

X射線光電子能譜儀(XPS)特點

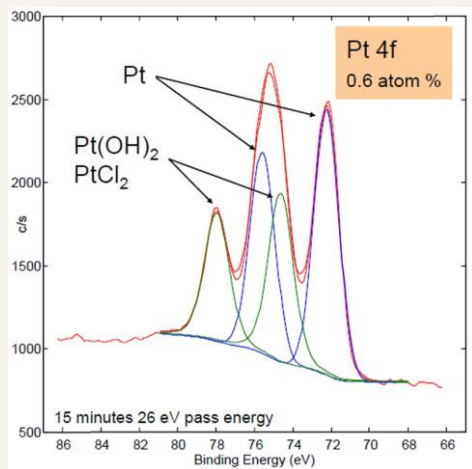
表面的元素構成
(通常範圍為1
奈米到10奈米)

純淨材料的
化學實驗式

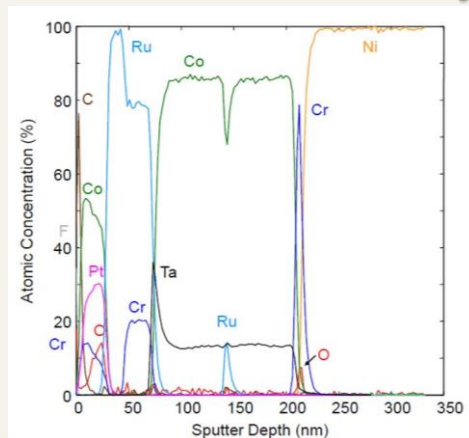
表面每一種元素的化
學態和電子態

不純淨表面的雜
質的元素構成

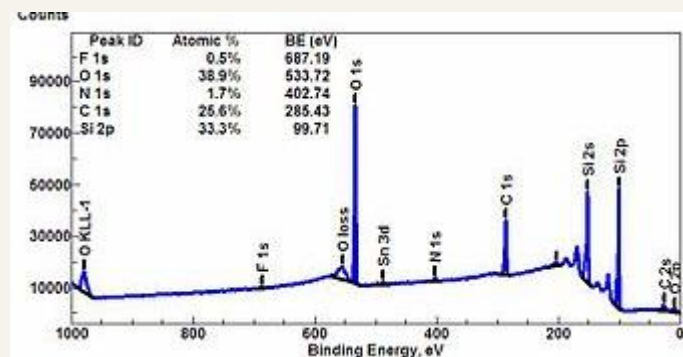
表面元素構成的
均勻性



圖、Pt元素分析



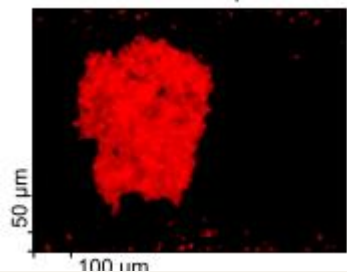
圖、表面元素縱深分析



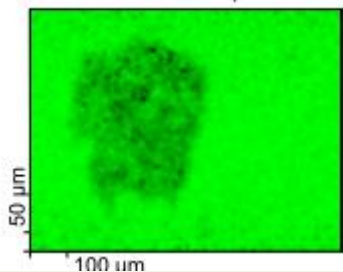
圖、表面元素全頻譜分析

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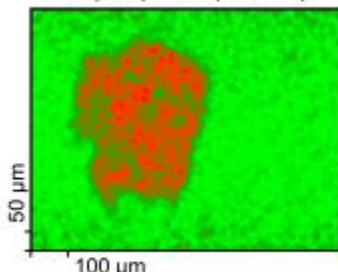
F 1s Map



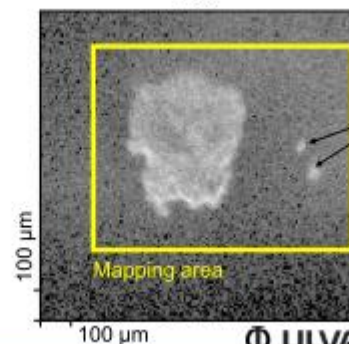
C 1s Map



F (red) + C (Green)



SXI

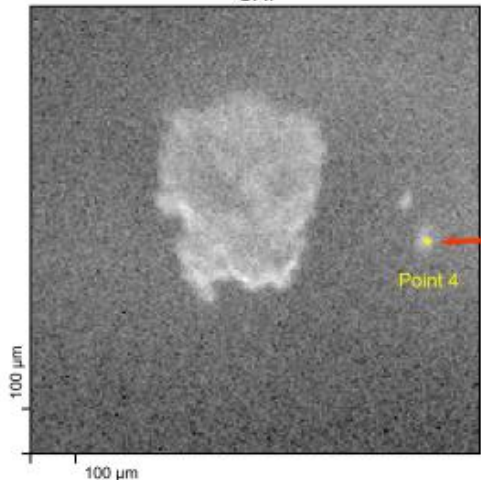


Sample features not associated with fluorine.

