

Supporting Information

Temperature Regulation Growth of Au Nanocrystals: from Concave Trisoctahedron to Dendritic Structures and Their Ultrasensitive SERS-based Detection of Lindane

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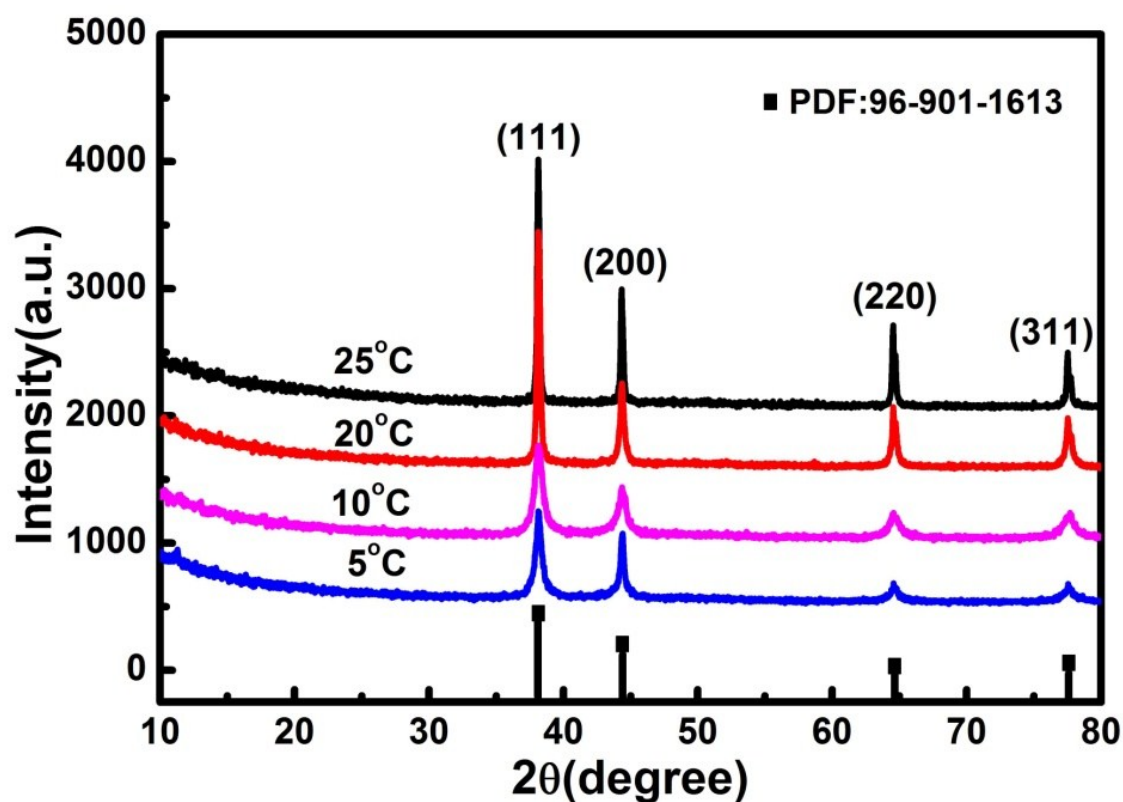


Figure S1. The XRD patterns of the products obtained by addition of Au seed solution with 0.05mL at different reaction temperatures.

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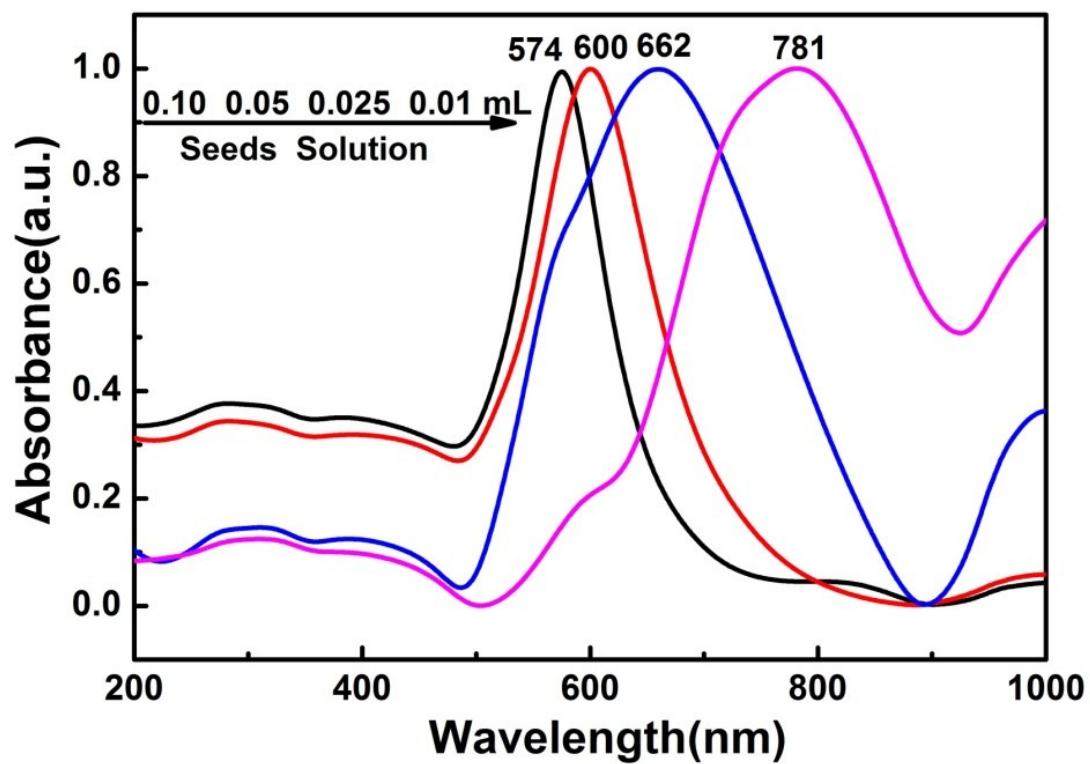


