Electronic Supplementary Information

Inclusion of Guest Materials in Aqueous Coordination Network Shells Spontaneously Generated by Reacting 2,5-Dimercapto-1,3,4-thiadiazole with Nanoscale Metallic Silver

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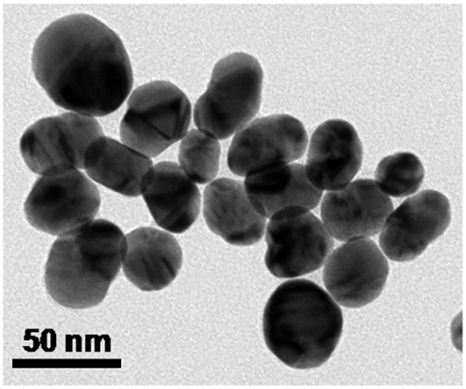

Figure S1. The TEM image of Au NPs after being incubated with 100 μL DMcT aqueous solution for about 3 h at room temperature.

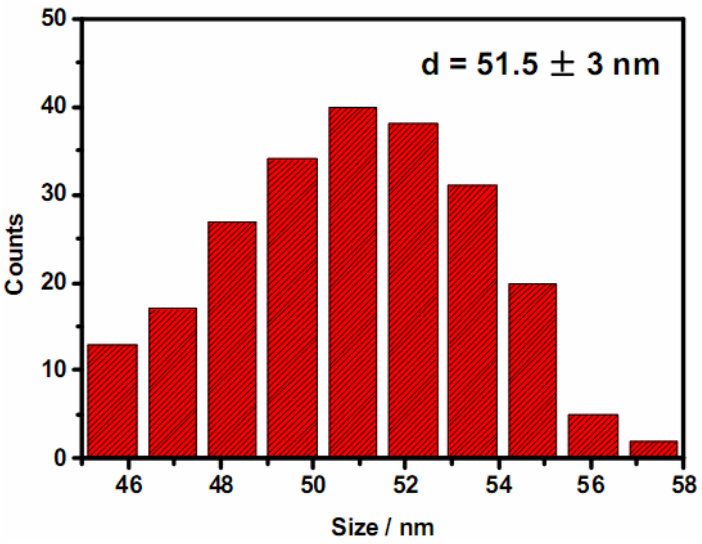

Figure S2. Statistic data of the size of more than 200 Au@Ag@void@ICPs **1** NPs.

