_3$	FeBr3
$FeCl_2$	FeCl2
$FeCl_2 \cdot 4H_2O$	FeCl2_4H2O
$FeCl_3$	FeCl3
$FeCl_3 \cdot 6H_2O$	FeCl3_6H2O
$FeF_3 \cdot 3H_2O$	FeF3_3H2O
$FeMoO_4$	FeMoO4

$FeNi_2O_4$	FeNi2O4
FeO	FeO
$FePO_4$	FePO4
FeS	FeS
FeS_2	FeS2
$FeSO_4$	FeSO4
$FeSO_4 \cdot 7H_2O$	FeSO4_7H2O
FeSe	FeSe
$FeSi_2$	FeSi2
$FeTiO_3$	FeTiO3
$FeWO_4$	FeWO4
HAVAR	HAVAR
Hastelloy C-276	Hastelloy_C-276
Inconel 600	Inconel_600
Iron chromium 10(Fe90% · Cr9% · Mo1%)	Iron_chromium_10
Iron chromium type 2	Iron_chromium_2
KOVAR	KOVAR
$LaFeO_3$	LaFeO3
$LiFeO_2$	LiFeO2
$LiFePO_4$	LiFePO4
$MgFe_2O_4$	MgFe2O4
$MnFe_2O_4$	MnFe2O4
Stainless steel SUS301	SUS301
Stainless steel SUS304	SUS304
Stainless steel SUS316L	SUS316L
Stainless steel SUS430	SUS430
Stainless steel SUS631	SUS631
$Y_3Fe_5O_{12}$	Y3Fe5O12

$ZnFe_2O_4$	ZnFe2O4
α-Fe_2O_3	a-Fe2O3
α-FeOOH	a-FeOOH
approx. $Fe(OH)(CH_3COO)_2$	approx_Fe(OH)(CH3COO)2
approx. $Fe(OH)_3$	approx_Fe(OH)3
approx. $FeBr_2$	approx_FeBr2
approx. γ-FeOOH	approx_g-FeOOH
μ -metal	mu-metal
	62 species(as of 9.20.2023)

- Co

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$C_{32}H_{16}CoN_8$	C32H16CoN8
$Co(C_2H_3O_2)_2 \cdot 4H_2O$	Co(C2H3O2)2_4H2O
$Co(C_5H_7O_2)_3$	Co(C5H7O2)3
$Co(NO_3)_2 \cdot 6H_2O$	Co(NO3)2_6H2O
$Co(OH)_2$	Co(OH)2
Co-foil	Co-foil
Co-oxide Black	Co-oxide_Black
Co_2P	Co2P
$Co_3(PO_4)_2 \cdot 8H_2O$	Co3(PO4)2_8H2O
Co_3O_4	Co3O4
$CoBr_2$	CoBr2
CoC_2O_4	CoC2O4
CoCO3(basic)	CoCO3(basic)
$CoCl_2$	CoCl2
CoF_2	CoF2
$CoFe_2O_4$	CoFe2O4
$CoMoO_4$	CoMoO4
CoO	CoO
CoO(OH)	CoO(OH)
CoS	CoS
CoS_2	CoS2
$CoSO_4 \cdot 7H_2O$	CoSO4_7H2O
CoSb	CoSb
$CoTiO_3$	CoTiO3
$CoWO_4$	CoWO4
HAVAR	HAVAR

KOVAR	KOVAR
$LiCoO_2$	LiCoO2
$LiCoPO_4$	LiCoPO4
LiNi0.33Mn0.33Co0.33O2	LiNi0_33Mn0_33Co0_33O2
$LiNi_{0.8}Co_{0.2}O_2$	LiNi0_8Co0_2O2
	31 species (as of 10.9.2020)

- Ni

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
42 Invar	42_Invar
45 Permalloy	45_Permalloy
78 Permalloy	78_Permalloy
$C_{32}H_{16}N_8Ni$	C32H16N8Ni
Copper nickel	Copper_nickel
HAVAR	HAVAR
Hastelloy C-276	Hastelloy_C-276
Inconel 600	Inconel_600
$K_2Ni(H_2IO_6)_2$	K2Ni(H2IO6)2
K_2NiF_6	K2NiF6
KOVAR	KOVAR
$Li_2Mn_3NiO_8$	Li2Mn3NiO8
LiNi0.33Mn0.33Co0.33O2	LiNi0_33Mn0_33Co0_33O2
$LiNi_{0.8}Co_{0.2}O_2$	LiNi0_8Co0_2O2
$LiNiO_2$	LiNiO2
Manganin	Manganin
$Ni(C_2H_3O_2)_2・xH_2O$	Ni(C2H3O2)2_xH2O
$Ni(C_5H_7O_2)_2$	Ni(C5H7O2)2
$Ni(NO_3)_2・6H_2O$	Ni(NO3)2_6H2O
$Ni(OH)_2$	Ni(OH)2
Ni-foil	Ni-foil
Ni_2O_3	Ni2O3
$NiBr_2$	NiBr2
$NiC_2O_4・2H_2O$	NiC2O4_2H2O
$NiCO_3(basic)$	NiCO3(basic)
$NiCO_3・xH_2O$	NiCO3_xH2O

