The Periodic Table

¹ H																	² He
³ Li	⁴ Be											⁵ B	⁶ C	⁷ N	⁸ O	⁹ F	¹⁰ Ne
¹¹ Na	¹² Mg											¹³ AI	¹⁴ Si	¹⁵ P	¹⁶ S	¹⁷ CI	¹⁸ Ar
¹⁹ K	²⁰ Ca	²¹ Sc	²² Ti	²³ V	²⁴ Cr	²⁵ Mn	²⁶ Fe	²⁷ Co	²⁸ Ni	²⁹ Cu	³⁰ Zn	³¹ Ga	³² Ge	³³ As	³⁴ Se	³⁵ Br	³⁶ Kr
³⁷ Rb	³⁸ Sr	³⁹ Y	⁴⁰ Zr	⁴¹ Nb	⁴² Mo	⁴³ Tc	⁴⁴ Ru	⁴⁵ Rh	⁴⁶ Pd	⁴⁷ Ag	⁴⁸ Cd	⁴⁹ I	⁵⁰ Sn	⁵¹ Sb	⁵² Te	⁵³ I	⁵⁴ Xe
⁵⁵ Cs	⁵⁶ Ba	⁵⁷ La	⁷² Hf	⁷³ Ta	⁷⁴ W	⁷⁵ Re	⁷⁶ Os	⁷⁷ lr	⁷⁸ Pt	⁷⁹ Au	⁸⁰ Hg	⁸¹ TI	⁸² Pb	⁸³ Bi	⁸⁴ Po	⁸⁵ At	⁸⁶ Rn
⁸⁷ Fr	⁸⁸ Ra	⁸⁹ Ac															
Lanthanide		de	⁵⁸ Ce	⁵⁹ Pr	⁶⁰ Nd	⁶¹ Pm	⁶² Sm	⁶³ Eu	⁶⁴ Gd	⁶⁵ Tb	⁶⁶ Dy	⁶⁷ Ho	⁶⁸ Er	⁶⁹ Tm	⁷⁰ Yb	⁷¹ Lu	
	Actinide		⁹⁰ Th	⁹¹ Pa	⁹² U		-	-		-	_	-		-	-	-	
		BL1N2:	150	~	2,000	eV		K edge:	⁵ B ~ ¹⁴	Si	L edge:	¹⁶ S ~ ³⁵	Br				
BL6N1:		1,750	~	6,000	eV		K edge:	¹⁴ Si ~ ²²	² Ti	L edge:	³⁷ Rb ~ ⁵	⁵⁵ Cs					
BL7U:		30	~	850	eV		K edge:	³ Li ~ ⁹ F		L edge:	¹³ Al ~ ²⁷	Со					

O K edge

Back to the periodic table

	1.6						Materi
			٨				Beam
	ŀ		- 11				Mono
	1 1						Slits
(°	1.4 -						Energ Calibra
(I)	F						Rang
Absorption	1.2 - - 1.0 -			\frown	\bigwedge		Ener
	0.8						dwellir measu Metho
	520	530	540	550	560	 570	detec
		Dł	noton Er	orav (a)	/)		Date
		FI		ieigy (ev	')		Note

Material	NiO			
Beamline	BL1N2			
Monochromator	G1: 500	lines/mm		
Slits	S1 = S2	= 30 μm		
Energy Calibration	Au 4f _{7/2} @ 510 eV			
Range	510 ~ 700 eV			
	510	2.00		
	529	0.50		
	530	0.05		
Energy & Step	538	0.20		
(eV)	542	0.50		
	550	1.00		
	580	2.00		
	620	5.00		
	700			
dwelling time	3 sec.			
measured for	21 min.			
Method	TEY			
detector	I ₀ : Au mesh			
delector	(sample current)			
Date		2018/9/12		
Note	powder on In s	sheet		

Co L edge



	14 F					Material	LiCo	02
	F	A				Beamline	BL1	N2
	12	Λ				Monochromator	G1: 500 li	nes/mm
≻	F					Slits	S1 = S2 =	= 30 μm
Ш Н	10 -					Energy Calibration	Au 4f _{7/2} @	2 750 eV
ð	Ę					Range	750 ~ 8	45 eV
<u>ă</u>	8 F						750	1.00
a	È	11		Λ		Energy & Step	774	0.10
<u>,</u>	6 -			Ν		(87)	845	1.00
D	F					dwelling time	3 se	ec.
Ζ	4 -					measured for	25 m	nin.
	F					Method	TE	Y
	2					detector	I ₀ : Au mesh	
	ţ					detector	(sample curre	nt)
	٥t					Date		2018/7/13
	770	780	790	800 82	10	Note	powder on In sh	neet
		Photor	n Energy	y (eV)			<u>.</u>	