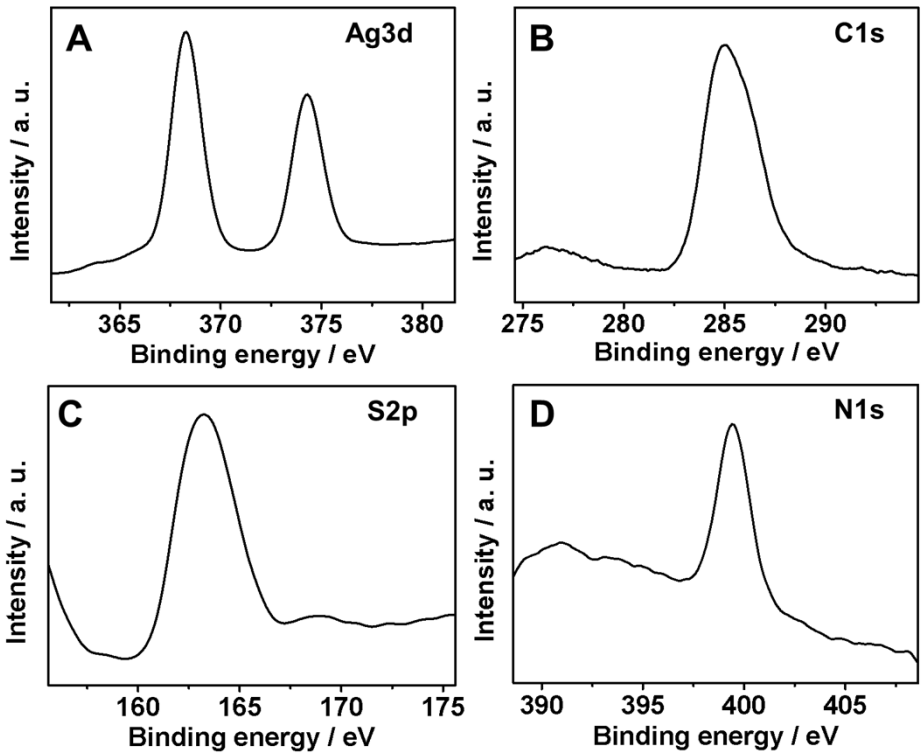

Figure S3. XPS spectra of the as-synthesized Au@Ag@void@ICPs **1**: (A) high resolution of Ag spectrum; (B) high resolution of C spectrum; (C) high resolution of S spectrum and (D) high resolution of N spectrum.

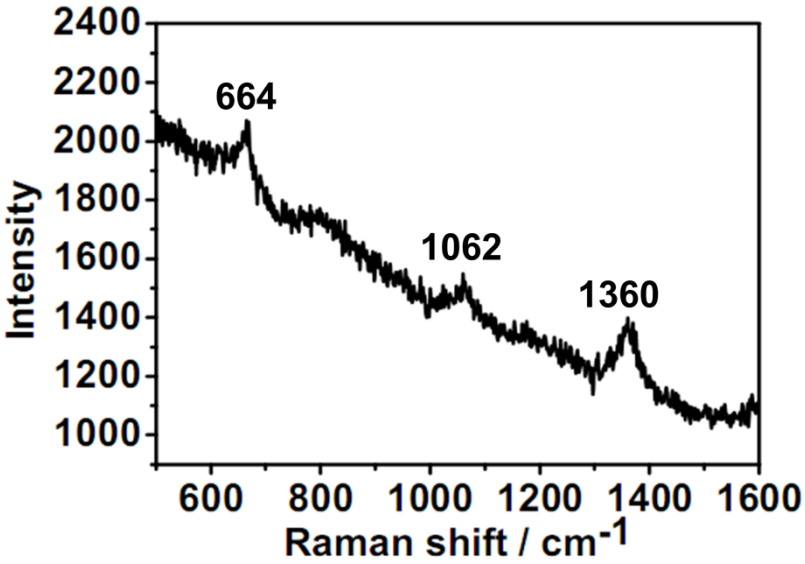

Figure S4. SERS spectra of the as-synthesized Au@Ag@void@ICPs **1**.

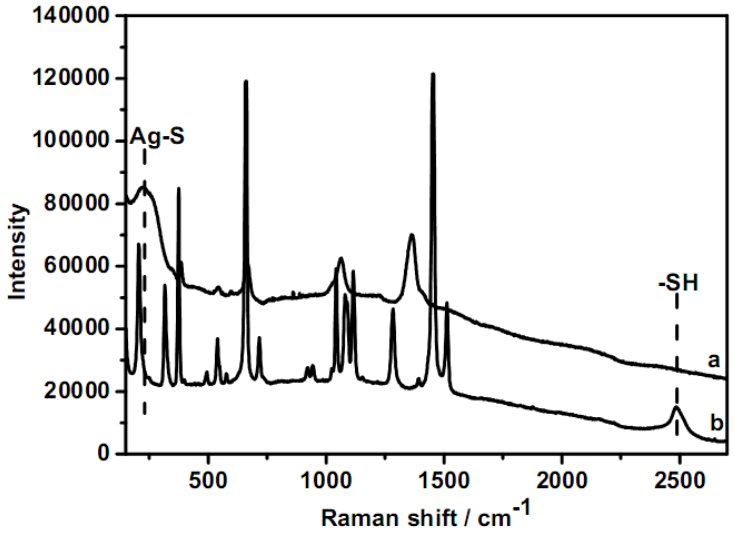

Figure S5. SERS spectra of the reaction products of DMcT with Au@Ag NPs (a) and DMcT in solid state (b).

