Supporting information

Plasmonic Core-Shell Nanoparticles for SERS Detection of the Pesticide Thiram: Size- and Shape-Dependent Raman Enhancement

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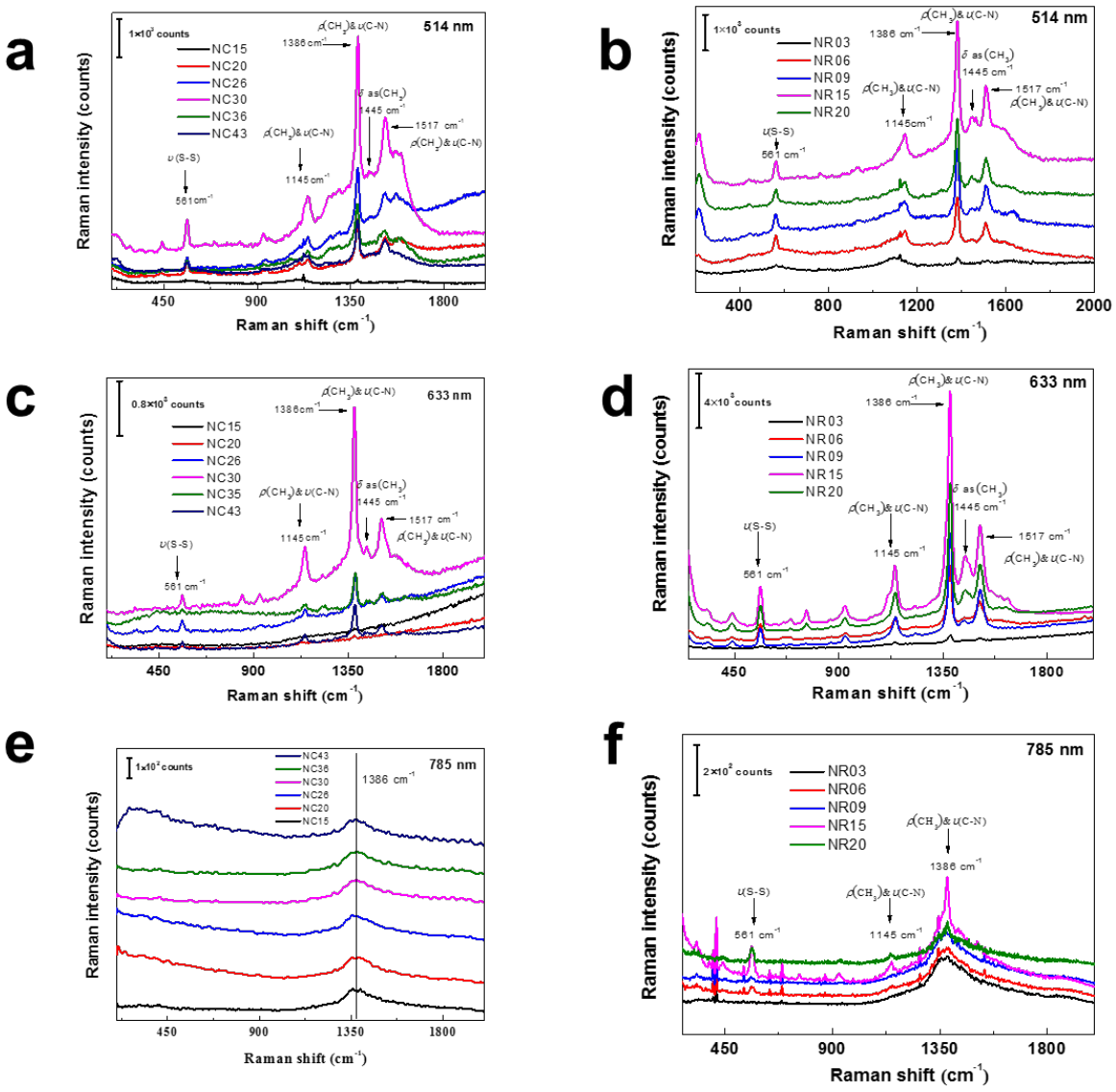

Figure SI-1 Raman spectra of 1×10^{-6} M thiram *vs* different sizes of NCs and NBs from 514, 633, and 782 nm lasers, with demonstrations of vibrations modes of each SERS peak of thiram.

