

姓名：

Lab:

- 1.XRD 遵循布拉格方程式 Bragg's Law，請問其方程式以及分別名詞解釋？
- 2.XRD 使用之 X-Ray 為何種？以及其該 X-Ray 產生之原理？
- 3.請解釋在程式設定中，thin film 模式中 2θ 與 $\theta/2\theta$ 分別代表甚麼？
- 4.本機台 X 光管開啟後工作電壓、電流值、冷卻水流速為多少？(要寫單位)
- 5.試解釋在薄膜光學配件的狹縫片差異(0.2 mm、1.0 mm)所造成的影響？
- 6.相同瓦數下，高電壓與低電流比高電流低電壓好的原因是甚麼？
7. 請說明本 XRD 機台可以做哪些量測？
8. 開軟體之後，按 Start (Run) 等待的 8 分鐘，請問機台是在做甚麼？
- 9.如何從 X 光圖譜中判斷，薄膜是否有殘留應力？
- 10.請解釋如何測量優選方向？
- 11.請畫出不同低略角下，掃描的樣品差異

上為薄膜(Thin film)	
下為基材(Substrate)	

Name:

Lab:

1. XRD follows Bragg's Law. Please write down the equation and explain each term in the equation.
2. What type of X-ray is used in XRD? Also, explain the principle of how this X-ray is generated.
3. In the software settings, under "thin film," what do 2θ and $\theta/2\theta$ each represent?
4. After the X-ray tube of this instrument is switched on, what are the working voltage, current, and cooling water flow rate? (Include units.)
5. Explain the effect caused by different slit sizes (0.2 mm, 1.0 mm) in the thin film optics accessory.
6. Under the same power setting, why is high voltage with low current better than low voltage with high current?
7. What types of measurements can this XRD instrument perform?
8. After launching the software and pressing Start (Run), there is an 8-minute waiting period. What process is the machine performing during this time?
9. How can you determine from X-ray images whether a thin film has residual stress?
10. Please explain how to measure the Preferred Orientation.
11. Draw and illustrate the differences in the scanned sample at different low incident angles.

Above is Thin film
Under is Substrate
