

Recent advances in gold nanoparticle-based optic sensor

The ease in preparation and conjugation, stability, biocompatibility, as well as the size-dependent optical properties makes gold nanoparticles (Au NPs) one of the most popular nanomaterials for sensing of analytes of interest in the last decade. We have witnessed many sensitive and selective Au NPs based optical systems for quantitation of metal ions, anions, proteins, and DNA, based on analyte induced changes in their absorption, fluorescence, and scattering intensity. In this paper, we briefly discuss wet chemical approaches for the preparation of Au NPs.

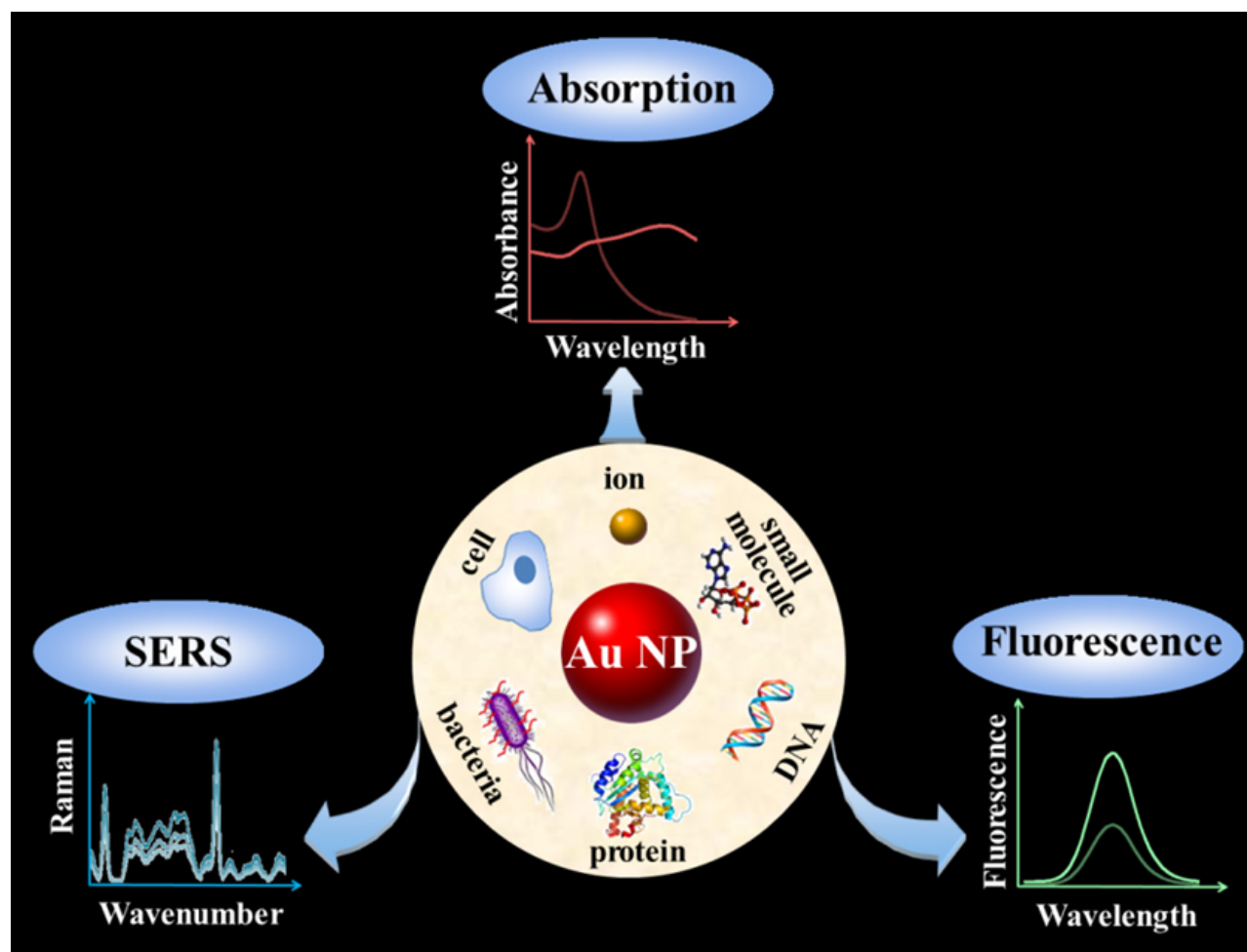


Fig. 1. Schematic illustration of analytes sensing using Au NP probes based on absorption, fluorescence and Raman techniques.

Sensing mechanisms and strategies of Au NPs based optical systems are provided to show basic concepts in designing sensitive and selective sensing systems. Strategies for signal amplification applied in Au NPs based systems are emphasized for the analysis of trace amounts of analytes in

real samples. Many excellent Au NPs based optical sensing systems are discussed to highlight their practicality for the analysis of complicated biological and environmental samples. The challenge and future trend of Au NPs based optical sensing systems were discussed in the end of this paper.

Zhiqin Yuan

*State Key Laboratory of Chemical Resource Engineering
Beijing University of Chemical Technology
Beijing, China*

Publication

[Gold nanoparticles as sensitive optical probes.](#)

Yuan Z, Hu CC, Chang HT, Lu C.

Analyst. 2016 Feb 15