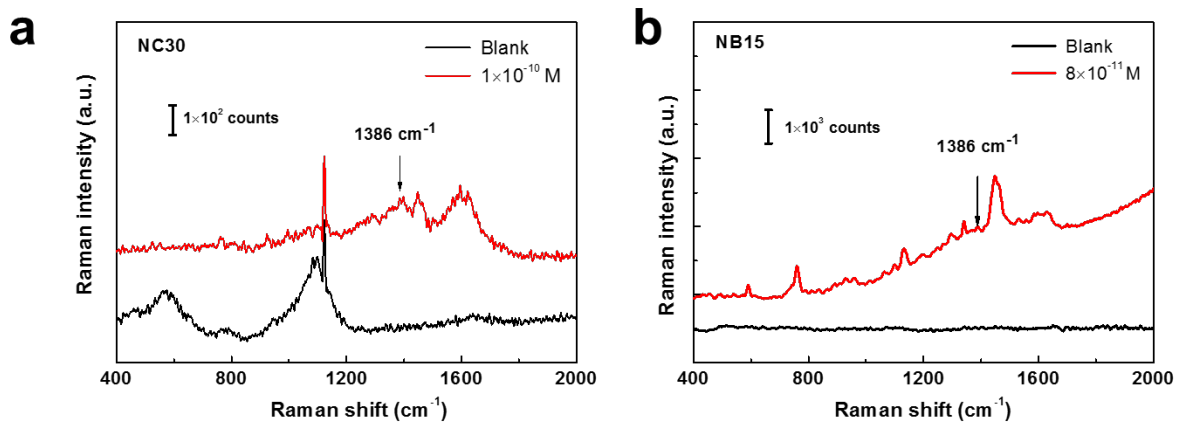

Figure SI-2 The compare of Raman spectra of 1×10^{-10} M thiram and blank. (a) Raman spectra of 1×10^{-10} M thiram based on different sizes of NC30 excited by 514 nm laser, (b) Raman spectra of 8×10^{-11} M thiram based on NB 15 excited by 633 nm laser.

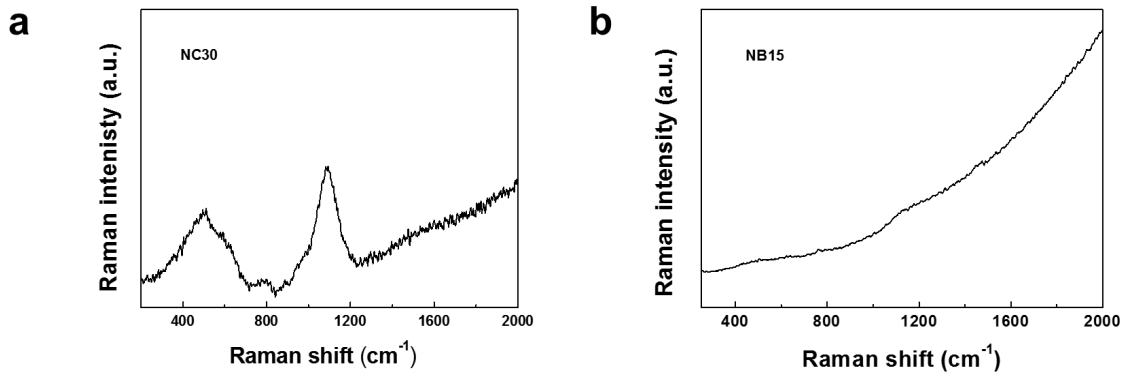

Figure SI-3 The Raman spectra of nanoparticles as the contrast tests: NC30 (a) and NB15(b) without thiram under excitation by 514 and 633 nm lasers, respectively.

