Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Assembly of Heteropoly Acid into Localized Porous Structures for In-situ Preparation of Sliver and Polypyrrole Nanoparticles

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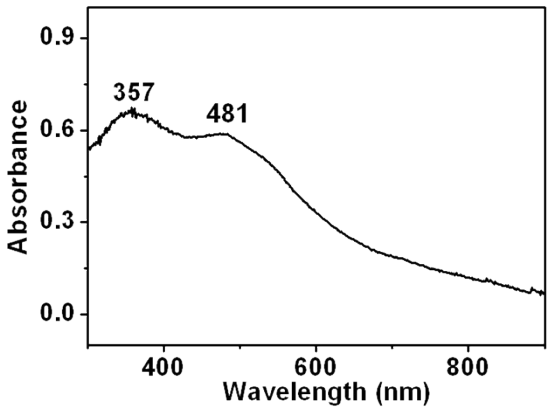

Fig. S1 UV-Vis spectrum of $HPMo_{12}$/PMMA film on quartz substrate after the in situ polymerization (PPy spheres) prepared by dipping the hybrid porous film in 0.1 M of pyrrole aqueous solution under pH 4 for 40 min.

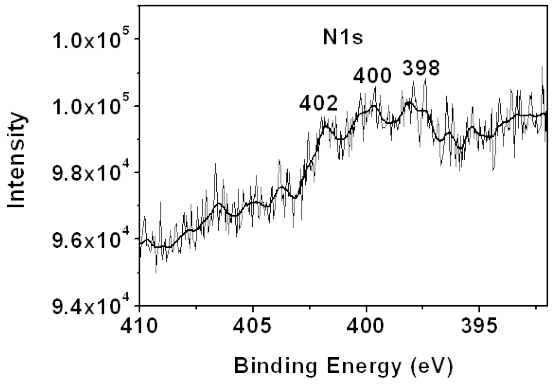

Fig. S2 XPS spectrum of N element on the $HPMo_{12}$/PMMA film after encountering 40 min of its dipping in pH 4 of pyrrole aqueous solution.

$$POM^{n-} \xrightarrow{UV} POM^{(n-1)-}$$

$$POM^{(n-1)-} + Ag^{+} \longrightarrow POM^{n-} + Ag$$

Eq. S1 The chemical process of reduction of silver ions by heteropoly acids.

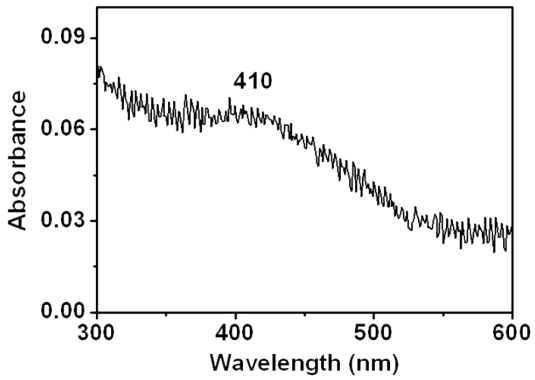

Fig. S3 UV-vis spectrum of HPW_{12}/PMMA film on quartz substrate containing Ag nanoparticles prepared with the irradiation of UV light for 15 min and then dipped in silver nitrate aqueous solution for 30 min.

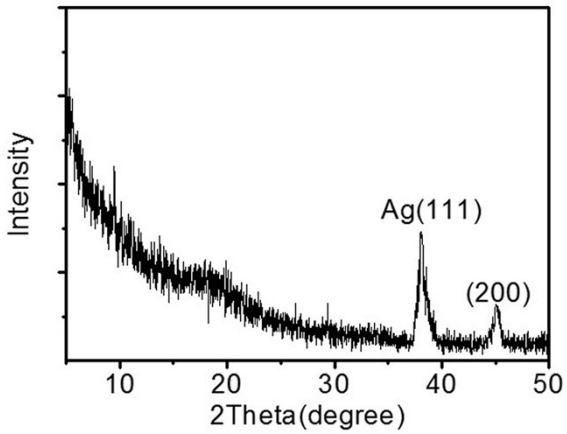

Fig. S4 XRD spectrum of Ag nanoparticles on the HPW_{12}/PMMA film after 15 min of UV light irradiation for the film and then 30 min of dipping in silver nitrate aqueous solution.

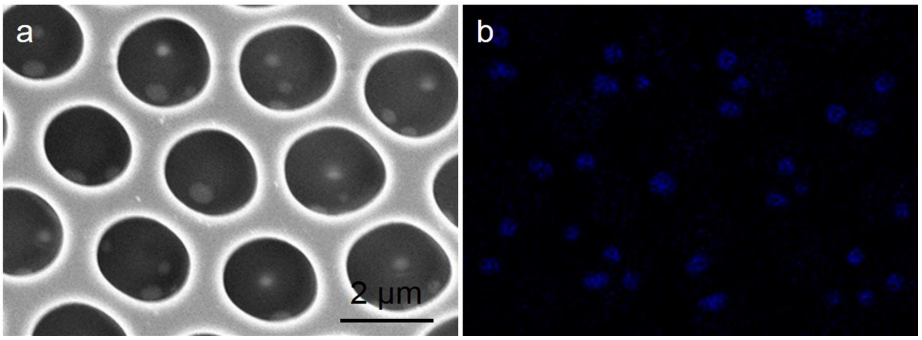

Fig. S5 (a) SEM image and (b) EDX analysis of PMMA porous films containing silver nanoparticles, respectively.

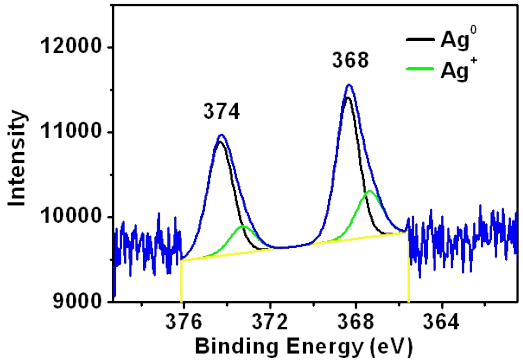

Fig. S6 XPS spectrum of Ag element on the HPW_{12}/PMMA film after 15 min of UV light irradiation for the film and then 30 min of dipping in silver nitrate aqueous solution.

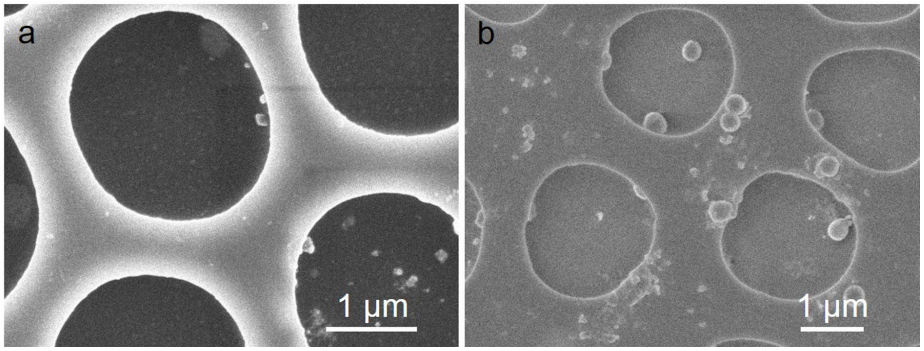

Fig. S7 SEM images of (a) silver and (b) polypyrrole nanoparticles contained porous film with sonication and washing treatments, respectively.