What are they?

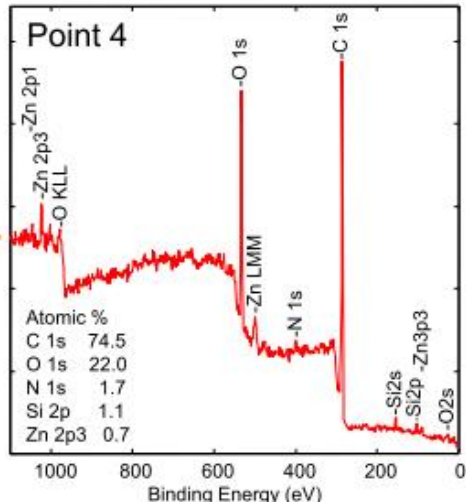
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SXI



Secondary Electron Image

Point 4



Spectrum obtained using 10 μm diameter x-ray beam detected Zn, probably Zn stearate

定性、定量、影像掃描分析
製程中產生未知物進行分析
透過元素鍵結推論可能導致
未知物產生機制，進而改善
優化製程。



YunTech 國立雲林科技大學
National Yunlin University of Science & Technology

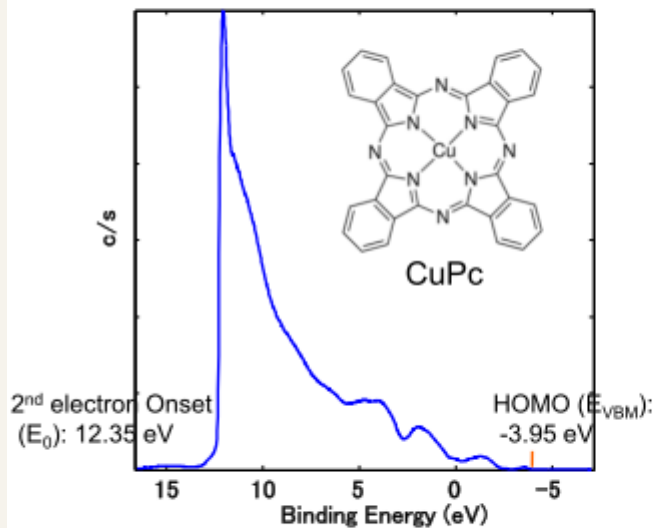


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Research case: CuPc film UPS and LEIPS spectra

UPS spectrum (with -5 V bias) → Calculate Ionization Energy

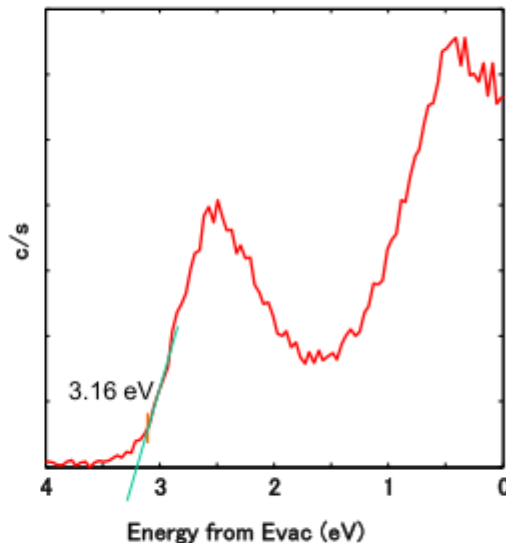
LEIPS spectrum by energy from vacuum level



Ionization Energy : 4.90 eV

Ionization Energy (IE) calculation:

$$IE = h\nu - (E_o - E_{VBM})$$



Electron Affinity: 3.16 eV

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UPS與LEIPS分析，求得材料價帶(LUMO)與導帶(HOMO)