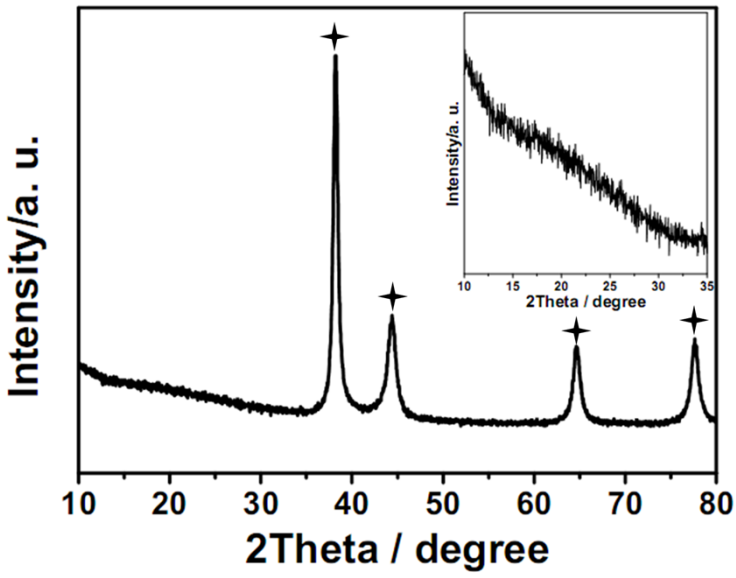

Figure S6. Power XRD patterns of the hollow core-shell Au@Ag@void@ICPs **1**. The inset shows the lower-angle diffraction peaks contributed by the Ag-DMcT ICPs shell and the marked peaks are assigned to the Au@Ag core.

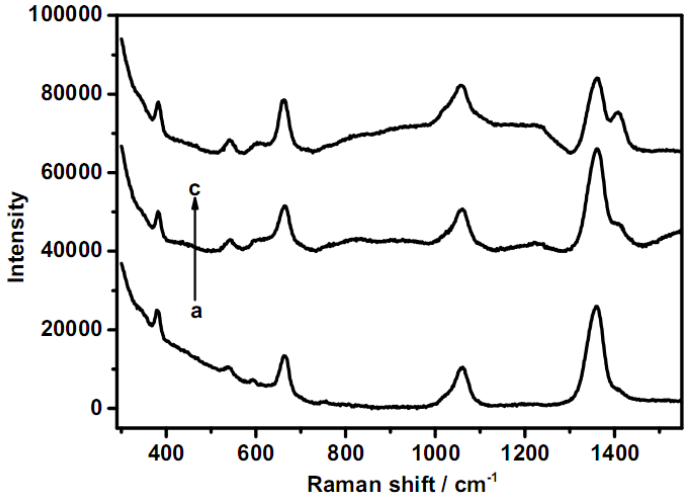

Figure S7. Evolution of normalized SERS spectra of Au@Ag NPs after being incubated with 50 μL DMcT solution for different times: (a) 1, (b) 20, and (c) 180 min.

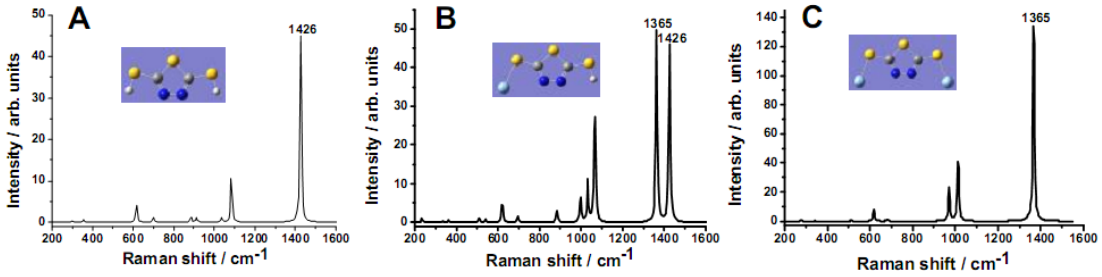

Figure S8. DFT calculated Raman spectra of free DMcT (A), one S-H of DMcT molecules interaction with one Ag atom (B) and two S-H of DMcT molecules interaction with two Ag atoms (C). Insert: the corresponding optimized structures based on DFT.

