

Supplementary Materials

Structural and Morphological Studies of Pt in the As-Grown and Encapsulated States and Dependency on Film Thickness

Figure S1. (a–e) and (k–o) are the HR-RSM data of the Pt111 and Pt222 reflections, respectively, for Pt_Th10nm, Pt_Th25nm, Pt_Th40nm, Pt_Th55nm and Pt_Th70nm in the as-grown state. (e1, e2) and (o1, o2) are the corresponding angular and radial diffraction profiles of the Pt111 and Pt222 reflections, respectively. (f–j) and (p–t) are the HRRSM of the Pt111 and Pt222 reflections, respectively, for EncPt_Th10nm, EncPt_Th25nm, EncPt_Th40nm, EncPt_Th55nm, and EncPt_Th70nm in the encapsulated state. (j1, j2) and (t1, t2) are the corresponding angular and radial diffraction profiles of the Pt111 and Pt222 reflections, respectively.

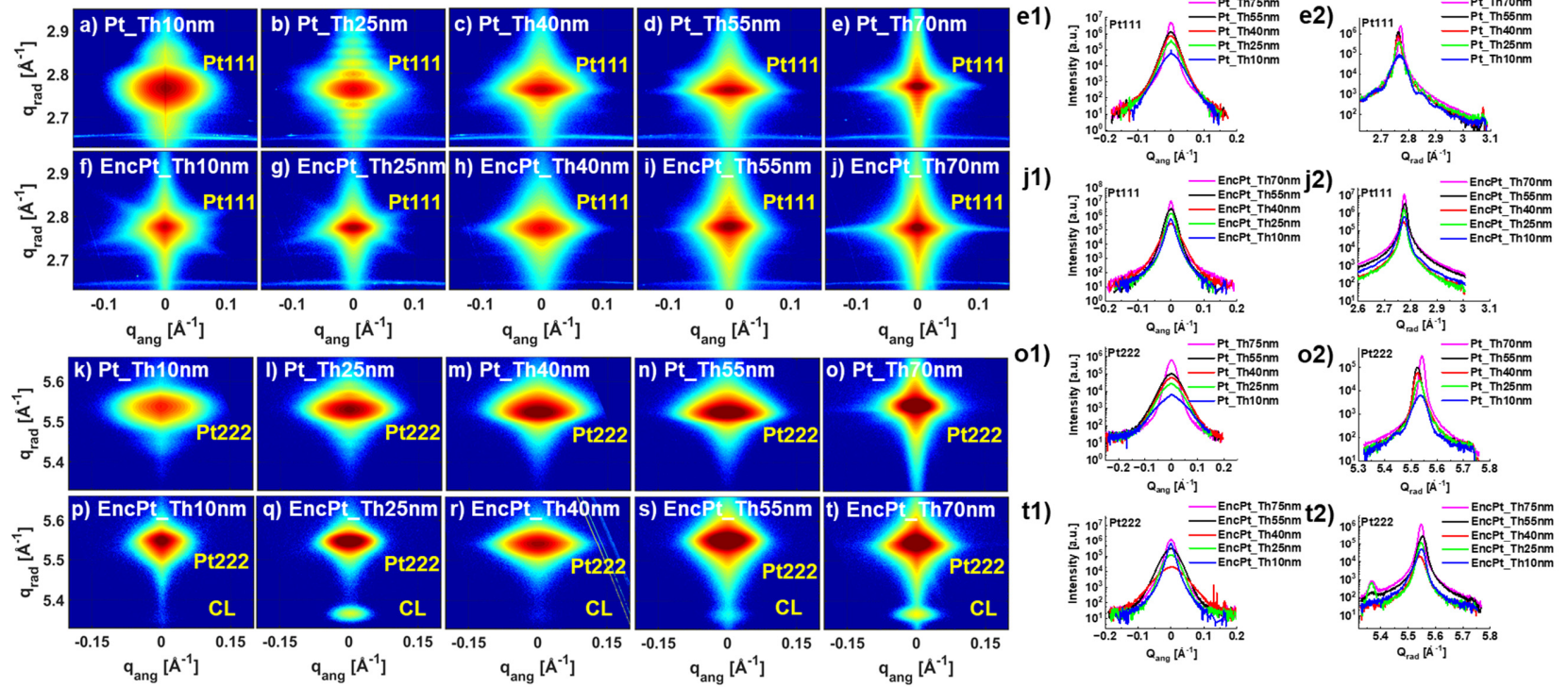


Figure S2. (a–e) and (f–j) are the combined HR-RSMs of Pt331 and Y224 asymmetric reflections of the Pt_Th10nm, Pt_Th25nm, Pt_Th40nm, Pt_Th55nm, and Pt_Th70nm, as well as the corresponding data of EncPt_Th10nm, EncPt_Th25nm, EncPt_Th40nm, EncPt_Th55nm, and EncPt_Th70nm, respectively.