Figure S2. Optical absorbance spectra of Au colloidal solutions obtained by addition of different Au seeds solution amounts (0.10 mL, 0.05 mL, 0.025 mL, 0.01 mL) at 25°C, respectively.

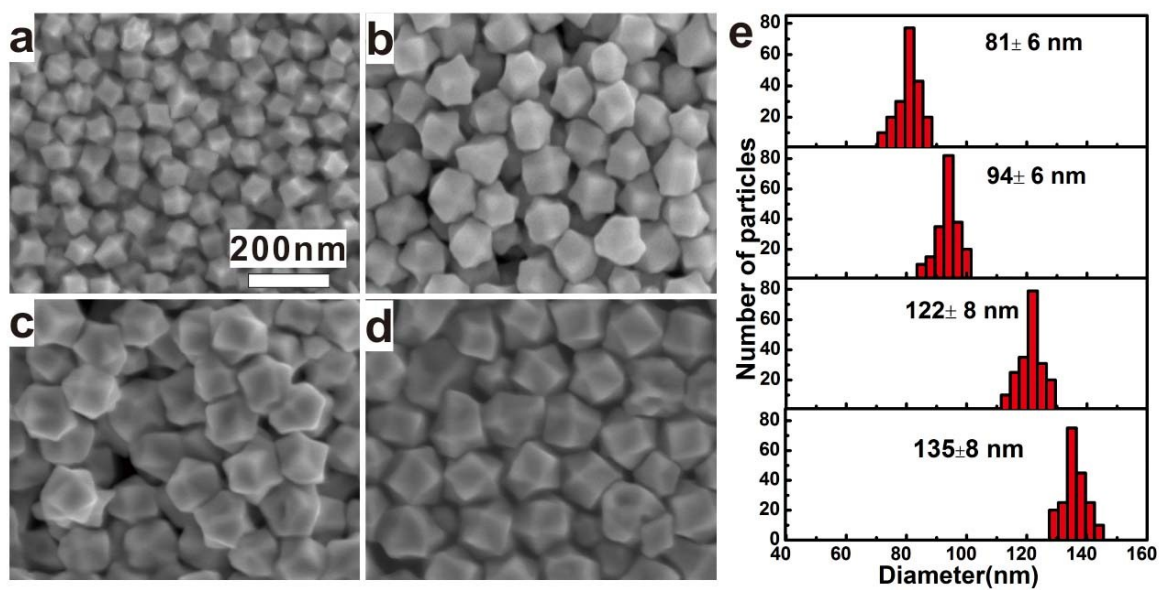


Figure S3. (a–d): SEM images of products obtained by addition of Au seeds solution amounts 0.10 mL, 0.05mL, 0.025mL and 0.01 mL, respectively, at 25°C. (e): The size distribution histograms of the particles. The frames from top to bottom: correspond to the samples in panels a–d, respectively.

