Supporting Information

for

Approaches to nanostructure control and functionalizations of polymer@silica hybrid nanograss surface generated by biomimetic silica mineralization on a self-assembled polyamine layer

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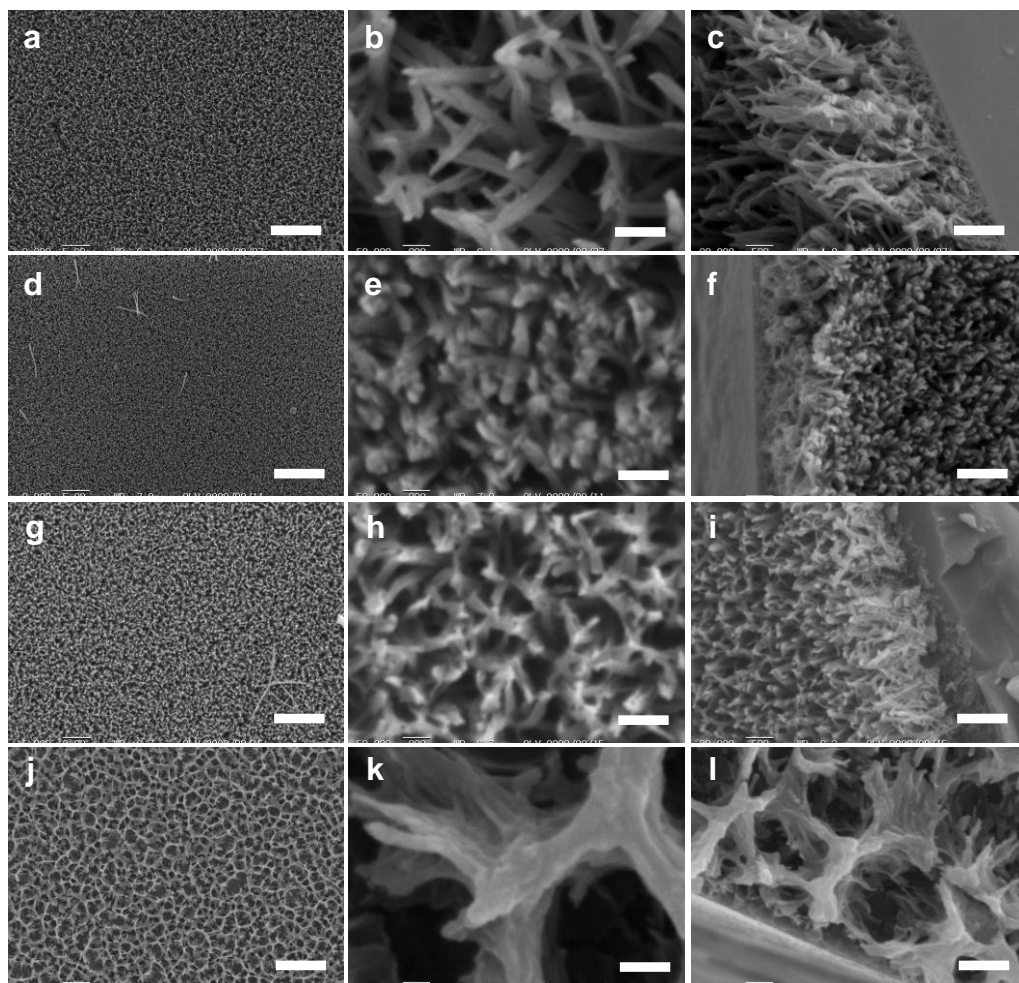
Additional figures