Ni L edge

Material	Ν	iO	
Beamline	BL1N2		
Monochromator	G1: 500	lines/mm	
Slits	S1 = S2	= 30 μm	
Energy Calibration	Au 4f _{7/2} @	@ 830 eV	
Range	830 ~	950 eV	
	830	2.00	
	850	0.50	
Energy & Stop	852	0.05	
(eV)	855	0.20	
(00)	880	1.00	
	890	2.00	
	950		
dwelling time	3 s	ec.	
measured for	18 ו	min.	
Method	TE	ΞY	
dotoctor	I ₀ : Au mesh		
	(sample current)		
Date		2018/9/12	
Note powder on In sheet			



Mg K edge



Material	MgO			
Beamline	BL1N2			
Monochromator	G2: 1,000	lines/mm		
Slits	S1 = S2	= 50 μm		
Energy Calibration	Au 4f _{7/2} @ 1,270 eV			
Range	1,270 ~	1,450 eV		
	1,270	3.00		
	1,300	0.50		
Energy & Sten	1,304	0.10		
	1,320	0.50		
(0 v)	1,330	1.00		
	1,360	3.00		
	1,450			
dwelling time	5 sec.			
measured for	28 min.			
Method	TEY			
data ata r	I ₀ : Au mesh			
detector	(sample current)			
Date	2018/7/13			
Note	powder on In s	sheet		

Al K edge



Al ₂ BL ² G2: 1,000 S1 = S2 Au 4f _{7/2} @	O ₃ IN2 Iines/mm = 50 μm		
BL ² G2: 1,000 S1 = S2 Au 4f _{7/2} @	IN2 lines/mm = 50 μm		
G2: 1,000 S1 = S2 Au 4f _{7/2} @	lines/mm = 50 μm		
S1 = S2 Au 4f _{7/2} @	= 50 μm		
Au 4f _{7/2} @			
	2 1,500 eV		
1,500 ~ 1,750 eV			
1,500	2.00		
1,550	0.50		
1,560	0.10		
1,580	0.50		
1,600	2.00		
1,650	5.00		
1,750			
5 sec.			
35 r	min.		
TEY			
I ₀ : Au mesh			
(sample current)			
2018/7/13			
powder on In s	sheet		
	1,500 ~ 1,500 1,550 1,560 1,580 1,600 1,650 1,750 5 s 35 r TE I ₀ : Au mesh (sample curre		



Material	Si			
Beamline	BL6N1			
Monochromator	InSb	(111)		
Slits	3 x 1	0 mm		
Energy Calibration	S K edge of K ₂ SO ₄ (2,481.7 eV)			
Range	1,820 ~	1,890 eV		
	1,820	1.00		
Energy & Step	1,837	0.20		
(eV)	1,860	0.50		
	1,890			
dwelling time	1 sec.			
measured for	8 min.			
Method	CEY / PFY			
	I ₀ : Au mesh			
detector	CEY: He 0.1 Mpa			
	PFY: Vortex -EM			
Date		2018/12/5		
Note	wafer			
	-			





Material	Si			
Beamline	BL1N2			
Monochromator	G2: 1,000	lines/mm		
Slits	S1 = S2 = 50 μr			
Energy Calibration	Au 4f _{7/2} @ 1,800 eV			
Range	1,800 ~ 1,950 eV			
	1,800	2.00		
	1,835	1.00		
Enorgy & Stop	1,840	0.50		
(eV)	1,843	0.20		
(01)	1,872	1.00		
	1,900	2.00		
	1,950			
dwelling time	3 sec.			
measured for	18 min.			
Method	TEY			
detector	I ₀ : Au mesh			
dotootoi	(sample current)			
Date		2018/7/13		
Note	wafer			



Material	SiO ₂		
Beamline	BL1N2		
Monochromator	G2: 1,000	lines/mm	
Slits	S1 = S2	= 50 μm	
Energy Calibration	Au 4f _{7/2} @ 1,800 eV		
Range	1,800 ~	1,950 eV	
	1,800	2.00	
	1,835	1.00	
Energy & Stop	1,840	0.50	
eV)	1,843	0.20	
(01)	1,872	1.00	
	1,900	2.00	
	1,950		
dwelling time	3 sec.		
measured for	18 r	min.	
Method	TE	ΞY	
detector	I ₀ : Au mesh		
	(sample current)		
Date		2018/7/13	
Note	wafer		