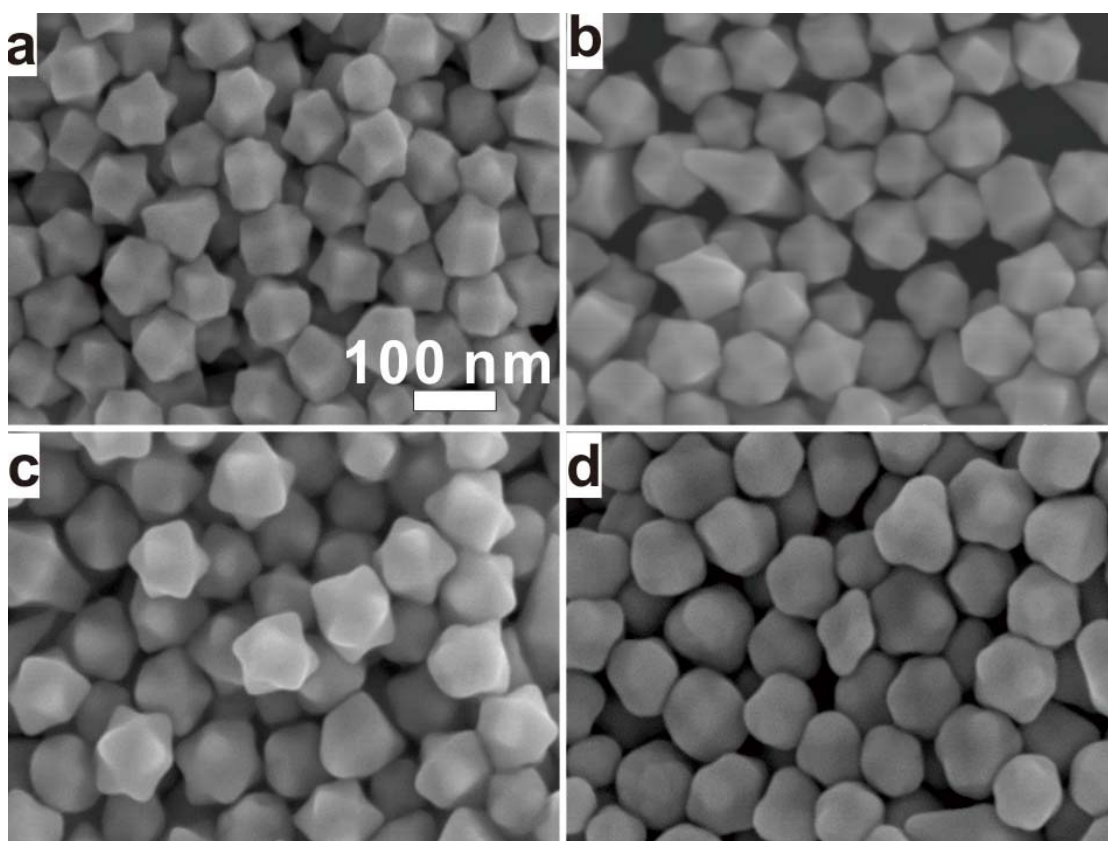


Figure S4. The SEM images of the products obtained by addition of Au seeds solution with 0.05mL at different reaction temperatures. (a): 40 °C, (b): 60 °C, (c): 80 °C, (d):100 °C.

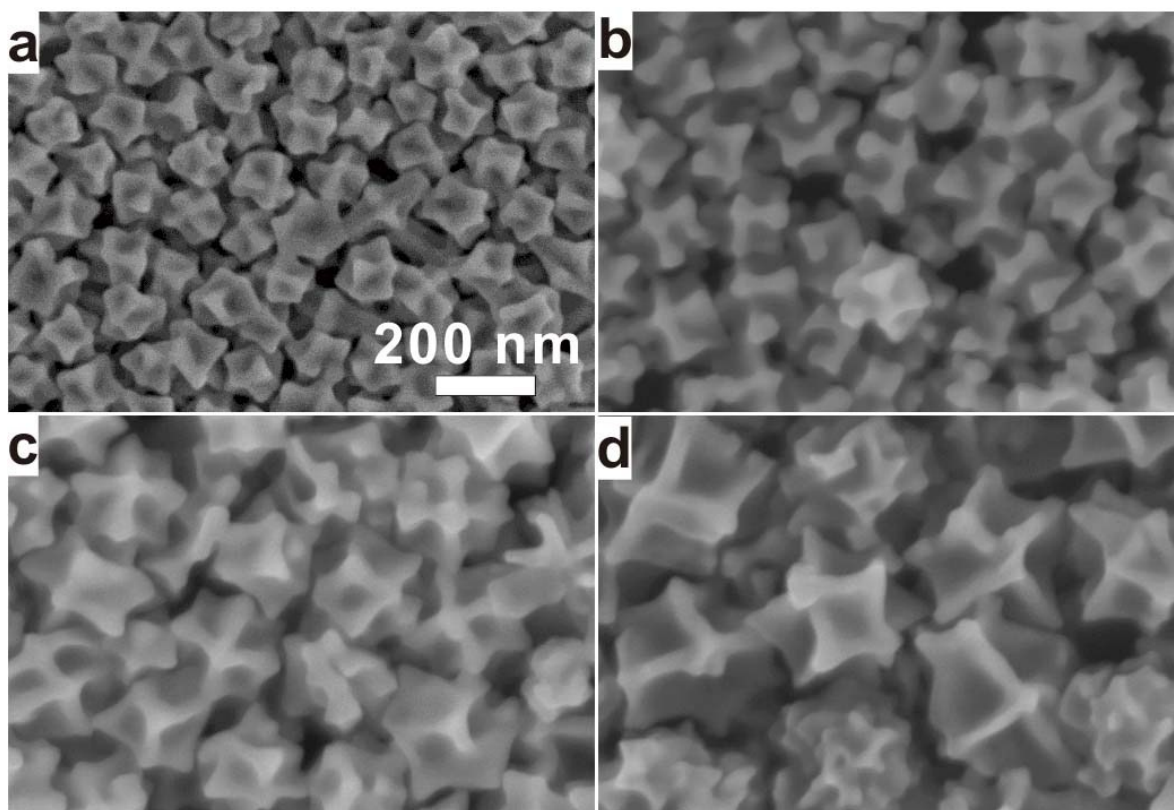


Figure S5. The SEM images of the Au nanocrystals obtained at 20°C by addition of Au seeds solution amounts (a): 0.10 mL, (b): 0.05mL, (c): 0.025mL and (d): 0.01 mL.