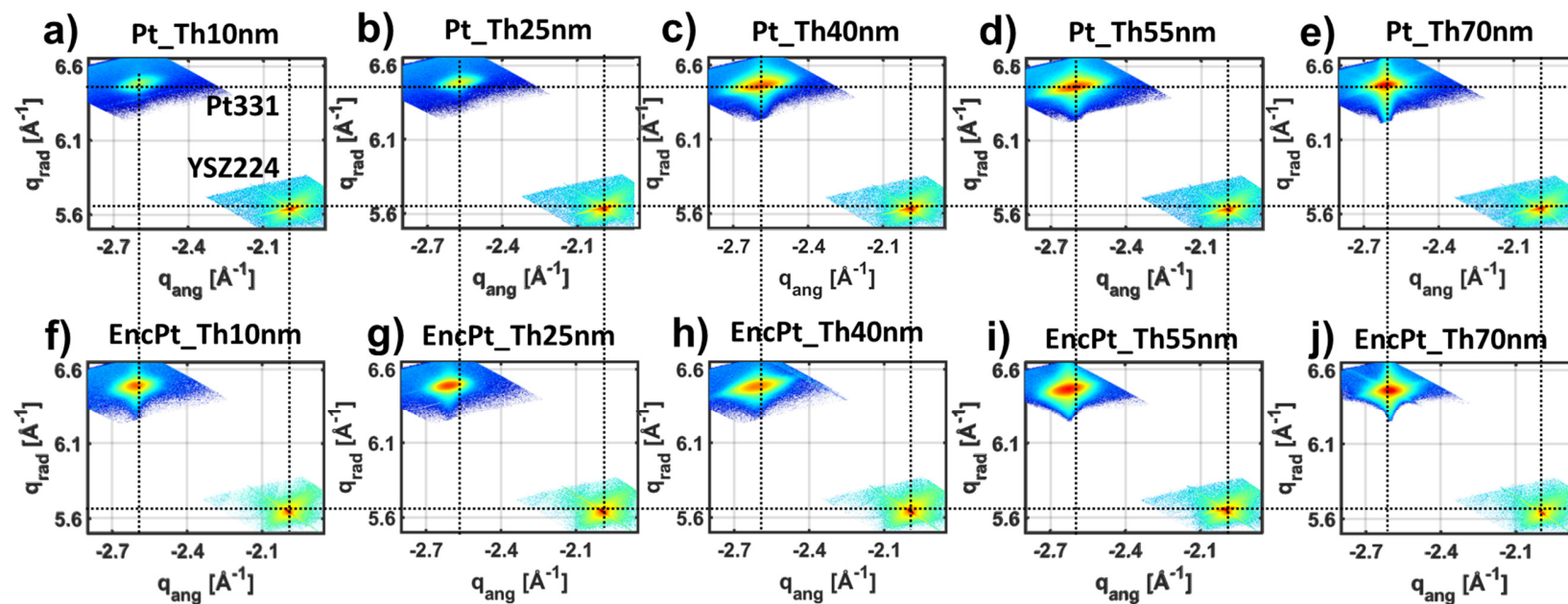


Figure S3: (a–e) are the BSE_0° images for the samples Pt_Th10nm, Pt_Th25nm, Pt_Th40nm, Pt_Th55nm, and Pt_Th70nm in the as-grown state. (f–j) BSE_0° images of the samples in the encapsulated state, i.e. EncPt_Th10nm, EncPt_Th25nm, EncPt_Th40nm, EncPt_Th55nm, and EncPt_Th70nm. The degree of coverage was derived from the images and is given in percentage in the BSE_0° images.