P K edge



P K edge



Material	FePO ₄ nH ₂ O			
Beamline	BL6N1			
Monochromator	InSb	(111)		
Slits	3 x 1	0 mm		
Energy	S K edge	of K ₂ SO ₄		
Calibration	(2,481	.7 eV)		
Range	2,120 ~ 2,210 eV			
	2,120	0.5		
Energy & Step	2,140	0.2		
(eV)	2,160	0.5		
	2,210			
dwelling time	1 sec.			
measured for	8 min.			
Method	TEY			
detector	I ₀ : Au	mesh		
delector	(sample current)			
Date	2018/12/5			
Note	powder on carbo	on tape		



CI K edge



MaterialNaClBeamlineBL6N1MonochromatorSi (111)Slits 3×10 mmEnergy CalibrationS K edge of K2SO4 (2,481.7 eV)Range $2,800 \sim 2,900 eV$ Panegy & Step (eV) $2,800 = 0.20$ $2,820 = 0.20$ $2,845 = 0.50$ $2,845 = 0.50$ $2,900 = 0.20$ dwelling time1 sec.measured for7 min.MethodCEY $detector$ I_0 : Au meshDate $2018/12/5$ Notepowder on carbon tape					
BeamlineBL6N1MonochromatorSi (111)Slits $3 \times 10 \text{ mm}$ Energy CalibrationS K edge of K2SO4 (2,481.7 eV)Range $2,800 \sim 2,900 \text{ eV}$ Amage $2,800 \sim 2,900 \text{ eV}$ Penergy & Step (eV) $2,820$ $2,820$ 0.20 $2,845$ 0.50 $2,845$ 0.50 $2,870$ 1.00 $2,900$ $2,900$ dwelling time 1 sec. measured for 7 min. Method CEY $detector$ I_0 : Au mesh CEY : He 0.1 MPaDate $2018/12/5$ Note $powder \text{ on carbon tape}$	Material	NaCl			
MonochromatorSi (111)Slits $3 \times 10 \text{ mm}$ Energy CalibrationS K edge of K2SO4 (2,481.7 eV)Range $2,800 \sim 2,900 \text{ eV}$ Amage $2,800 \sim 2,900 \text{ eV}$ Penergy & Step (eV) $2,820$ $2,845$ 0.50 $2,845$ 0.50 $2,870$ 1.00 $2,900$ $2,900$ dwelling time 1 sec. measured for 7 min. MethodCEY $detector$ I_0 : Au mesh CEY : He 0.1 MPaDate $2018/12/5$ Notepowder on carbon tape	Beamline	BL6N1			
Slits $3 \times 10 \text{ mm}$ Energy Calibration S K edge of K ₂ SO ₄ (2,481.7 eV) Range $2,800 \sim 2,900 \text{ eV}$ $A = 2,800$ 1.00 $A = 2,800$ 1.00 $A = 2,800$ 1.00 $A = 2,800$ 0.20 $A = 2,820$ 0.20 $A = 2,820$ 0.20 $A = 2,820$ 0.20 $A = 2,845$ 0.50 $A = 2,870$ 1.00 $A = 2,900$ $A = 1,00$ $A = 1,00$ $A = 2,900$ $A = 1,00$	Monochromator	Si (′	111)		
Energy Calibration S K edge of K_2SO_4 (2,481.7 eV) Range 2,800 ~ 2,900 eV Amount of the sec of the	Slits	3 x 1	0 mm		
Range $2,800 \sim 2,900 \text{ eV}$ Energy & Step (eV) $2,800$ 1.00 $2,820$ 0.20 $2,845$ 0.50 $2,870$ 1.00 $2,870$ 1.00 $2,900$ $dwelling time$ 1 sec. measured for 7 min. Method CEY $detector$ I_0 : Au mesh Date $2018/12/5$ Note powder on carbon tape	Energy Calibration	S K edge of K ₂ SO ₄ (2,481.7 eV)			
$ \begin{array}{c c c} & 2,800 & 1.00 \\ \hline 2,820 & 0.20 \\ \hline 2,845 & 0.50 \\ \hline 2,870 & 1.00 \\ \hline 2,900 \\ \hline \\$	Range	2,800 ~ 2,900 eV			
2,820 0.20 2,845 0.50 2,870 1.00 2,900 2,900 dwelling time 1 sec. measured for 7 min. Method CEY detector I₀: Au mesh CEY: He 0.1 MPa Date 2018/12/5 Note powder on carbon tape		2,800	1.00		
Energy & Step (eV) 2,845 0.50 2,870 1.00 2,900 2,900 dwelling time 1 sec. measured for 7 min. Method CEY detector I ₀ : Au mesh CEY: He 0.1 MPa 2018/12/5 Note powder on carbon tape		2,820	0.20		
2,870 1.00 2,900 2,900 dwelling time 1 sec. measured for 7 min. Method CEY detector I₀: Au mesh Date 2018/12/5 Note powder on carbon tape	Energy & Step	2,845	0.50		
2,900dwelling time1 sec.measured for7 min.MethodCEYdetectorI₀: Au meshCEY: He 0.1 MPaDate2018/12/5Notepowder on carbon tape	(ev)	2,870	1.00		
dwelling time1 sec.measured for7 min.MethodCEYdetectorI₀: Au meshCEY: He 0.1 MPaDate2018/12/5Notepowder on carbon tape		2,900			
measured for7 min.MethodCEYdetectorI₀: Au meshCEY: He 0.1 MPaDate2018/12/5Notepowder on carbon tape	dwelling time	1 sec.			
MethodCEYdetectorI0: Au meshCEY: He 0.1 MPaDate2018/12/5Notepowder on carbon tape	measured for	7 min.			
detectorI0: Au meshCEY: He 0.1 MPaDate2018/12/5Notepowder on carbon tape	Method	CEY			
CEY: He 0.1 MPa Date 2018/12/5 Note powder on carbon tape	dotostor	I ₀ : Au mesh			
Date 2018/12/5 Note powder on carbon tape	delector	CEY: He 0.1 MPa			
Note powder on carbon tape	Date	2018/12/5			
	Note	powder on car	bon tape		