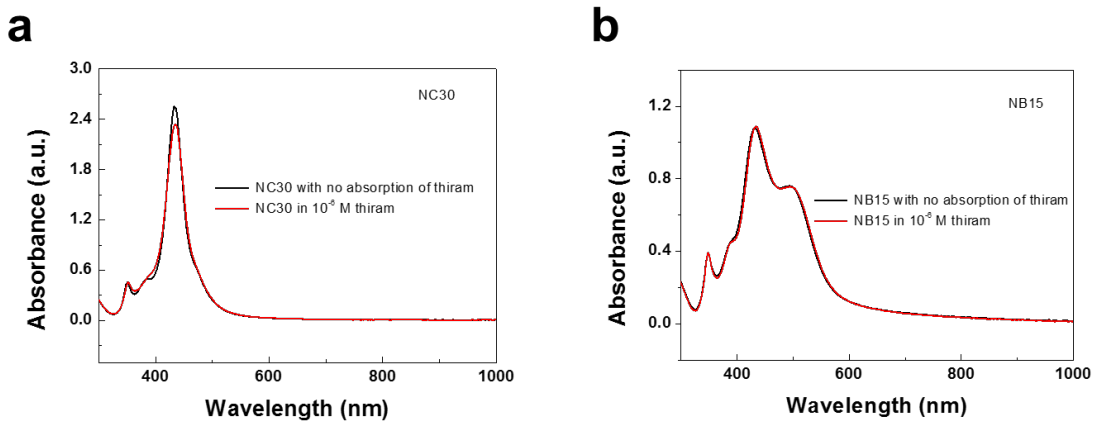

Figure SI-4 The experiments demonstrated that no aggregation of nanoparticles occurred before Raman test. The UV-vis spectra of NC30 (a) and NB15 (b) with/without absorption of thiram, respectively.

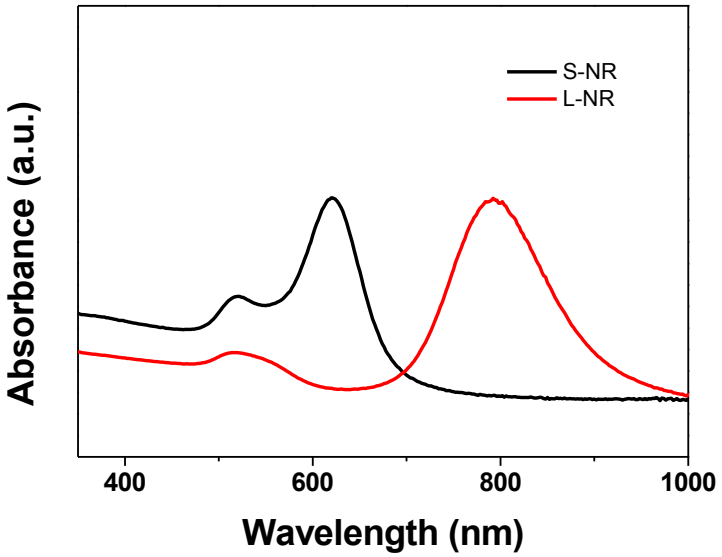

Figure SI-5 The synthesis of longer and shorter Au nanorod as the core to study core-size/shape dependent SERS activity of Au@Ag core/shell nanoparticles. The UV-vis spectra of shorter/longer nanorods (S/L-NR) with aspect ratio of ~2.2 and ~4.1, respectively.

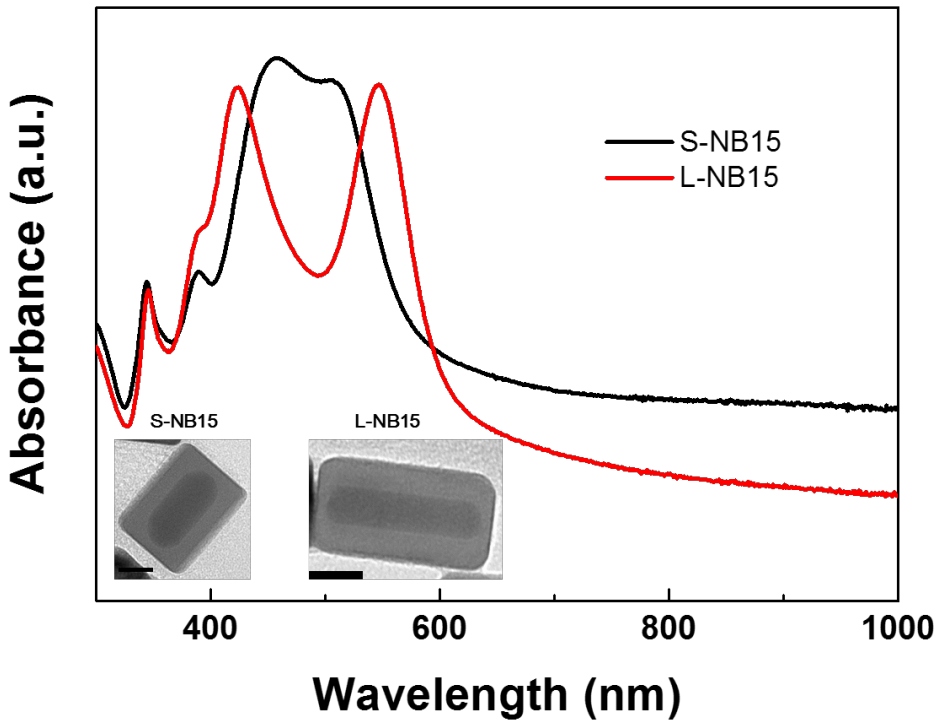

Figure SI-6 The optical spectra of nanocuboids with shorter/longer nanorods as core. The concentration of Au nanorod was same with previous study before Ag coating, and the same amount of Ag was coated. (TEM images are inset with scale bar of 20 nm).