Figure S1: SEM images of LPEI@silicas nanograss surface obtained by using the silica sources of MS51 with different concentrations: 50 vol % (3 mL MS51 and 3 mL water; a–c); 3.3 vol % (0.5 mL MS51and 15 mL water; d–f); 0.25 vol % (0.25 mL MS51in 100 mL water, g–i) and 0.1 vol % (0.1 mL MS51 in 100 mL water, j–l). The LPEI concentration is 5.0 wt % and the silica deposition was conducted at room temperature for 40 min. The bars are 10 μm for a, d, g and j; 400 nm for b, e, h and k, 1 μm for c, f, i and l.
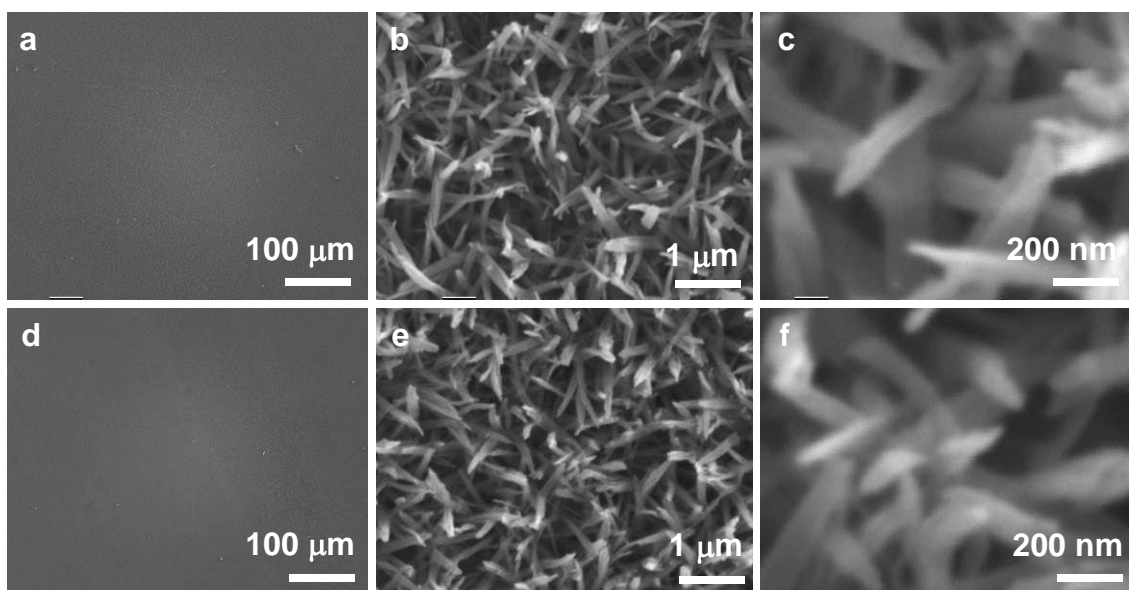
Figure S2: SEM images of LPEI@silica nanograss surface functionalized with porphyrin moiety with molar ratio of [EI]/[TSPP] = 600/1 (a–c) and 1200/1 (d–f). The other synthesis conditions are the same as those used for the sample shown in Figure 7.
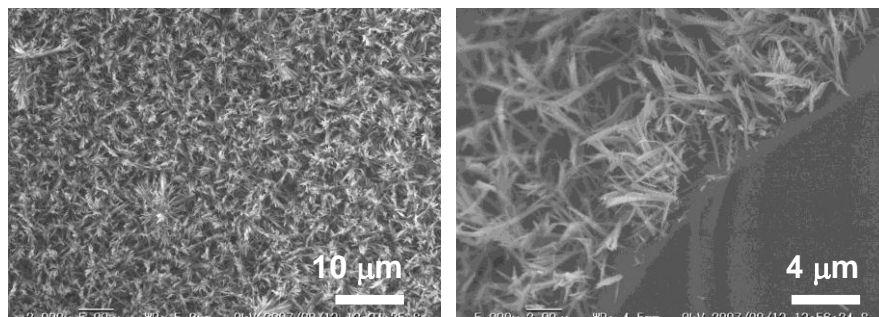
Figure S3: SEM images of LPEI@silica nanograss surface used for the generation of Au nanoparticles.
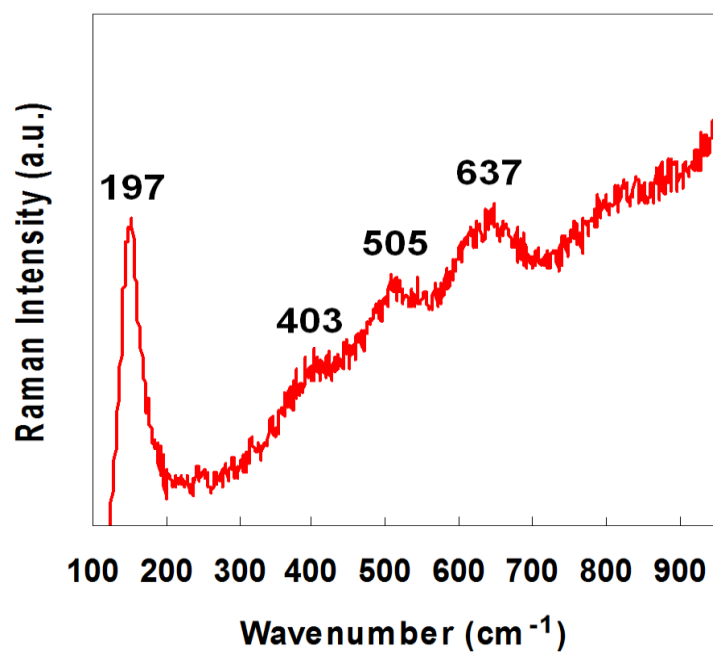
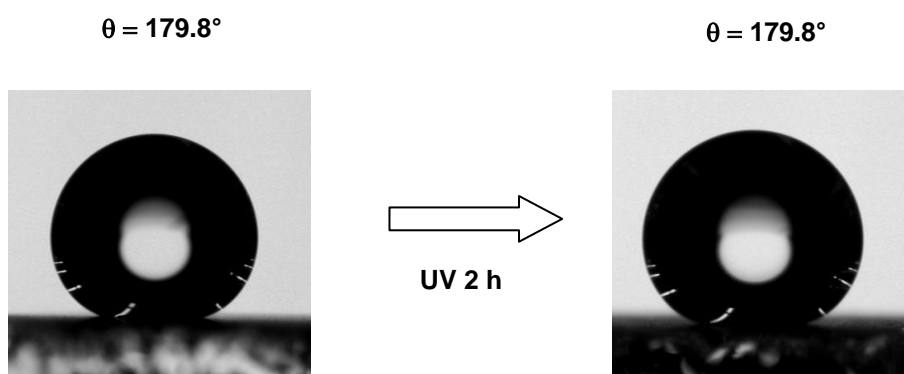**Figure S4:** Raman spectrum of silica@titania composite nanograss surface.