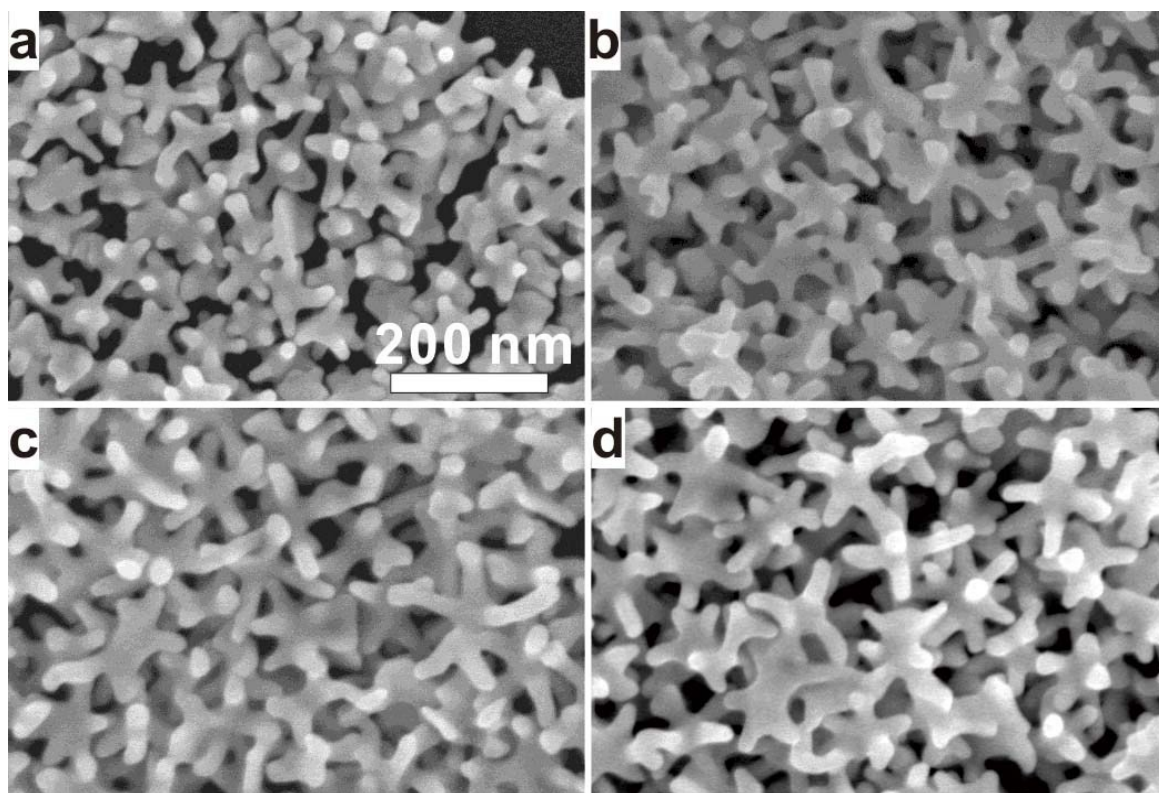


Figure S6. The SEM images of the Au nanocrystals obtained at 10°C by addition of Au seeds solution amounts (a): 0.10 mL, (b): 0.05mL, (c): 0.025mL and (d): 0.01 mL.