CI K edge



Material	KCI		
Beamline	BL6N1		
Monochromator	Si (111)		
Slits	3 x 10 mm		
Energy Calibration	S K edge of K ₂ SO ₄ (2,481.7 eV)		
Range	2,800 ~ 2,900 eV		
	2,800	1.00	
Energy & Stop	2,820	0.20	
energy & Step (eV)	2,845	0.50	
	2,870	1.00	
	2,900		
dwelling time	1 sec.		
measured for	7 min.		
Method	CEY		
detector	I ₀ : Au mesh		
	CEY: He 0.1 MPa		
Date	2018/12/5		
Note	powder on carbon tape		

K K edge



Material	KCI		
Beamline	BL6N1		
Monochromator	Si (111)		
Slits	3 x 10 mm		
Energy Calibration	S K edge of K ₂ SO ₄ (2,481.7 eV)		
Range	3,580 ~ 3,670 eV		
Energy & Step (eV)	3,580	1.00	
	3,600	0.20	
	3,622	0.50	
	3,670		
dwelling time	1 sec.		
measured for	6 min.		
Method	CEY / PFY / TEY		
detector	I ₀ : Au mesh		
	CEY: He 0.1 Mpa		
	PFY: Vortex -EM		
	TEY: sample current (Vac)		
Date	2018/12/5 (CEY/PEY)		
	2019/2/22 (TEY)		
Note	powder on carbon tape		

Ca K edge



Material	Ca(OH) ₂		
Beamline	BL6N1		
Monochromator	Si (111)		
Slits	3 x 10 mm		
Energy Calibration	S K edge of K ₂ SO ₄ (2,481.7 eV)		
Range	3,990 ~ 4,150 eV		
Energy & Step (eV)	3,990	1.00	
	4,030	0.20	
	4,070	0.50	
	4,150		
dwelling time	1 sec.		
measured for	11 min.		
Method	CEY / PFY / TEY		
detector	I ₀ : Au mesh		
	CEY: He 0.1 Mpa		
	PFY: Vortex -EM		
	TEY: sample current (Vac)		
Date	2018/12/5 (CEY/PEY)		
	2019/2/22 (TEY)		
Note	powder on carbon tape		

Ti K edge



Material	TiO ₂ (rutile)		
Beamline	BL6N1		
Monochromator	Si (111)		
Slits	3 x 10 mm		
Energy Calibration	S K edge of K ₂ SO ₄ (2,481.7 eV)		
Range	4,920 ~ 5,130 eV		
	4,920	1.00	
Energy & Step	4,955	0.30	
(eV)	5,020	1.00	
	5,130		
dwelling time	1 sec.		
measured for	10 min.		
Method	CEY		
detector	I ₀ : Au mesh		
	CEY: He 0.1 MPa		
Date		2018/12/5	
Note	powder on carbon tape		