θ = **179.8°**   θ = **179.8°**

UV 2 h

Figure S5: Water contact angles of silica nanograss surface (as shown in Figure

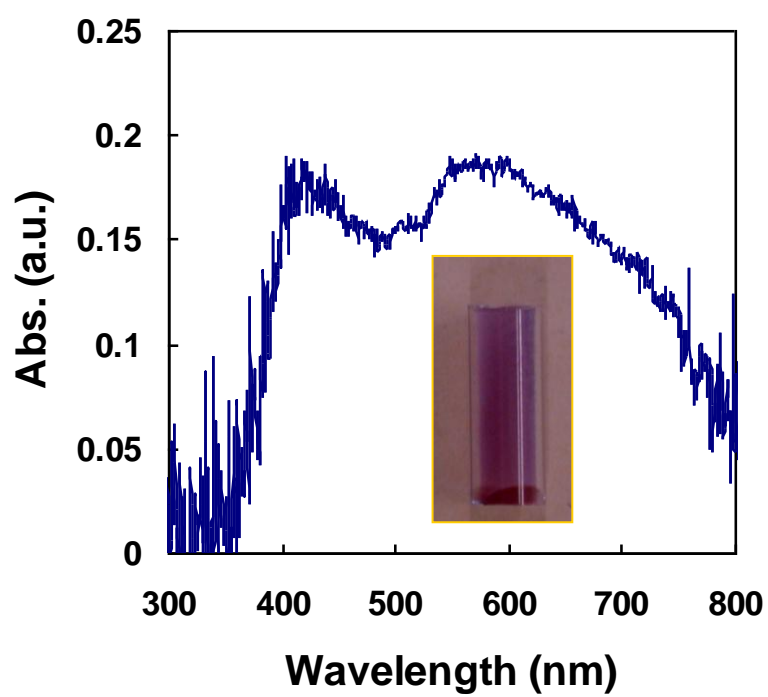9a and b) before and after 2 h UV irradiation.

Figure S6: UV–vis spectrum of LPEI@silica nanograss functionalized with nanoparticles.