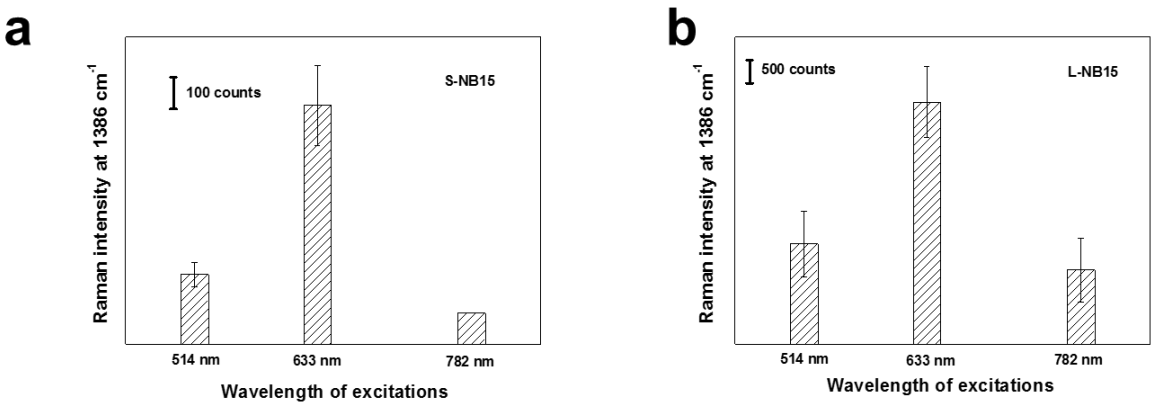

Figure SI-7 The SERS activities of Au@Ag core/shell nanocuboid with shorter and longer Au nanorod core under three different excitations, 514, 633, and 782 nm: S -NB15 (a), and L-NB15 (b).

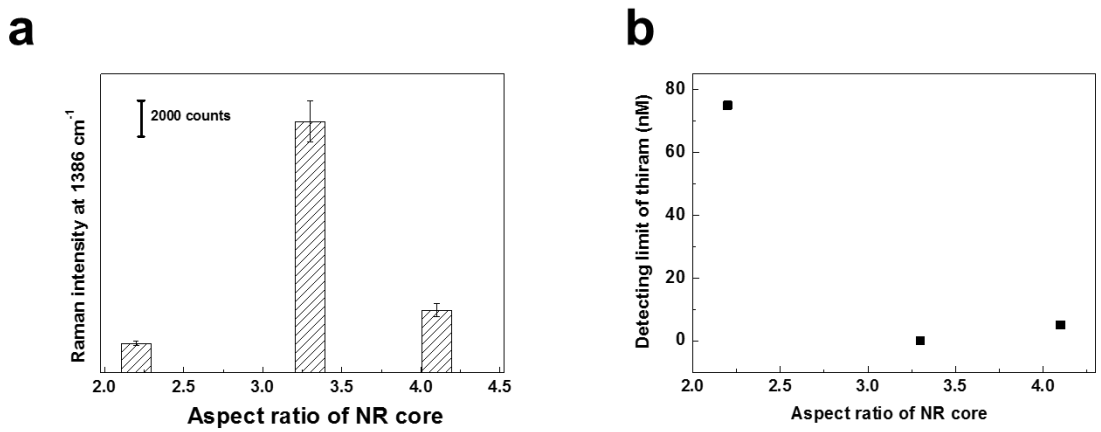

Figure SI-8 The SERS activities studied varying with aspect ratios of Au nanorod core. (a) The Raman intensity of 10^{-6}M thiram at 1386 cm^{-1} varying with aspect ratio of Au nanorod core: S -NB15, NB 15, and L-NB15, under 633 nm excitations; (b) The detecting limit of thiram based on Au@Ag core/shell nanocuboids varying with aspect ratios of Au nanorod core.