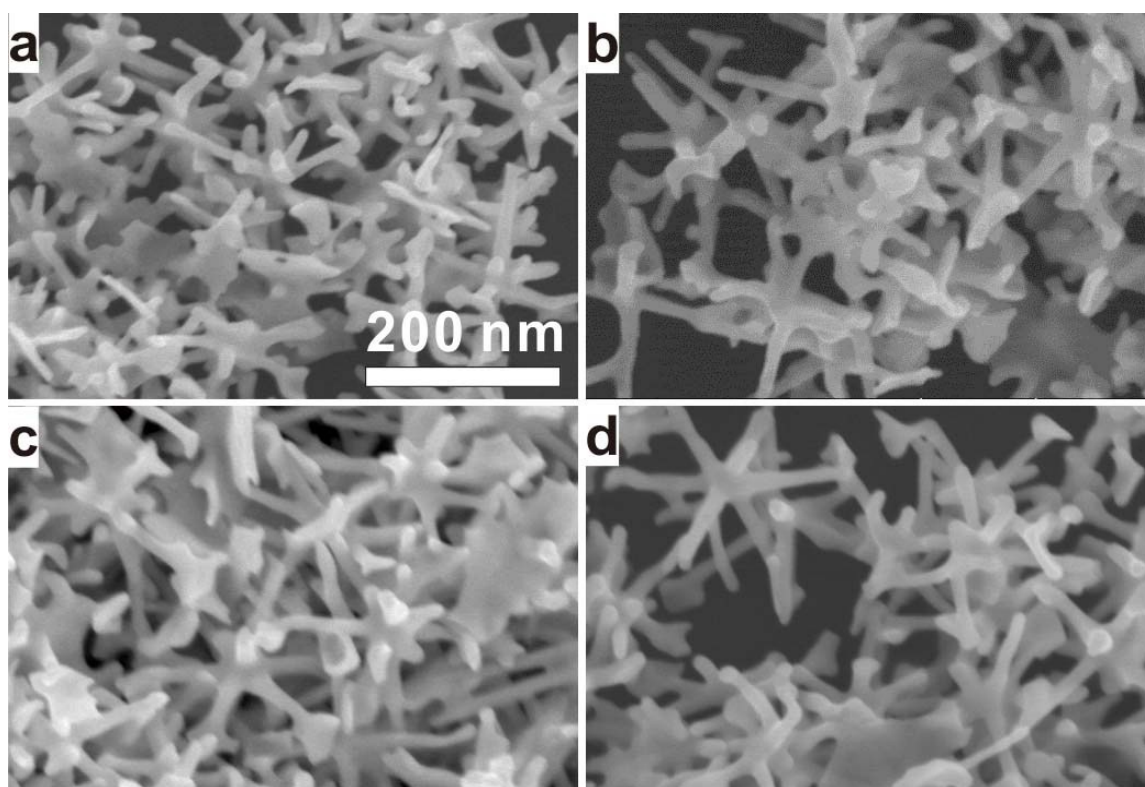


Figure S7. The SEM images of the Au nanocrystals obtained at 5°C by addition of Au seeds solution amounts (a): 0.10 mL, (b): 0.05mL, (c): 0.025mL and (d): 0.01 mL.

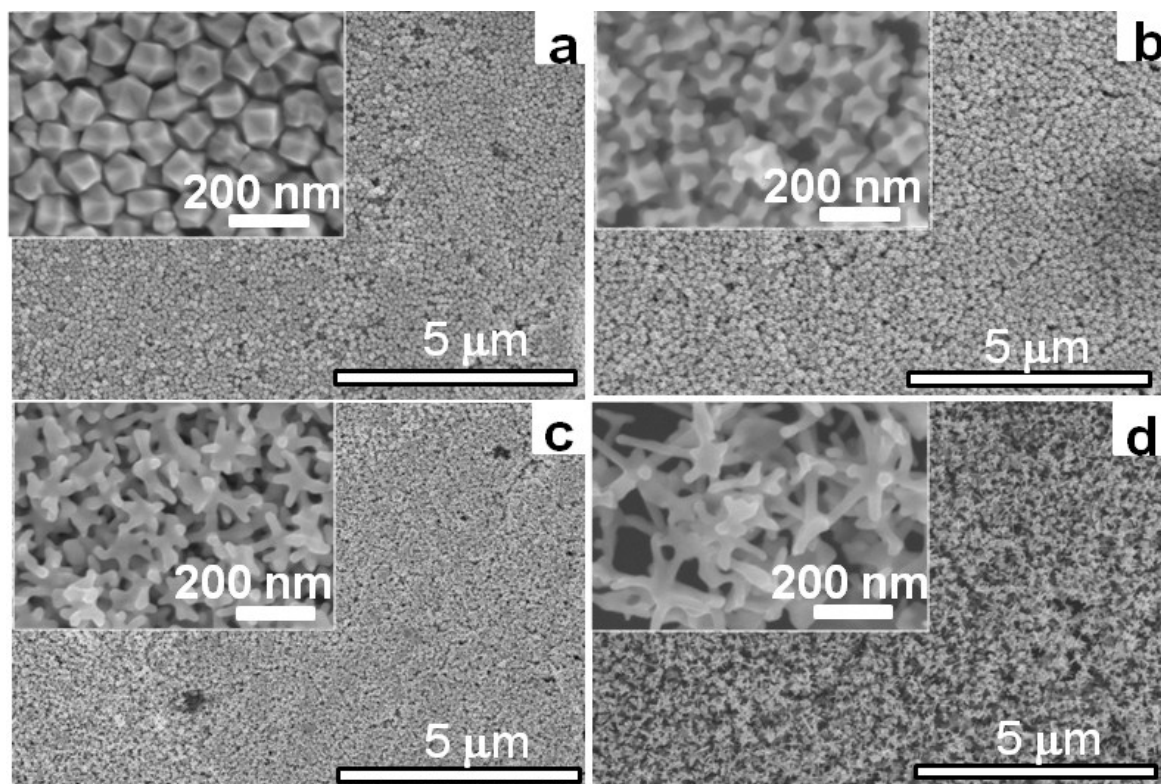


Figure S8. SEM images of the films built of the Au nanocrystals obtained by addition of 0.05 mL seeds solution at different reaction temperatures. (a): 25°C, (b): 20°C, (c): 10°C, (d): 5°C.