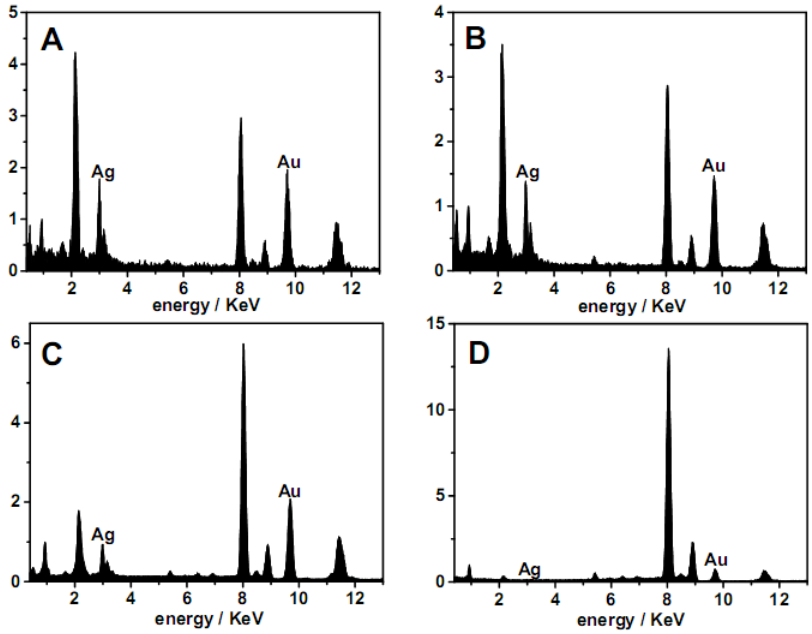

Figure S9. Normalized EDX spectra of Au@Ag NPs after being incubated with (A) 0, (B) 10, (C) 100 and (D) 500 μL DMcT solution for 3 h.

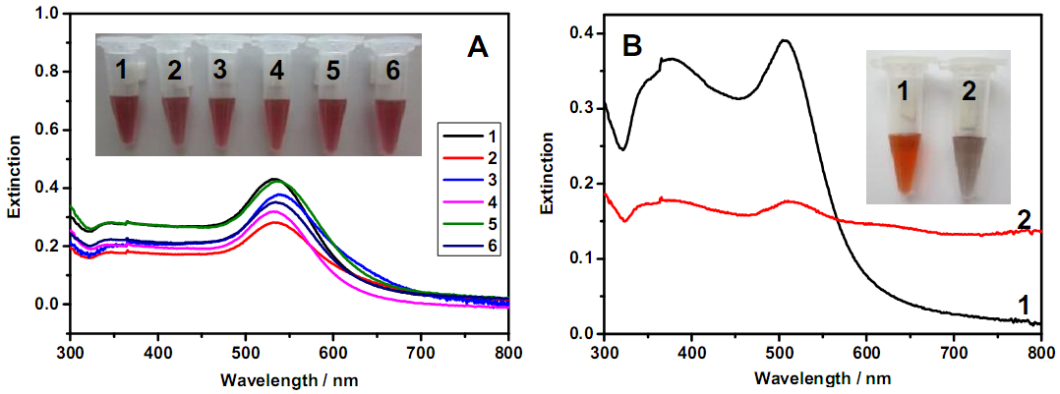

Figure S10. (A) The UV-*vis* absorption spectra of the as-synthesized Au@Ag@void@ICPs **1** redispersed in (1) pure water, (2) 50 mM NaCl aqueous solution, (3) pH 4.0 aqueous solution, (4) pH 12.0 aqueous solution, (5) ethanol and (6) methanol. (B) The UV-vis absorption spectra of Au@Ag NPs redispersed in (1) pure water, (2) 50 mM NaCl aqueous solution.