NiCl$_2$	NiCl2
NiCl$_2$ · 6H$_2$O	NiCl2_6H2O
NiF$_2$	NiF2
NiFe$_2$O$_4$	NiFe2O4
NiI$_2$	NiI2
NiMoO$_4$	NiMoO4
NiO	NiO
NiS	NiS
NiSO$_4$	NiSO4
NiSO$_4$ · 6H$_2$O	NiSO4_6H2O
NiTiO$_3$	NiTiO3
NiWO$_4$	NiWO4
Nichrome	Nichrome
Nickel silver	Nickel_silver
Stainless steel SUS301	SUS301
Stainless steel SUS304	SUS304
Stainless steel SUS316L	SUS316L
Stainless steel SUS631	SUS631
μ -metal	mu-metal
	45 species (as of 12.14.2020)

- Cu

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
$C_{32}H_{16}CuN_8$	C32H16CuN8
Copper nickel	Copper_nickel
$Cu(C_5H_7O_2)_2$	Cu(C5H7O2)2
$Cu(CH_3COO)_2$(neutral)	Cu(CH3COO)2(neutral)
$Cu(NO_3)_2 \cdot 3H_2O$	Cu(NO3)2_3H2O
$Cu(OH)_2$	Cu(OH)2
Cu-foil	Cu-foil
Cu_2O	Cu2O
Cu_2S	Cu2S
Cu_3N	Cu3N
$CuBr_2$	CuBr2
$CuC_2O_4 \cdot H_2O$	CuC2O4_H2O
$CuCO_3$(basic)	CuCO3(basic)
CuCl	CuCl
$CuCl_2$	CuCl2
$CuCl_2 \cdot 2H_2O$	CuCl2_2H2O
$CuCr_2O_4$	CuCr2O4
$CuF_2 \cdot 2H_2O$	CuF2_2H2O
$CuFe_2O_4$	CuFe2O4
CuI	CuI
$CuMoO_4$	CuMoO4
CuO	CuO
$CuSO_4$	CuSO4
$CuSO_4 \cdot 5H_2O$	CuSO4_5H2O
CuSe	CuSe
$CuWO_4$	CuWO4

Manganin	Manganin
Nickel silver	Nickel_silver
approx. CuF_2	approx_CuF2
μ -metal	mu-metal
	30 species (as of 10.9.2020)

- Zn

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
$C_{32}H_{16}ZnN_8$	C32H16ZnN8
Nickel silver	Nickel_silver
$Cu(C_5H_7O_2)_2・xH_2O$	Cu(C5H7O2)2_xH2O
$Zn(CH_3COO)_2・2H_2O$	Zn(CH3COO)2_2H2O
$Zn(NO_3)_2・6H_2O$	Zn(NO3)2_6H2O
Zn-foil	Zn-foil
$Zn_2B_6O_{11}$	Zn2B6O11
$Zn_2P_2O_7$	Zn2P2O7
Zn_2SiO_4	Zn2SiO4
$Zn_3(PO_4)_2・4H_2O$	Zn3(PO4)2_4H2O
Zn_3As_2	Zn3As2
Zn_4Sb_3	Zn4Sb3
$ZnAl_2O_4$	ZnAl2O4
$ZnAs_2$	ZnAs2
$ZnBr_2$	ZnBr2
$ZnC_2O_4・2H_2O$	ZnC2O4_2H2O
$ZnCl_2$	ZnCl2
$ZnCr_2O_4$	ZnCr2O4
ZnF_2	ZnF2
$ZnF_2・4H_2O$	ZnF2_4H2O
$ZnFe_2O_4$	ZnFe2O4
ZnI_2	ZnI2
$ZnMoO_4$	ZnMoO4
ZnO	ZnO
ZnS	ZnS
ZnS(melt)	ZnS(melt)

$ZnSO_4 \cdot 7H_2O$	ZnSO4_7H2O
ZnSb	ZnSb
$ZnSeO_3$	ZnSeO3
ZnTe	ZnTe
$ZnWO_4$	ZnWO4
approx. $5ZnO \cdot 2CO_3 \cdot 4H_2O$	approx._5ZnO_2CO3_4H2O
	32 species (as of 2.1.2024)

● Ga

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$Ga(NO_3)_3\_xH_2O$	Ga(NO3)3_xH2O
$Ga_2(SO_4)_3$	Ga2(SO4)3
$Ga_2(SO_4)_3\_xH_2O$	Ga2(SO4)3_xH2O
Ga_2O_3	Ga2O3
Ga_2S_3	Ga2S3
Ga_2Se_3	Ga2Se3
Ga_2Te_3	Ga2Te3
GaAs	GaAs
$GaBr_3$	GaBr3
$GaCl_3$	GaCl3
GaI_3	GaI3
GaN	GaN
GaO_2H	GaO2H
GaP	GaP
GaS	GaS
Ga powder	Ga_powder
V_3Ga	V3Ga
	17 species (as of 2.1.2024)

