Controllable Preparation of Gold Nanocrystals with Different Porous Structures for SERS Sensing

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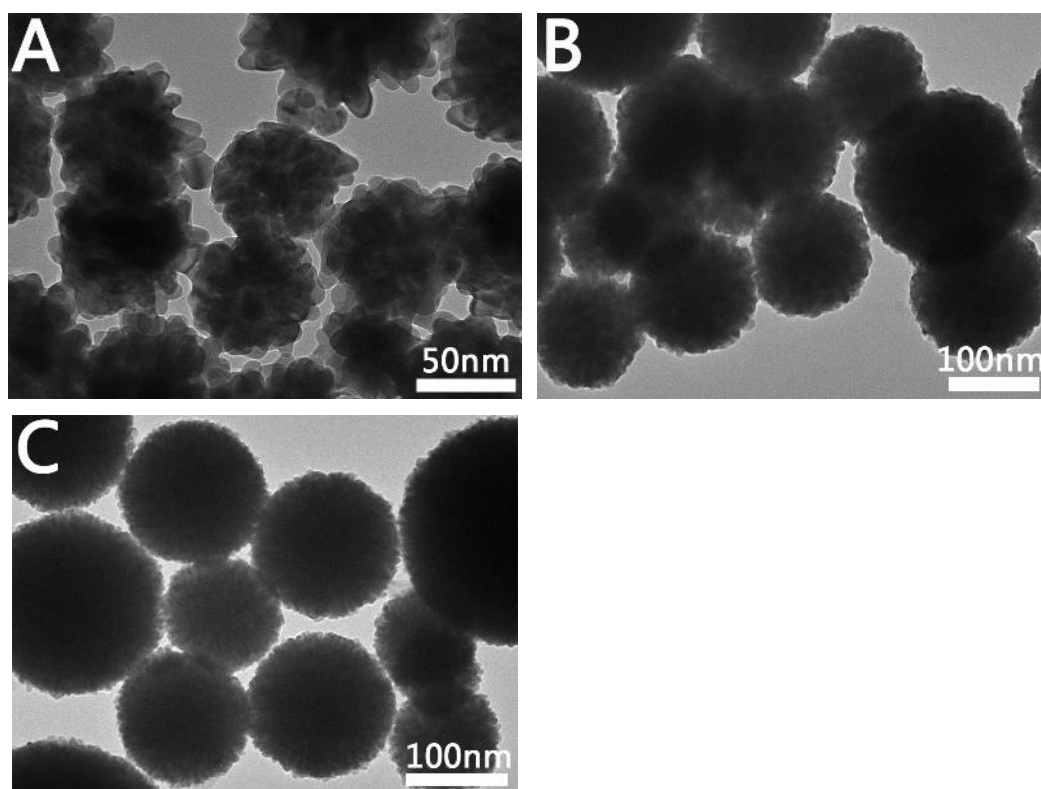*   Correspondence: yazhouqin@zju.edu.cn (Y.Q.); yaoweixuan@zjpc.edu.cn (W.Y.)

