Supplementary Information

Giant Raman enhancement on nanoporous gold film by conjugating with nanoparticles for single-molecule detection

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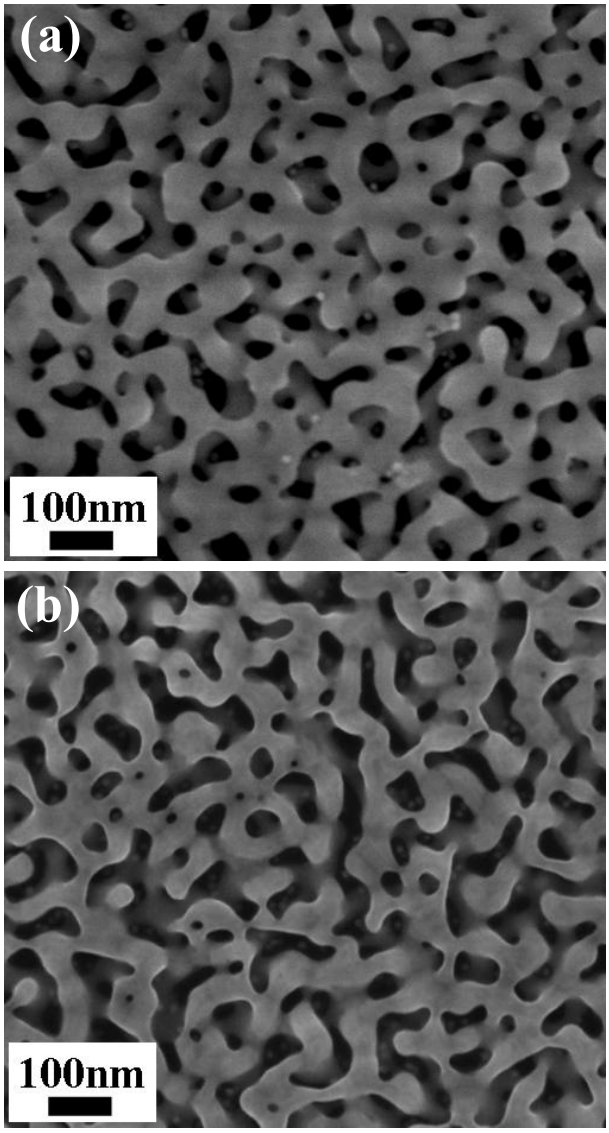

Figure S1. SEM images of NPG films conjugated with gold nanoparticles with different densities.

Fig. S1(a-b)/Qian et al.

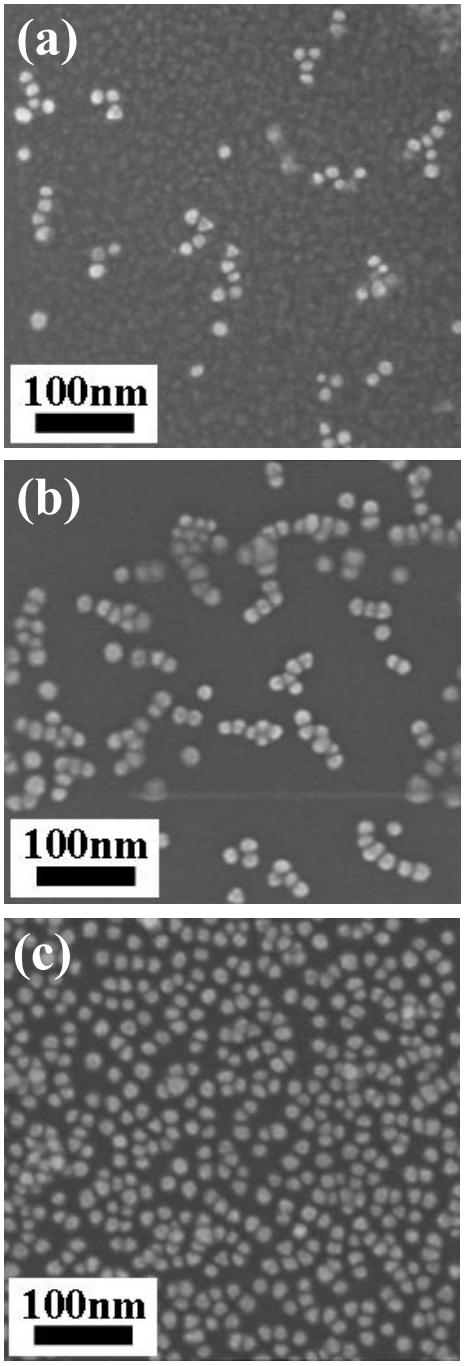

Figure S2. Typical SEM images of single layer gold nanoparticles with different densities.

Fig. S2(a-c)/Qian et al.

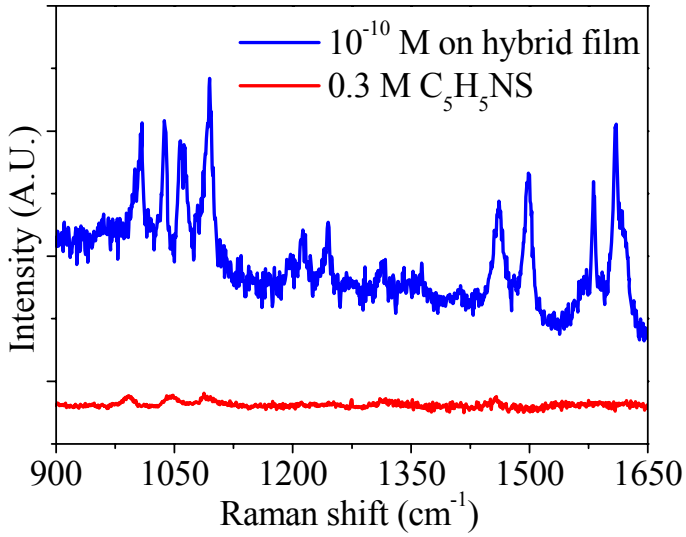

Figure S3. Raman spectra collected from NPG-nanoparticle conjugates after immersing into 10^{-10} M 4-MP solution and from bulk solution with a concentration of 0.3 M.

Fig. S3/Qian et al.

Table S1: Assignments of Raman bands at different frequencies ν observed in this work.

ν (cm^{-1})	Assignment	ν (cm^{-1})	Assignment
925	$5b_1$ out-of-plane C-H def	1247	in-plane N-H def
950	out-of-plane def for N-H+	1316	$3b_2$ in-plane C-H def
1017	$1a_1$ ring breathing	1372	$14b_2$ ring stretch
1053	$18a_1$ in-plane C-H def	1448	$19b_2$ ring stretch
1088	$18b_2$ in-plane C-H def	1472	$19a_1$ ring stretch
1097	$12a_1$ trigonal ring breathing with C=S	1586	$8b_2$ ring stretch with deprotonated nitrogen
1141	15 b_2 C-H def	1610	$8b_2$ ring stretch with protonated nitrogen
1196	$9a_1$ in-plane C-H def with protonated nitrogen	1621	$8a_2$ ring stretch
1213	$9a_1$ in-plane C-H def		

Table S1/Qian et al.