- Ge

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
Ge_3N_4	Ge3N4
GeO_2	GeO2
GeS	GeS
GeS_2	GeS2
GeSe	GeSe
GeTe	GeTe
Ge_powder	Ge_powder
Li_2GeO_3	Li2GeO3
Na_2GeO_3	Na2GeO3
	9 species（as of 2.22.2023）

- As

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
As_2O_3	As2O3
As_2O_5	As2O5
As_2S_3	As2S3
As powder	As_powder
GaAs	GaAs
InAs(metal base)	InAs(metal_base)
Zn_3As_2	Zn3As2
$ZnAs_2$	ZnAs2
	8 species (as of 2.1.2024)

- Se

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
Bi_2Se_3	Bi2Se3
Cu_2Se	Cu2Se
CuSe	CuSe
FeSe	FeSe
Ga_2Se_3	Ga2Se3
GeSe	GeSe
In_2Se_3	In2Se3
InSe	InSe
MnSe	MnSe
NiSe	NiSe
Sb_2Se_3	Sb2Se3
Se powder	Se_powder
$SeCl_4$	SeCl4
SeO_2	SeO2
SeS_2	SeS2
SnSe	SnSe
$TiSe_2$	TiSe2
WSe_2	WSe2
$ZnSeO_3$	ZnSeO3
approx. $MoSe_2$	approx_MoSe2
	20 species (as of 10.3.2024)

- Sr

Absorption edge : K-edge、 Net plane : Si(111)、 Si(311)

Sample name	Notation in the database
$Sr(NO_3)_2$	Sr(NO3)2
$Sr(OH)_2$	Sr(OH)2
$Sr(OH)_2 \cdot 8H_2O$	Sr(OH)2_8H2O
$Sr_{0.95}Eu_{0.02}Dy_{0.03}Al_2O_4$	Sr0_95Eu0_02Dy0_03Al2O4
$SrAl_2O_4$	SrAl2O4
$SrBr_2$	SrBr2
$SrBr_2 \cdot 6H_2O$	SrBr2_6H2O
$SrC_2O_4 \cdot H_2O$	SrC2O4・H2O
$SrCO_3$	SrCO3
$SrCl_2$	SrCl2
$SrCl_2 \cdot 6H_2O$	SrCl2_6H2O
SrF_2	SrF2
$SrFe_{12}O_{19}$	SrFe12O19
SrI_2	SrI2
$SrMoO_4$	SrMoO4
SrO	SrO
SrS	SrS
$SrSO_4$	SrSO4
$SrSi_2$	SrSi2
$SrTiO_3$	SrTiO3
SrV_2O_6	SrV2O6
$SrWO_4$	SrWO4
$SrZrO_3$	SrZrO3
stabilized ZrO_2(CSZ)	approx_Sr3N2
stabilized ZrO_2(MSZ)	approx_SrNb2O6
approx. $SrTa_2O_6$	approx_SrTa2O6

- Y

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
$NaY_{0.77}Yb_{0.20}Eu_{0.03}F_4$	NaY0_77Yb0_20Eu0_03F4
$Y(NO_3)_3 \cdot 6H_2O$	Y(NO3)3_6H2O
Y-foil	Y-foil
$Y_{1.92}Eu_{0.08}O_3$	Y1_92Eu0_08O3
$Y_2(CO_3)_3 \cdot xH_2O$	Y2(CO3)3_xH2O
$Y_2(SO_4)_3$	Y2(SO4)3
Y_2O_3	Y2O3
Y_2S_3	Y2S3
$Y_3Al_5O_{12}$	Y3Al5O12
$Y_3Fe_5O_{12}$	Y3Fe5O12
$Y_4Al_2O_9$	Y4Al2O9
$YAlO_3$	YAlO3
YB_6	YB6
YCl_3	YCl3
$YCl_3 \cdot xH_2O$	YCl3_xH2O
YF_3	YF3
YH_2	YH2
$YMnO_3$	YMnO3
YN	YN
$YPO_4 \cdot xH_2O$	YPO4_xH2O
approx. YSi	approx_YSi
	21 species（as of 9.20.2023）