Figure S1. Without CTAB, the Au NCs were prepared by changing the amount of glutathione added. (**A**) 10 µL, (**B**) 50 µL and (**C**) 100 µL.
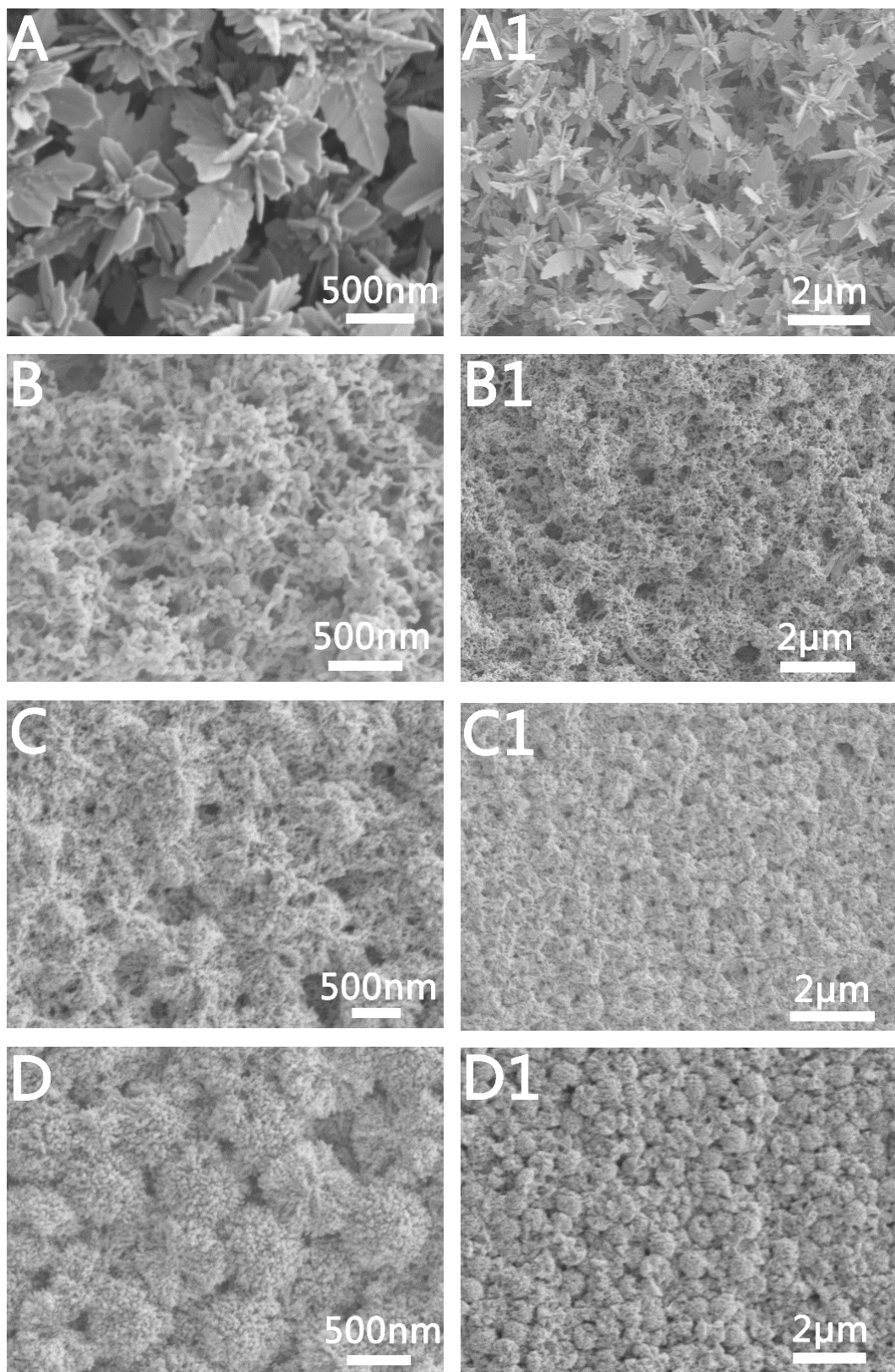
Figure S2. SEM images of gold nanoparticles prepared under different alkyl length conditions. (**A**) C_6TAB, (**B**) $C_{10}TAB$, (**C**) $C_{12}TAB$, (**D**) $C_{14}TAB$.
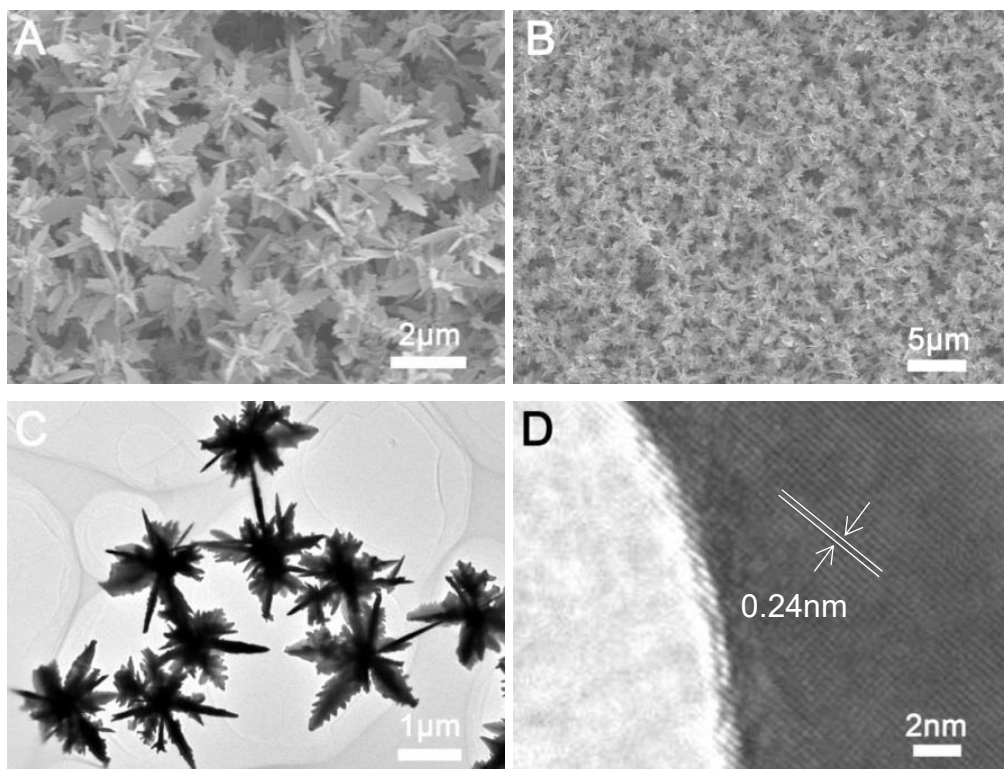
Figure S3. Structural characterization of leaf-shaped gold nanoparticles. (**A**) High-magnification SEM image. (**B**) and (**C**) low-magnification SEM image and TEM image. (**D**) High-resolution TEM image.

Table S1. Characteristic vibrations of R6G.

SERS/cm^{-1}	
613	δ(C-C-C)
772	γ(C-H)
1181	δ(N-H), δ(C-H)
1312	ν (C = C)
1362	ν (C = O), ν (C = C)
1508	ν (C = C)benzene, ν (C = O)

Def: ν: stretching; δ: in-plane bending; σ: scissoring; ρ: rocking. γ: out-of-plane bending; τ: twisting; ω: wagging. β: ring breathing.

Table S2. Peak intensity of 10^{-5} M R6G at 613 cm^{-1} and 1362 cm^{-1} with different morphology Au NCs as SERS substrate.

	613 cm^{-1}	1362 cm^{-1}
Microporous Au NCs	534	413
Leaf-shaped Au NCs	962	887
Strip structure Au NCs	1908	1924
Mesoporous Au NCs	4625	3507
Hierarchical porous Au NCs	19371	16004