

Synthesis of Metal Core–Dielectric Satellite Nanoparticles

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Core–satellite nanoparticles with various compositions have been applied to sensitive molecular detections via surface–enhanced Raman spectroscopy. To date, the satellite nanoparticle has been limited to metals such as Au or Ag. Here we report a facile synthesis of Au core–SiO₂ satellite nanoparticles. First, we synthesize uniform Au core (~80 nm) and SiO₂ satellite nanoparticles (< 20 nm) respectively. Second, we subsequently attach the SiO₂ nanoparticles on the Au cores. The resulting core–satellite nanoparticles are characterized by UV–Vis spectroscopy and electron microscopy. In addition, our core–satellite nanoparticles are applied to sensitively detect small molecules.