● Zr

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
BaZrO$_3$	BaZrO3
Li$_2$ZrO$_3$	Li2ZrO3
Na$_2$ZrO$_3$	Na2ZrO3
PbZrO$_3$	PbZrO3
SrZrO$_3$	SrZrO3
Zr(OH)$_4$	Zr(OH)4
Zr(SO$_4$)$_2$・4H$_2$O	Zr(SO4)2_4H2O
Zr-foil	Zr-foil
ZrB$_2$	ZrB2
ZrC	ZrC
ZrCl$_4$	ZrCl4
ZrH$_2$	ZrH2
ZrI$_4$	ZrI4
ZrN	ZrN
ZrO(CH$_3$COO)$_2$	ZrO(CH3COO)2
ZrO(NO$_3$)$_2$・2H$_2$O	ZrO(NO3)2_2H2O
ZrO$_2$	ZrO2
ZrOCl$_2$・8H$_2$O	ZrOCl2_8H2O
ZrS$_2$	ZrS2
ZrSi$_2$	ZrSi2
approx. ZrSiO$_4$	approx_ZrSiO4
stabilized ZrO$_2$(CSZ)	stabilized_ZrO2(CSZ)
stabilized ZrO$_2$(MSZ)	stabilized_ZrO2(MSZ)
stabilized ZrO$_2$(YSZ)	stabilized_ZrO2(YSZ)
	24 species (as of 6.6.2017)

- Nb

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$KNbO_3$	KNbO3
$LiNbO_3$	LiNbO3
$NaNbO_3$	NaNbO3
Nb-foil	Nb-foil
Nb_2O_5	Nb2O5
NbB	NbB
NbB_2	NbB2
$NbBr_5$	NbBr5
NbC	NbC
$NbCl_5$	NbCl5
NbF_5	NbF5
NbN	NbN
NbO	NbO
NbO_2	NbO2
$NbOCl_3$	NbOCl3
NbS_2	NbS2
$NbSi_2$	NbSi2
$NbTe_4$	NbTe4
approx. Nb_2O_3	approx_Nb2O3
approx. $SrNb_2O_6$	approx_SrNb2O6
	20 species (as of 1.31.2023)

- Mo

Absorption edge : K-edge、 Net plane : Si(111)、 Si(311)

Sample name	Notation in the database
$(NH_4)_6Mo_7O_{24} \cdot 4H_2O$	(NH4)6Mo7O24_4H2O
Ag_2MoO_4	Ag2MoO4
$BaMoO_4$	BaMoO4
Bi_2MoO_6	Bi2MoO6
$CaMoO_4$	CaMoO4
$CoMoO_4$	CoMoO4
$CuMoO_4$	CuMoO4
$FeMoO_4$	FeMoO4
H_2MoO_4	H2MoO4
K_2MoO_4	K2MoO4
Li_2MoO_4	Li2MoO4
$MgMoO_4$	MgMoO4
Mo-foil	Mo-foil
Mo_2C	Mo2C
Mo_2N	Mo2N
MoB	MoB
$MoCl_5$	MoCl5
MoO_2	MoO2
MoO_3	MoO3
MoS_2	MoS2
$MoSi_2$	MoSi2
$MoTe_2$	MoTe2
Na_2MoO_4	Na2MoO4
$NiMoO_4$	NiMoO4
$SrMoO_4$	SrMoO4
approx. $MoSe_2$	approx_MoSe2

- Ru

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$Ru(C_{11}H_{19}O_2)_3$	Ru(C11H19O2)3
$RuCl_3$	RuCl3
$RuCl_3NO \cdot xH_2O$	RuCl3NO_xH2O
$RuCl_3 \cdot xH_2O$	RuCl3_xH2O
RuI_3	RuI3
$RuI_3 \cdot xH_2O$	RuI3_xH2O
RuO_2	RuO2
$RuO_2 \cdot xH_2O$	RuO2_xH2O
$[Ru(NH_3)_5Cl]Cl_2$	[Ru(NH3)5Cl]Cl2
$[Ru(NH_3)_5]Cl_2$	[Ru(NH3)5]Cl2
$[Ru(NH3)6]Cl_2$	[Ru(NH3)6]Cl2
$[Ru(NH_3)_6]Cl_3$	[Ru(NH3)6]Cl3
	12 species (as of 12.1.2016)

- Rh

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$[(CF_3CF_2CF_2CO_2)_2Rh]_2$	C16F28O8Rh2
$Rh(NO_3)_3 \cdot xH_2O$	Rh(NO3)3_xH2O
Rh-foil	Rh-foil
$Rh_2(OOCCH_3)_4$	Rh2(OOCCH3)4
Rh_2O_3	Rh2O3
$Rh_2O_3 \cdot xH2O$	Rh2O3_xH2O
$RhCl_3$	RuCl3
$RhCl_3 \cdot xH_2O$	RhCl3_xH2O
	8 species（as of 12.1.2016）

● Pd

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
Pd(CH$_3$COO)$_2$	Pd(CH3COO)2
Pd(NH3)$_4$Cl$_2$・H$_2$O	Pd(NH3)4Cl2_H2O
Pd-foil	Pd-foil
PdBr$_2$	PdBr2
PdCl$_2$	PdCl2
PdCl$_2$・2H$_2$O	PdCl2_2H2O
PdI$_2$	PdI2
PdO	PdO
PdO・xH$_2$O	PdO_xH2OO
PdSO$_4$	PdSO4
PdSi	PdSi
	11 species (as of 12.1.2016)