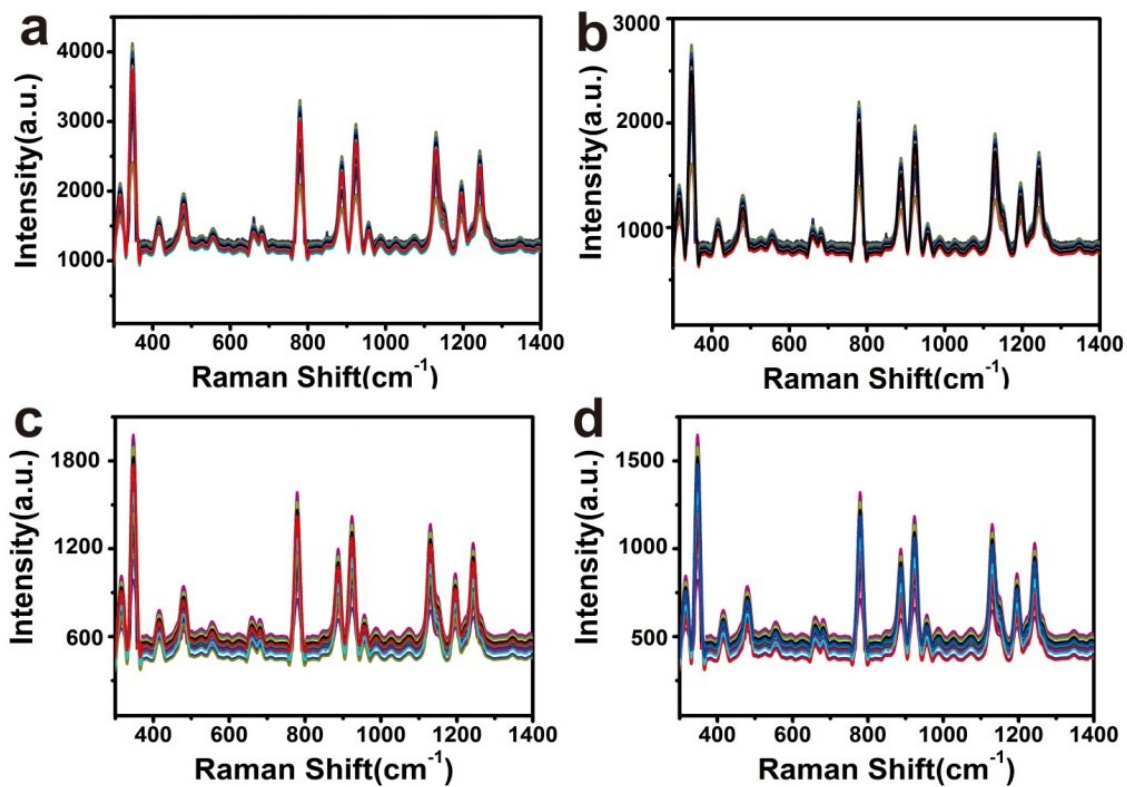


Figure S9. The Raman spectra from the 20 random spots on the films built of the nanocrystals obtained at (a) 25°C, (b) 20 °C, (c) 10 °C, (d) 5 °C, after soaking in the solution with 10^{-6} M in lindane concentration. (excited at 785nm)