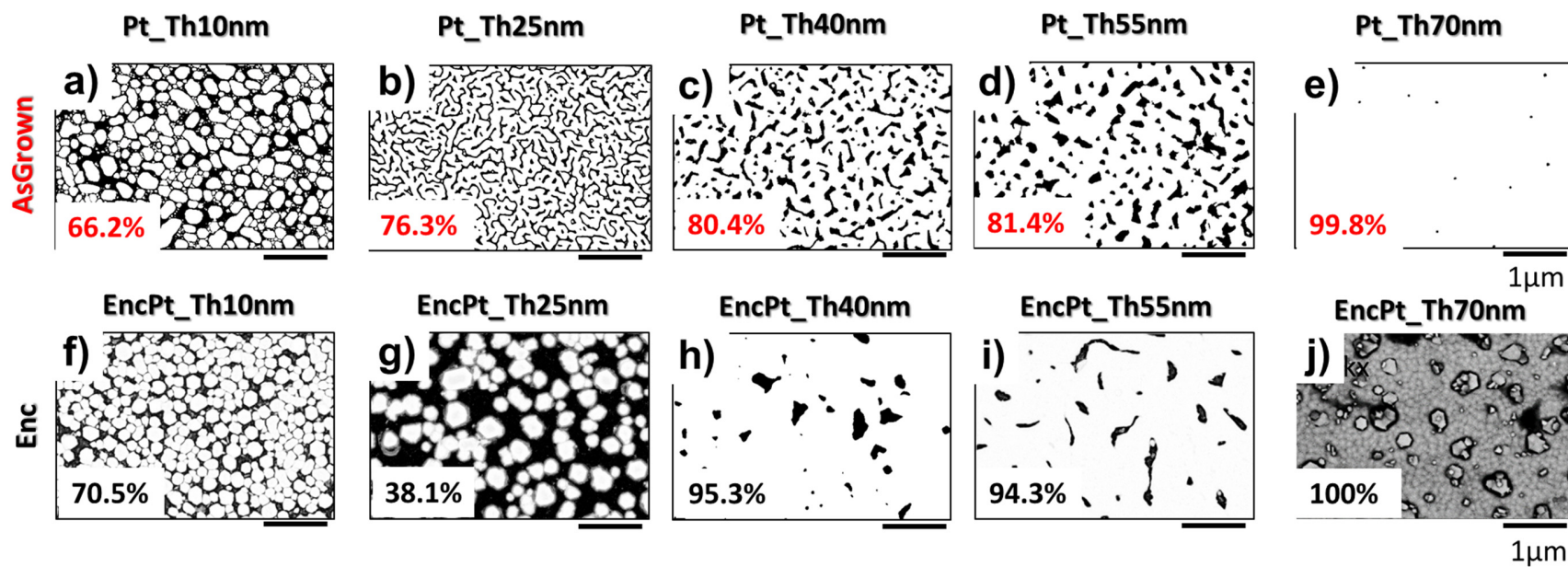


Figure S4: (a–e) Variation of the $FWHM_Ang$ with the reflection order for Pt films in the as-grown and encapsulated state for the thicknesses $Th_{Pt} = 10, 25, 40, 55$, and 70 nm. (f–j) Variation of the $FWHM_Rad$ with the reflection order for as-grown and encapsulated state Pt films with the thicknesses $Th_{Pt} = 10, 25, 40, 55$, and 70 nm.

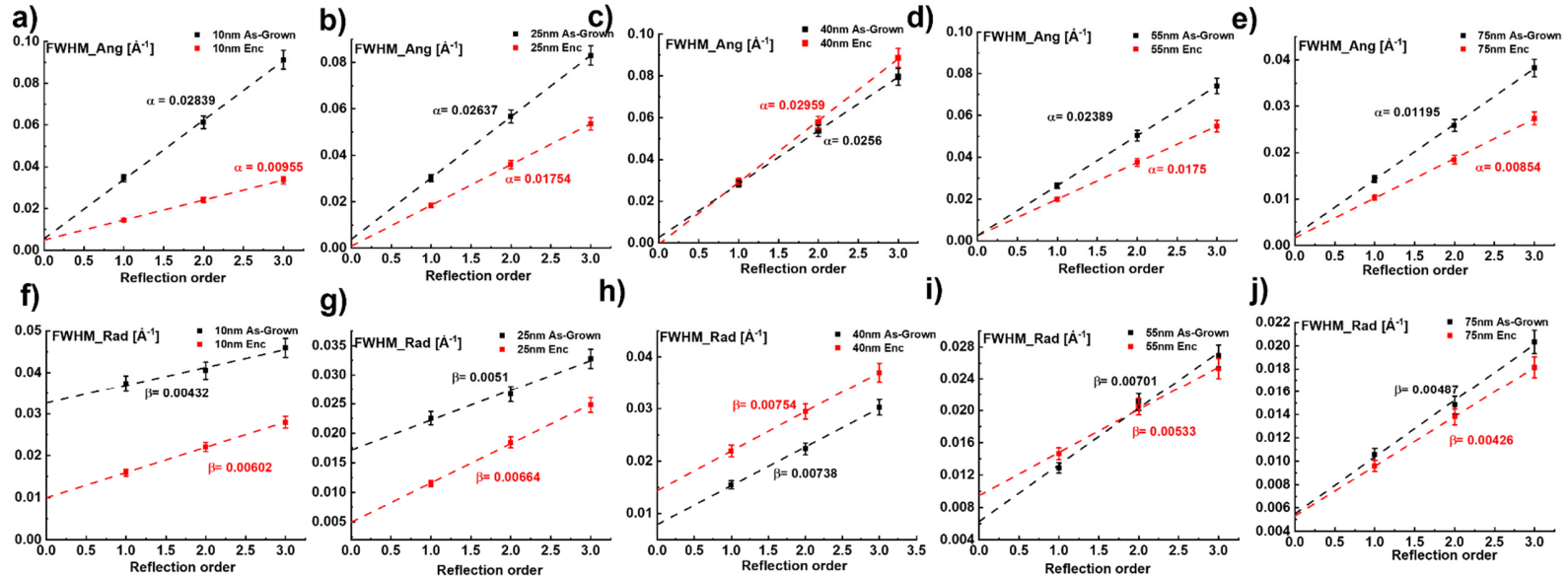


Figure S5. (a) The unit cell of cubic platinum (space group Fm-3m) and (b) a projection of the unit cell along the $[111]$ direction. Different crystallographic planes are indicated by colors: the (111) plane is shown in purple, $(\bar{1}\bar{1}0)$ plane in red, and (11-2) one in blue.