- Ag

Absorption edge：K-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
Ag-foil	Ag-foil
Ag_2CO_3	Ag2CO3
Ag_2CrO_4	Ag2CrO4
Ag_2MoO_4	Ag2MoO4
Ag_2O	Ag2O
Ag_2O_2	Ag2O2
Ag_2SO_4	Ag2SO4
Ag_2Te	Ag2Te
Ag_2WO_4	Ag2WO4
$Ag_4P_2O_7$	Ag4P2O7
Ag_4RbI_5	Ag4RbI5
$AgAsF_6$	AgAsF6
$AgCl$	AgCl
$AgClO_3$	AgClO3
$AgClO_4$	AgClO4
$AgClO_4 \cdot H_2O$	AgClO4_H2O
$AgClO_4 \cdot xH_2O$	AgClO4_xH2O
AgF_2	AgF2
AgI	AgI
$AgNO_3$	AgNO3
$AgReO_4$	AgReO4
$AgSbF_6$	AgSbF6
$AgVO_3$	AgVO3
$C_{10}H_9AgN_4O_2S$	C10H9AgN4O2S
$C_2F_5CO_2Ag$	C2F5CO2Ag
$C_6H_{11}(CH_2)_3CO_2Ag$	C6H11(CH2)3CO2Ag

CF$_3$CF$_2$CF$_2$CO$_2$Ag	CF3CF2CF2CO2Ag
CH$_3$C$_6$H$_2$SO$_3$Ag	CH3C6H2SO3Ag
CH$_3$CH(OH)COOAg	CH3CH(OH)COOAg
	29 species (as of 2.9.2017)

- In

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
In(NO$_3$)$_3$・xH$_2$O	In(NO3)3_xH2O
In(OH)$_3$	In(OH)3
In(SO$_4$)$_3$	In(SO4)3
In(SO$_4$)$_3$・xH$_2$O	In(SO4)3_xH2O
In-foil	In-foil
In$_2$O$_3$	In2O3
In$_2$S$_3$	In2S3
In$_2$Se$_3$	In2Se3
In$_2$Te$_3$	In2Te3
InAs(metal base)	InAs(metal_base)
InBr$_3$(metal base)	InBr3(metal_base)
InCl$_3$	InCl3
InCl$_3$・xH$_2$O	InCl3_xH2O
InF$_3$	InF3
InF$_3$・xH$_2$O	InF3_xH2O
InI$_3$(metal base)	InI3(metal_base)
InP(metal base)	InP(metal_base)
InS	InS
InSb	InSb
InSe	InSe
InTe	InTe
	21 species (as of 6.24.2017)

● Sn

Absorption edge：K-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
$CaSnO_3$	CaSnO3
H_2SnO_3	H2SnO3
Smartec-H($Mn_{3.1}Zn_{0.5}Sn_{0.4}N$)	Smartec-H
Smartec-M($Mn_{3.1}Zn_{0.5}Sn_{0.4}N$)	Smartec-M
Sn-foil	Sn-foil
$Sn_2P_2O_7$	Sn2P2O7
$SnBr_2$	SnBr2
SnC_2O_4	SnC2O4
$SnCl_2$	SnCl2
$SnCl_2・xH_2O$	SnCl2_xH2O
$SnCl_4・xH_2O$	SnCl4_xH2O
SnF_2	SnF2
SnI_2	SnI2
SnI_4	SnI4
SnO	SnO
SnO_2	SnO2
SnS	SnS
SnS_2	SnS2
$SnSO_4$	SnSO4
SnSe	SnSe
SnTe	SnTe
	21 species (as of 3.10.2021)

● Sb

Absorption edge : K-edge、Net plane : Si(111)、Si(311)

Sample name	Notation in the database
$AgSbF_6$	AgSbF6
AlSb	AlSb
InSb	InSb
MnSb	MnSb
Sb-foil	Sb-foil
Sb_2O_3	Sb2O3
Sb_2O_4	Sb2O4
Sb_2S_3	Sb2S3
Sb_2Se_3	Sb2Se3
Sb_2Te_3	Sb2Te3
$SbBr_3$	SbBr3
$SbCl_3$	SbCl3
SbF_3	SbF3
Zn_4Sb_3	Zn4Sb3
ZnSb	ZnSb
approx. Sb_2O_5	approx._Sb2O5
	16 species (as of 9.19.2018)

- Te

Absorption edge：K-edge、 Net plane： Si(111)、 Si(311)

Sample name	Notation in the database
Ag_2Te	Ag2Te
Bi_2Te_3	Bi2Te3
Cr_2Te_3	Cr2Te3
Cu_2Te	Cu2Te
Ga_2Te_3	Ga2Te3
GaTe	GaTe
GeTe	GeTe
H_6TeO_6	H6TeO6
In_2Te_3	In2Te3
InTe	InTe
MnTe	MnTe
$MoTe_2$	MoTe2
$NbTe_4$	NbTe4
NiTe	NiTe
PbTe	PbTe
Sb_2Te_3	Sb2Te3
SnTe	SnTe
Te powder	Te_powder
$TeBr_4$	TeBr4
$TeCl_4$	TeCl4
TeI_4	TeI4
TeO_2	TeO2
TeO_3	TeO3
WTe_2	WTe2
ZnTe	ZnTe
approx. CuTe	approx_CuTe