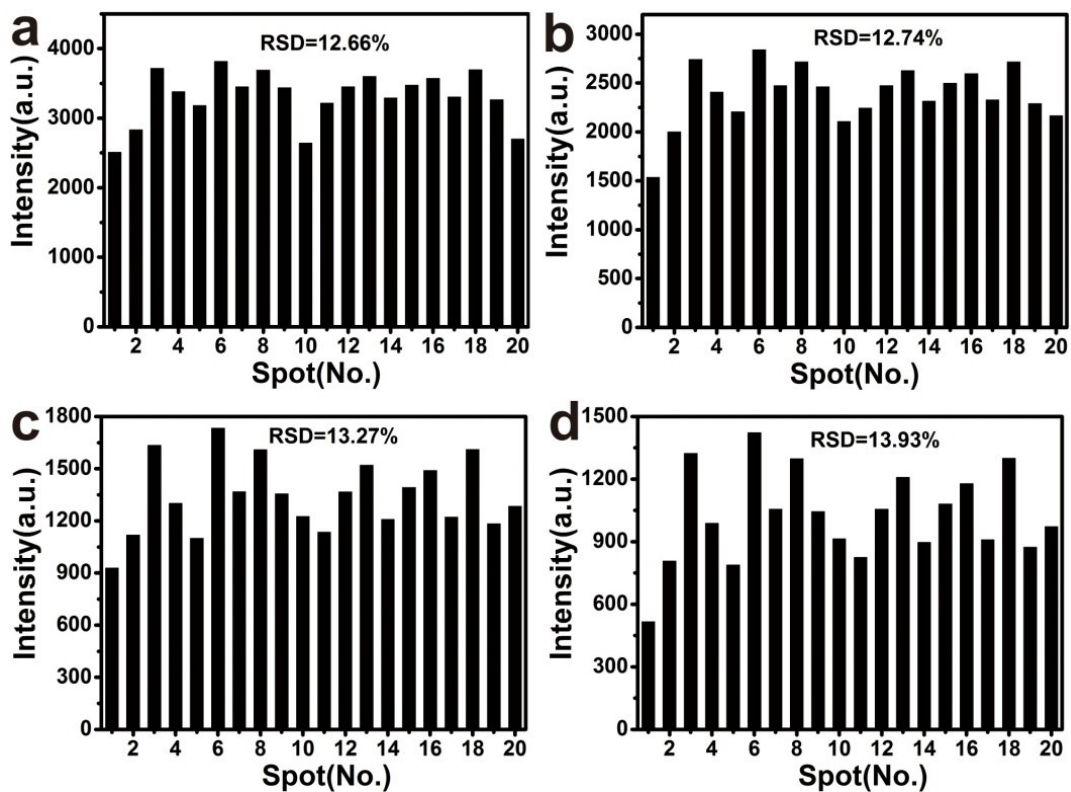


Figure S10. The intensity of the main peak at 345 cm⁻¹ from each spots on the Au nanocrystals-built films. The data in (a-d) are from (a), (b), (c) and (d) in Figure S10, respectively.

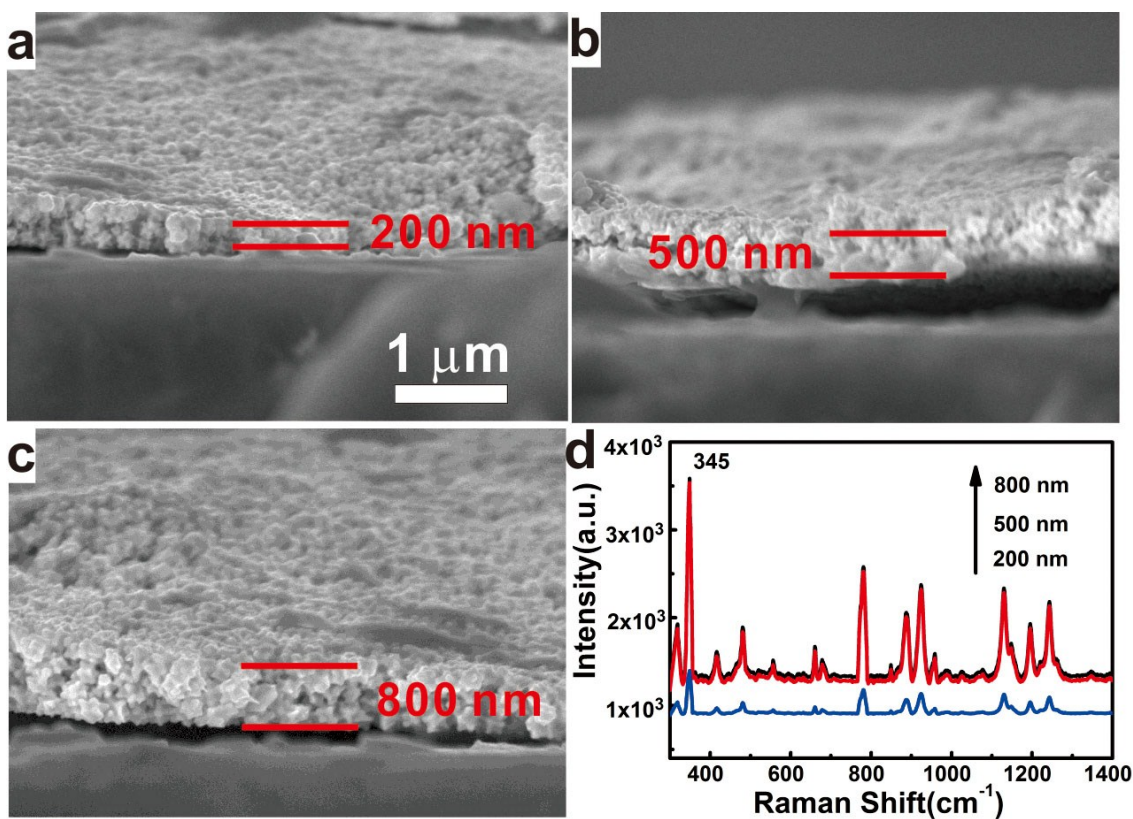


Figure S11. The SEM images of the Au concave trisoctahedral nanocrystals-built films with (a) 200 nm, (b) 500 nm and (c) 800 nm in thickness. (d): The Raman spectra of the lindane molecules on these films after soaking in the solution with 10^{-6} M in lindane concentration and drying.(excited at 785 nm).

