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Electronic Supplementary Information

Tunable Fluorescent Poly(Styrene-co-Methacrylic acid)/Au-Aphen Hybrid Nanoparticles via Surface Immobilization

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Quantum Yield Mesurement:

PL quantum yields of poly(St-co-MAA)/Au-Aphen hybrid nanoparticles with various MAA contents 4 wt %, 8 wt %, and 25 wt % in ethanol (ca. 0.33×10^{-6} M) was measured by comparing with quinine sulfate (ca. 0.33×10^{-6} M) in 0.10 M H_2SO_4 as standard according to following equation:

$$\Phi_{unk}= \Phi_{std}(I_{unk}/I_{std})(A_{std}/A_{unk})(\eta_{unk}/\eta_{std})^2$$

Where Φ_{unk} and Φ_{std} are the quantum yields of unknown and standard, I_{unk} and I_{std} are integrated PL emission intensity of unkown and standard exited at maximum wavelength of UV absorbance, A_{unk} and A_{std} are absorbance of unkown and standard at excitation wavelength with same concentration, η_{unk} and η_{std} are refractive index of solvents used for unknown and standard.

Figure S1. UV-Visible spectra of ethanol dispersed poly(St-co-MAA)/Au-Aphen hybrid nanoparticles with various MAA contents as a reflectance spectra.

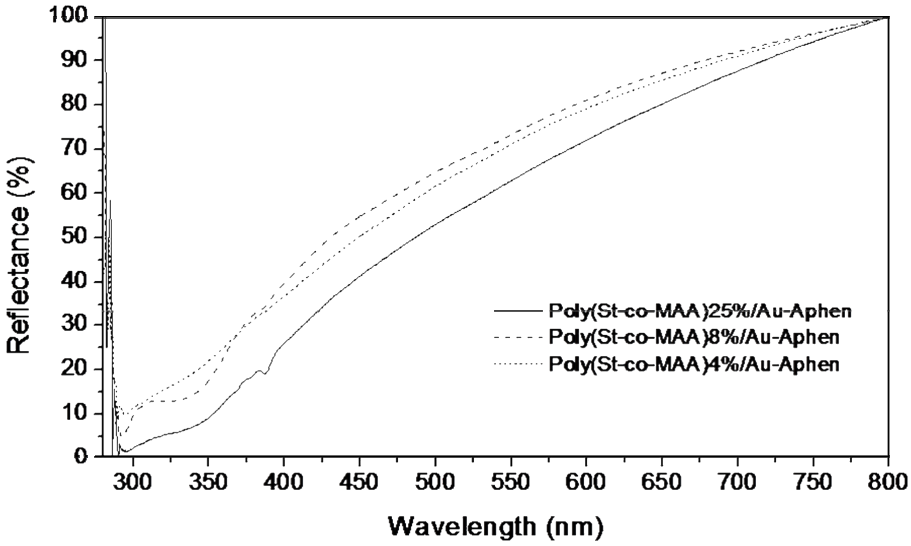

Figure S2. DSC thermogram of poly(St-co-MAA) copolymer nanoparticles with various MAA contents; (a) 4 wt %, (b) 8 wt %, (c) 25 wt % and poly(St-co-MAA)/Au-Aphen hybrid nanoparticles with MAA contents; (d) 4 wt %, (e) 8 wt %, and (f) 25 wt %.

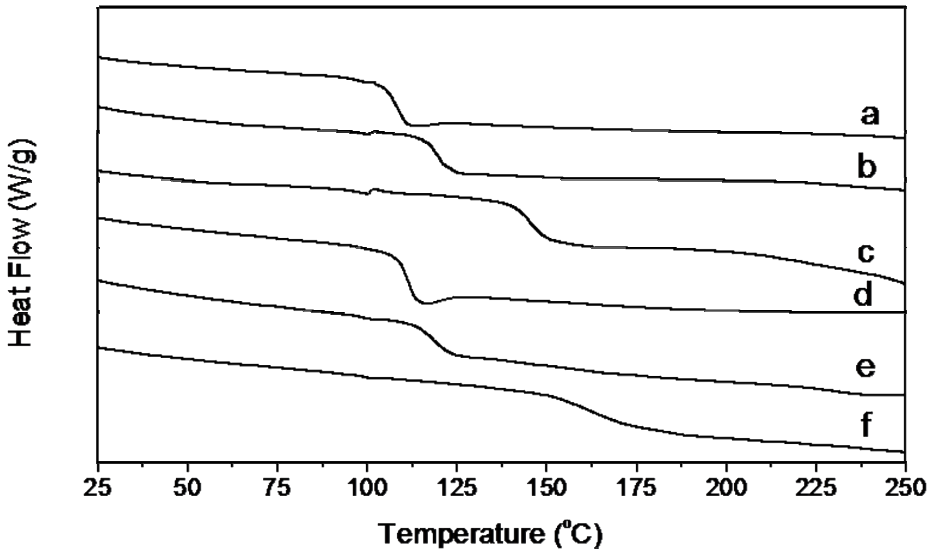

Figure S3. PL excitation at emission maxima and emission spectra of ethanol dispersed poly(St-co-MAA)/Au-Aphen hybrid nanoparticles with various MAA contents. The emission spectra were obtained at excitation wavelength of 300 nm in the emulsion state.