- Cs

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)

Sample name	Notation in the database
$(COOCs)_2$	(COOCs)2
Cs_2CO_3	Cs2CO3
Cs_2SO_4	Cs2SO4
CsBr	CsBr
CsCOOH	CsCOOH
CsCl	CsCl
$CsClO_4$	CsClO4
CsF	CsF
CsI	CsI
$CsNO_3$	CsNO3
$CsVO_3$	CsVO3
approx. $Cs_2Ti_4O_9$	approx_Cs2Ti4O9
	12 species (as of 12.19.2019)

- Ba

Absorption edge：K-edge、 Net plane：Si(311)

Absorption edge：L-edge、 Net plane：Si(111)

Sample name	Notation in the database
$Ba(NO_3)_2$	Ba(NO3)2
$Ba(OH)_2 \cdot 8H_2O$	Ba(OH)2_8H2O
$Ba_3(PO_4)_2$	Ba3(PO4)2
$BaAl_2O_4$	BaAl2O4
BaB_6	BaB6
$BaBr_2$	BaBr2
$BaBr_2 \cdot 2H_2O$	BaBr2_2H2O
BaC_2O_4	BaC2O4
$BaCO_3$	BaCO3
$BaCl_2$	BaCl2
$BaCl_2 \cdot 2H_2O$	BaCl2_2H2O
$BaCrO_4$	BaCrO4
BaF_2	BaF2
$BaFe_{12}O_{19}$	BaFe12O19
$BaHfO_3$	BaHfO3
BaI_2	BaI2
$BaI_2 \cdot 2H_2O$	BaI2_2H2O
$BaMoO_4$	BaMoO4
$BaNb_2O_6$	BaNb2O6
BaO	BaO
BaO_2	BaO2
BaS	BaS
$BaSO_4$	BaSO4
$BaSi_2$	BaSi2
$BaTaO_2N$	BaTaO2N

BaTiO$_3$	BaTiO3
BaWO$_4$	BaWO4
BaZrO$_3$	BaZrO3
approx. Ba$_3$N$_2$	approx_Ba3N2
approx. BaH$_2$	approx_BaH2
	30 species (as of 3.4.2020)

- Ta

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
Hf-foil	Hf-foil
$HfCl_4$	HfCl4
HfO_2	HfO2
HfS_2	HfS2
	4 species（as of 12.16.2025)

- Ta

Absorption edge：K-edge、 Net plane：Si(311)

Absorption edge：L-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
Ta-foil	Ta-foil
Ta_2O_5	Ta2O5
Ta_3N_5	Ta3N5
TaB	TaB
TaB_2	TaB2
$TaBr_5$	TaBr5
TaC	TaC
$TaCl_5$	TaCl5
TaN	TaN
approx. $SrTa_2O_6$	approx_SrTa2O6
approx. TaS_2	approx_TaS2
	12 species（as of 1.31.2023）

● W

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
Ag_2WO_4	Ag2WO4
$BaWO_4$	BaWO4
$CoWO_4$	CoWO4
$CuWO_4$	CuWO4
$FeWO_4$	FeWO4
H_2WO_4	H2WO4
$MnWO_4$	MnWO4
$NiWO_4$	NiWO4
$SrWO_4$	SrWO4
$W(CO)_6$	W(CO)6
W-foil	W-foil
WB	WB
WBr_5	WBr5
WC	WC
WCl_5	WCl5
WCl_6	WCl6
WO_2	WO2
WO_3	WO3
WS_2	WS2
WSe_2	WSe2
WSi_2	WSi2
WTe_2	WTe2
$ZnWO_4$	ZnWO4
approx. W_2C	approx_W2C
	24 species (as of 1.31.2023)

- Ir

Absorption edge：L-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
Ir($C_5H_7O_2$)$_3$	Ir(C5H7O2)3
Ir-foil	Ir-foil
IrCl$_3$	IrCl3
IrCl$_3$・3H$_2$O	IrCl3_3H2O
IrCl$_4$	IrCl4
IrO$_2$	IrO2
IrSi	IrSi
Ir_powder	Ir_powder
	8 species (as of 2.22.2023)

● Pt

Absorption edge：L-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$H_2Pt(OH)_6$	H2Pt(OH)6
Pt-foil	Pt-foil
$PtBr_2$	PtBr2
$PtCl_2$	PtCl2
$PtCl_4 \cdot 5H_2O$	PtCl4_5H2O
PtI_2	PtI2
PtO_2	PtO2
$PtO_2 \cdot xH_2O$	PtO2_xH2O
	8 species (as of 12.1.2016)