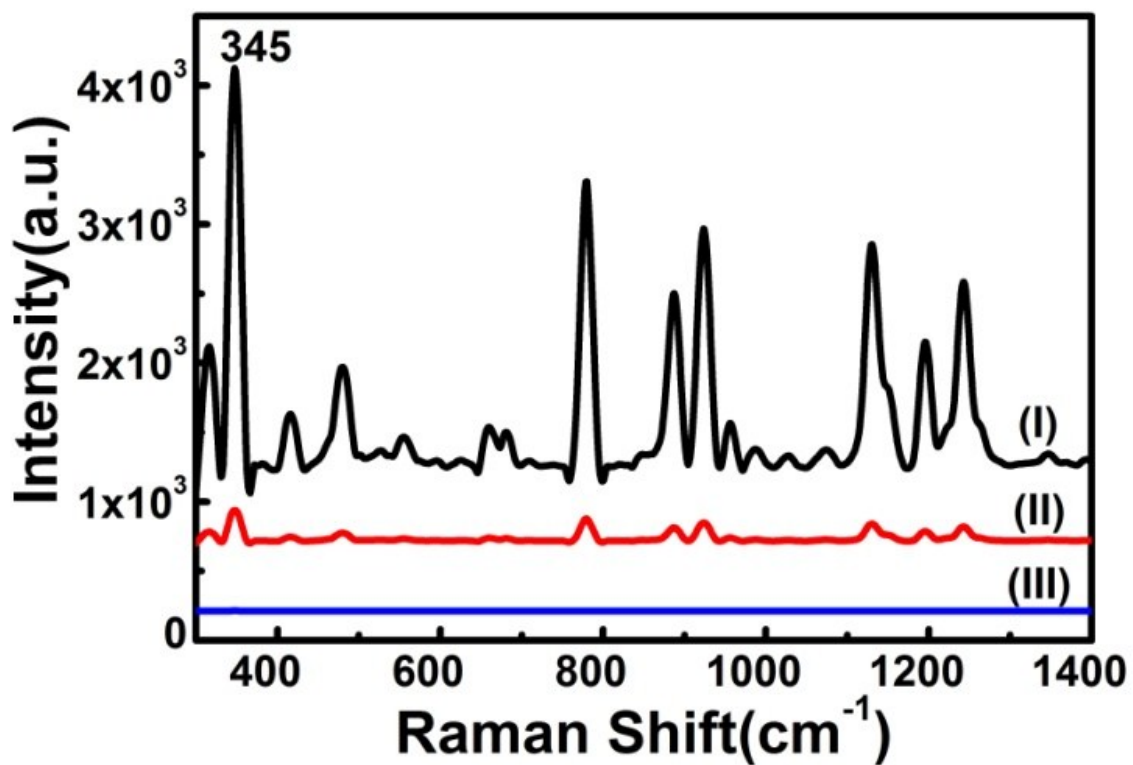


Figure S12. The Raman spectra of the lindane molecules on the Au concave trisoctahedral nanocrystals-built film after soaking in the lindane solution with 10^{-6} M, excited at different wavelengths. Curve (I): 785 nm; Curve (II): 633 nm; Curve (III): 532 nm.

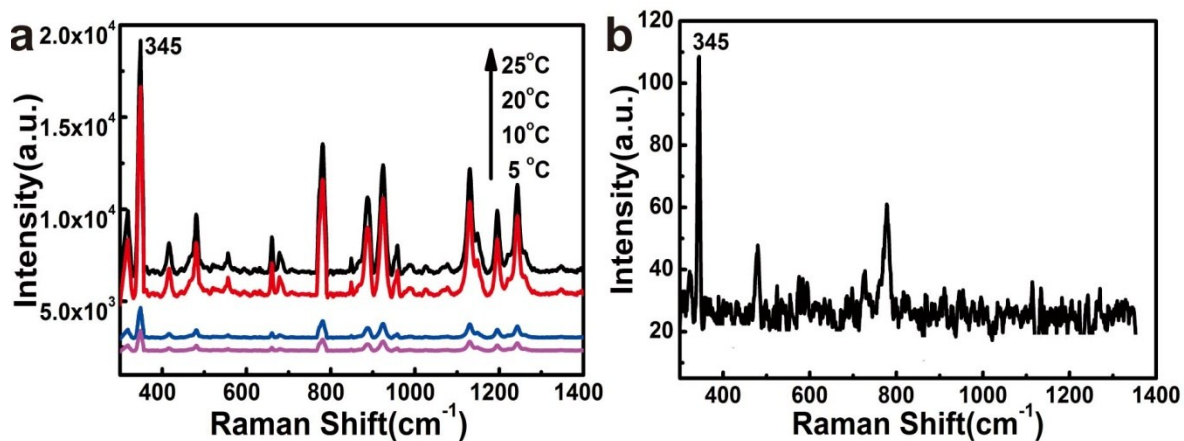


Figure S13. Raman spectra of the lindane molecules by dropping (a): 20 μ L lindane solution (10^{-5} M) on the films built of the Au nanocrystals obtained at different reaction temperatures and (b): 50 μ L lindane solution (0.1M) on Si wafer, and drying.