

1. 何謂 X 光的螢光效應(X-ray fluorescence) ?

2. 下表是由 X 光分析幾種不同的試片結果，請由圖中的 ZAF 係數計算其化學成分為何？

(a) X-ray microanalysis of Al-Cu alloys

Sample	x-ray line	$Z_i$	$A_i$	$F_i$	$ZAF_i$	$k_i$
$\phi(\rho z)$	Cu $K\alpha$	0.999	1.0	1.0		0.999
	Al $K\alpha$	0.857	2.42	1.0		0.00048

化學成分: Cu =                      Al=

(b) X-ray microanalysis of Ni-Fe alloys

Sample	x-ray line	$Z_i$	$A_i$	$F_i$	$ZAF_i$	$k_i$
$\phi(\rho z)$	Fe $K\alpha$	1.011	1.002	0.784		0.126
	Ni $K\alpha$	1.0	1.004	1.0		0.897

化學成分: Ni =                      Fe=

(c) X-ray microanalysis of Ni-Cr-Al alloys

Sample	x-ray line	$Z_i$	$A_i$	$F_i$	$ZAF_i$	$k_i$
$\phi(\rho z)$	Ni $K\alpha$	1.002	1.02	1.0		0.573
	Cr $K\alpha$	1.01	1.007	0.952		0.398
	Al $K\alpha$	0.896	1.976	1.0		0.570

化學成分: Ni =                      Cr=                      Al=

3. The diagram shows an energy level diagram for sodium (Na) with approximate binding energies for the core levels. If the Mg  $K\alpha$  ( $h\nu = 1253.6$  eV) radiation is used, please answer the following questions.



(a) at what binding energy will the Na 1s photoelectron peak be observed?

(b) at what binding energy will the Na 2s and 2p photoelectron peaks be observed ?



4. 請問下列的 Pd-3d 圖譜，請解釋會何謂有兩根能峰(3d<sub>3/2</sub> 與 3d<sub>5/2</sub>)，並請標示出那一根是 3d<sub>3/2</sub> 而哪一根是 3d<sub>5/2</sub>。