● Au

Absorption edge：L-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
Au(OH)$_3$	Au(OH)3
Au-foil	Au-foil
AuBr$_3$	AuBr3
AuCl$_3$	AuCl3
AuCl$_3$・xH$_2$O	AuCl3_xH2O
HAuBr$_4$・xH$_2$O	HAuBr4_xH2O
HAuCl$_4$・4H$_2$O	HAuCl4_4H2O
KAuCl$_4$	KAuCl4
	8 species（as of 12.1.2016）

- Pb

Absorption edge : L-edge、 Net plane : Si(111)、 Si(311)

Sample name	Notation in the database
$Pb(CH_3COO)_2$	Pb(CH3COO)2
$Pb(CH_3COO)_2 \cdot 3H_2O$	Pb(CH3COO)2_3H2O
$Pb(NO_3)_2$	Pb(NO3)2
Pb_3O_4	Pb3O4
PbO_2	PbO2
$PbCl_2$	PbCl2
$PbCO_3$	PbCO3
PbF_2	PbF2
Pb-foil	Pb-foil
PbO	PbO
PbO_2	PbO2
PbS	PbS
$PbSO_4$	PbSO4
PbTe	PbTe
$PbTiO_3$	PbTiO3
$PbZrO_3$	PbZrO3
	15 species (as of 3.10.2021)

- Bi

Absorption edge：L-edge、 Net plane：Si(111)、 Si(311)

Sample name	Notation in the database
$Bi(NO_3)_3 \cdot xH_2O$	Bi(NO3)3_xH2O
$Bi(OH)_3$	Bi(OH)3
Bi-foil	Bi-foil
Bi_2MoO_6	Bi2MoO6
Bi_2O_3	Bi2O3
Bi_2S_3	Bi2S3
Bi_2Se_3	Bi2Se3
$Bi_2Sn_2O_7$	Bi2Sn2O7
Bi_2Te_3	Bi2Te3
Bi_2WO_6	Bi2WO6
$Bi_4Ti_3O_{12}$	Bi4Ti3O12
$BiBr_3$	BiBr3
$BiCl_3$	BiCl3
BiF_3	BiF3
BiI_3	BiI3
BiOCl	BiOCl
BiSb	BiSb
$NaBiO_3 \cdot xH_2O$	NaBiO3_xH2O
approx. $(BiO)_2(CO_3)$	approx_(BiO)2(CO3)
	19 species (as of 2.1.2022)

● La

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)

Sample name	Notation in the database
La(NO$_3$)$_3$・6H$_2$O	La(NO3)3_6H2O
La(OH)$_3$	La(OH)3
La$_2$(SO$_4$)$_3$	La2_SO4_3
La$_2$(SO$_4$)$_3$・9H$_2$O	La2_SO4_3_9H2O
La$_2$O$_3$	La2O3
La$_2$S$_3$	La2S3
La$_2$Ti$_2$O$_7$	La2Ti2O7
LaB$_6$	LaB6
LaBr$_3$	LaBr3
LaCl$_3$	LaCl3
LaCl$_3$・7H$_2$O	LaCl3_7H2O
LaF$_3$	LaF3
LaFeO$_3$	LaFeO3
LaH$_x$	LaHx
LaI$_3$	LaI3
LaN	LaN
LaNi$_5$	LaNi5
LaSi	LaSi
approx. La$_2$(CO$_3$)$_3$	approx_La2(CO3)3
	20 species (as of 9.19.2018)

- Ce

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)

Sample name	Notation in the database
$Ce(NH_4)_2(NO_3)_6 \cdot xH_2O$	Ce(NH4)2(NO3)6_xH2O
$Ce(NO_3)_3 \cdot 6H_2O$	Ce(NO3)3_6H2O
$Ce(OH)_4$	Ce(OH)4
$Ce_2(C_2O_4)_3 \cdot xH_2O$	Ce2(C2O4)3_xH2O
$Ce_2(CO_3)_3 \cdot xH_2O$	Ce2(CO3)3_xH2O
CeB_6	CeB6
$CeBr_3$	CeBr3
$CeCl_3$	CeCl3
$CeCl_3 \cdot xH_2O$	CeCl3_xH2O
CeF_3	CeF3
CeO_2	CeO2
$CePO_4$	CePO4
approx. Ce_2S_3	approx_Ce2S3
	13 species (as of 3.26.2019)

● Nd

Absorption edge：K-edge、 Net plane：Si(311)

Absorption edge：L-edge、 Net plane：Si(111)

Sample name	Notation in the database
$Nd(NO_3)_3 \cdot xH_2O$	Nd(NO3)3_xH2O
$Nd_2(C_2O_4)_3 \cdot 10H_2O$	Nd2(C2O4)3_10H2O
$Nd_2(SO_4)_3 \cdot 8H_2O$	Nd2(SO4)3_8H2O
Nd_2O_3	Nd2O3
$NdBr_3$	NdBr3
$NdCl_3$	NdCl3
NdF_3	NdF3
NdH_x	NdHx
approx. Nd_2S_3	approx_Nd2S3
	9 species（as of 2.23.2018）

● Eu

Absorption edge : K-edge、 Net plane : Si(311)