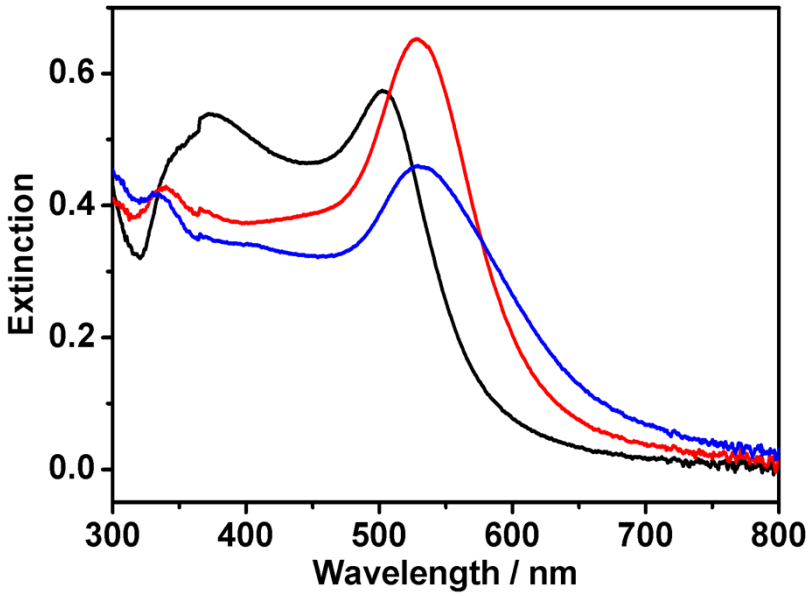

Figure S11. UV-*vis* spectra of Au@Ag NPs (black line), Au@Ag@void@ICPs **2** (red line) and the corresponding Au@Ag@void@ICPs/HRP (blue line).

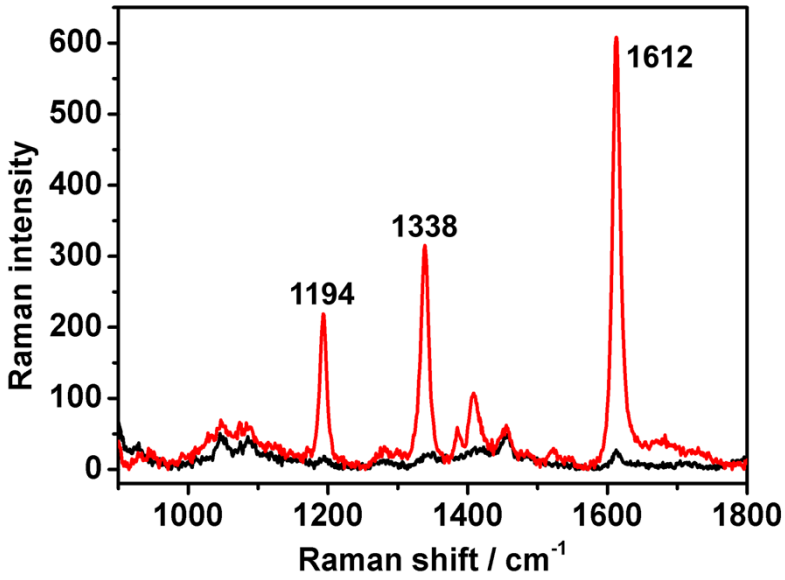

Figure S12. Raman spectra of TMB and Au@Ag@void@ICPs/HRP in the absence (black line) and presence (red line) of 30 μM H_2O_2.