

Supporting Information

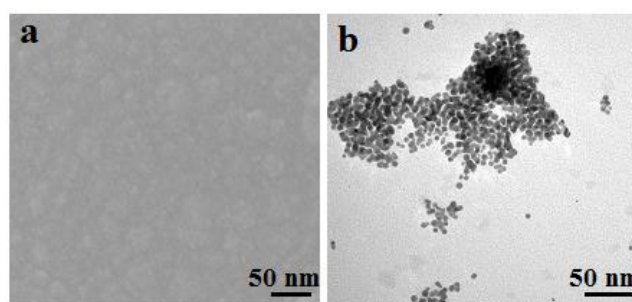


Figure S1. SEM and TEM images of PPY film (a) and Au-HTPC seeds (b)

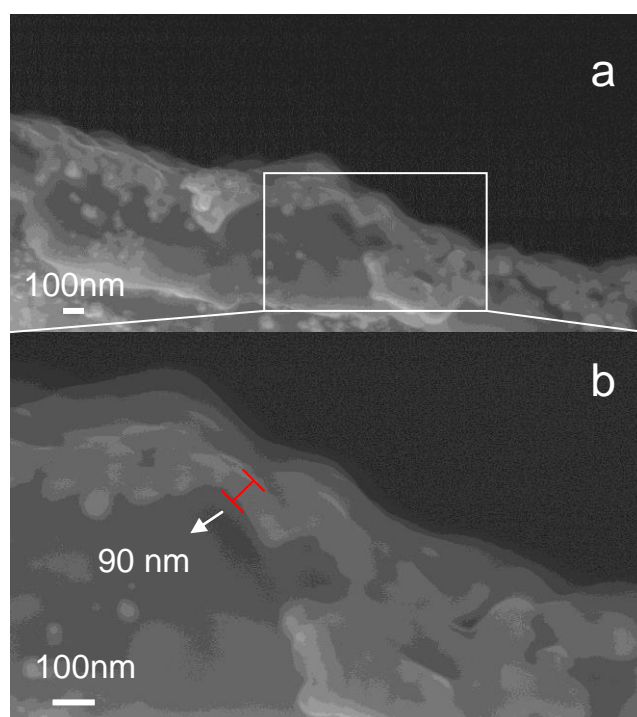


Figure S2. The cross-sectional SEM image of NPG film

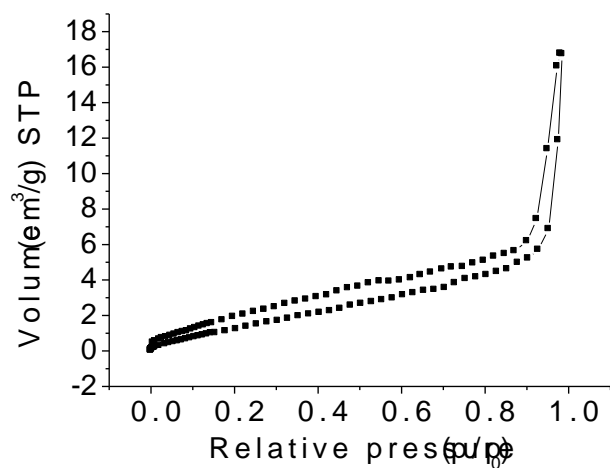


Figure S3 Nitrogen sorption isotherms of thin NPG film

N_2 sorption isotherms (Figure S3) of NPG film show pseudo-type-I curve with H1 hysteresis loop at a high relative pressure. The hysteresis loop at a higher p/p_0 (0.92-0.987) may be contributed by the inter-particle texture and nanoporous characterization.

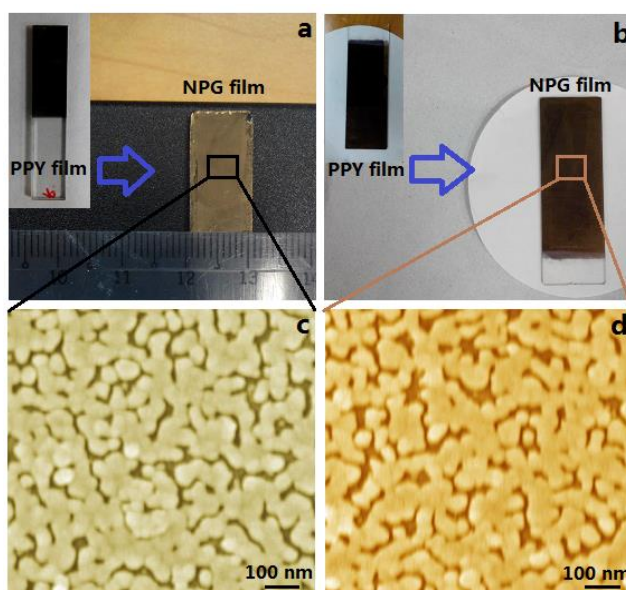


Figure S4. NPG films fabricated on different substrates (a) ITO glass, (b) universal glass

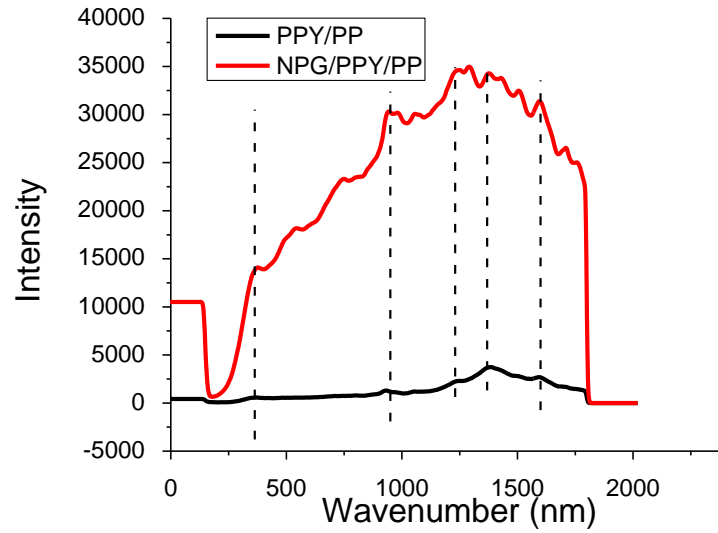


Figure S5. Raman spectra of PPY and NPG/PPY on the inwall of PPCT

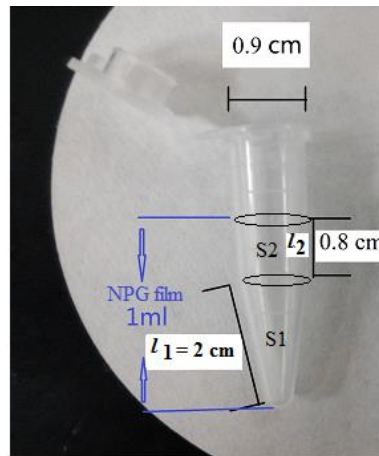


Figure S6 Image of PPCT (1.5 ml)

The caculation of inwall area of PPCT

The inwall area of circular cone (S_1) of PPCT

$$S_1 = \pi r l_2 = 3.14 \times 0.45 \text{ cm} \times 2 \text{ cm} = 2.82 \text{ cm}^2$$

The inwall area of circular column (S_2) of the PPCT

$$S_2 = 2\pi r l_1 = 2 \times 3.14 \times 0.45 \text{ cm} \times 0.8 \text{ cm} = 2.26 \text{ cm}^2$$

$$S_{\text{total}} = S_1 + S_2 = 5.08 \text{ cm}^2$$