Absorption edge : L-edge、 Net plane : Si(111)

Sample name	Notation in the database
$Ba_{0.86}Eu_{0.14}MgAl_{10}O_{17}$	Ba0_86Eu0_14MgAl10O17
$Eu(NO_3)_3 \cdot xH_2O$	Eu(NO3)3_xH2O
$Eu_2(SO_4)_3 \cdot xH_2O$	Eu2(SO4)3_xH2O
Eu_2O_3	Eu2O3
$EuCl_3$	EuCl3
$EuCl_3 \cdot xH_2O$	EuCl3_xH2O
EuF_3	EuF3
EuH_x	EuHx
EuN	EuN
EuS	EuS
$Y_{1.92}Eu_{0.08}O_3$	Y1_92Eu0_08O3
	11 species (as of 2.1.2022)

● Tb

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)

Sample name	Notation in the database
Tb(NO$_3$)$_3$・xH$_2$O	Tb(NO3)3_xH2O
Tb$_2$(SO$_4$)$_3$・xH$_2$O	Tb2(SO4)3_xH2O
Tb$_2$O$_3$	Tb2O3
Tb$_2$S$_3$	Tb2S3
Tb$_4$O$_7$	Tb4O7
TbCl$_3$	TbCl3
TbCl$_3$・xH$_2$O	TbCl3_xH2O
TbF$_3$	TbF3
	8 species (as of 5.24.2019)

● Er

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$Er(NO_3)_3 \cdot 5H_2O$	Er(NO3)3_5H2O
$Er_2(C_2O_4)_3 \cdot 10H_2O$	Er2(C2O4)3_10H2O
Er_2O_3	Er2O3
$ErCl_3 \cdot 6H_2O$	ErCl3_6H2O
ErF_3	ErF3
ErH_2	ErH2
$NaY_{0.77}Yb_{0.20}Er_{0.03}F_4$	NaY0_77Yb0_20Er0_03F4
approx. Er_2S_3	approx_Er2S3
	8 species (as of 9.20.2023)

● Yb

Absorption edge：K-edge、Net plane：Si(311)

Absorption edge：L-edge、Net plane：Si(111)、Si(311)

Sample name	Notation in the database
$NaY_{0.77}Yb_{0.20}Er_{0.03}F_4$	NaY0_77Yb0_20Er0_03F4
$Yb(NO_3)_3 \cdot xH_2O$	Yb(NO3)3_xH2O
Yb_2O_3	Yb2O3
$YbCl_3 \cdot 6H_2O$	YbCl3_6H2O
YbF_3	YbF3
approx. $YbBr_3$	approx_YbBr3
	6 species（as of 9.20.2023）

Revision history

Revision date	Revised content
12.1.2016	XAFS Standard Sample Database release (Ti 13 species、Cr 16species、Mn 20species、Fe 30species、Co 20species、Ni 20species、Cu 24species、Zn 27species、Ru 12species、Rh 8species、Pd 11species、Pt 8species、Au 8species)
2.9.2017	Mo 22species、Ag 29species added
6.6.2017	Mo 1species、Nb 19species、Zr 24species added
6.24.2017	In 21species、Sn 20species added
8.1.2017	Mn 1species、Zn 1species、Sb 15species added
2.23.2018	V 11species、Nd 9species added
9.19.2018	Ti 1species、Fe 1species、Sb 1species、La 20species added
3.26.2019	Ce 13species、Eu 9species、Yb 5specie added
5.24.2019	Tb 8species added
7.29.2019	Mn 2species、Fe 4species、Co 1species、Er 7species added
12.19.2019	Ti 9species、V 4species、Cr 3species、Mn 5species、Fe 7species、Co 6species、Ni 5species、Cu 1species、Zn 1species、Cs 12species added
3.3.2020	Cr 11species、Mn 1species、Fe 16species、Co 2species、Ni 16species、Cu 4species、Zn 1species、Ba 30species added
4.7.2020	Cu 1species revised
6.8.2020	Fe 1species、Co 1speciesadded Co 1species revised
10.9.2020	Cr 1species、Mn 1species、Fe 2species、Co 1species、Ni 2species、Cu 1species、Zn 1species、Ta 11species、Ir 7species added
12.14.2020	Ni 2species、W 23species added
3.10.2021	Ti 1species、Sn 1species、Pb 15species added
2.1.2022	Ca 29species、Ti 1species、Mo 2species、Bi 19species、Eu 2species added
1.31.2023	Ti 1species、V 1species、Sr 26species、Nb 1species、Mo 1species, Ta 1 species, W 1 species added
2.22.2023	Ge 9species, Ir 1 species added
9.20.2023	Mn 1species、Fe 1species、Y 21species、Er 1species、Yb 1

	species added
2.1.2024	Zn 1 species、Ga 17 species、As 8 species added
10.3.2024	Se 20 species、Te 26 species added
10.23.2024	Te 26 species added
12.16.2025	Hf 4 species added
2.27.2026	Sc 5 species、Cr 1 species added