

PhD Open Days



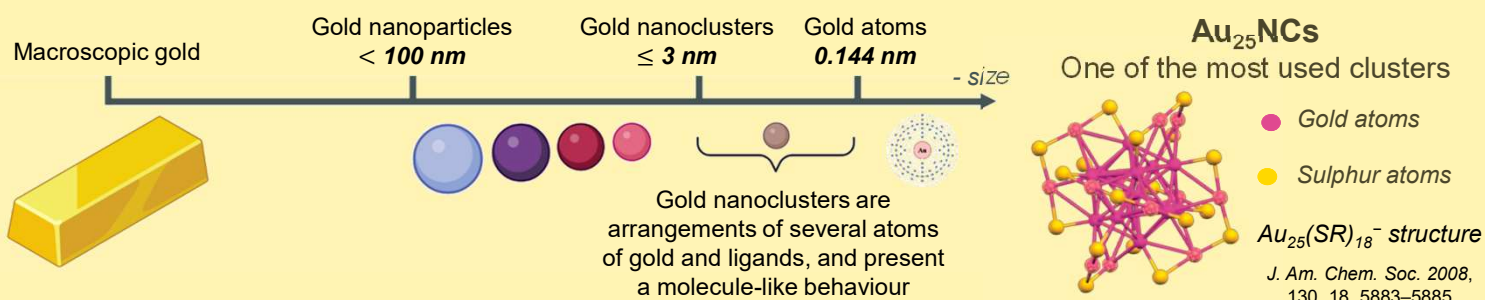
Gold nanoclusters doped with silver for Fluorescence Image-Guided Surgery

PhD Program in Materials Engineering

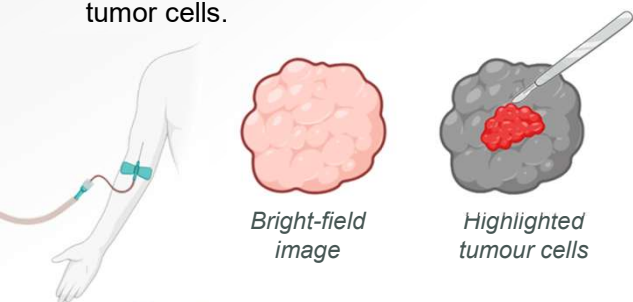
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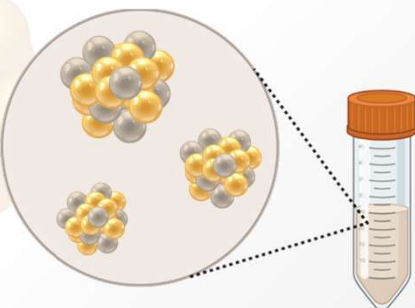
Gold Nanoclusters (AuNCs) are nanoparticles of 1 - 3 nm, which exhibit fluorescence with long lifetime, high photostability and low toxicity.



- Fluorescence Image-Guided Surgery (FIGS)** is one of the many applications of gold nanoclusters, which act as fluorescence probes helping to localize the tumor cells.

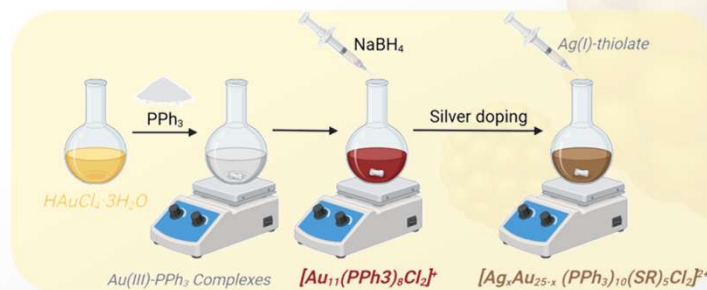


- Silver doping** enhances the fluorescence of gold nanoclusters.

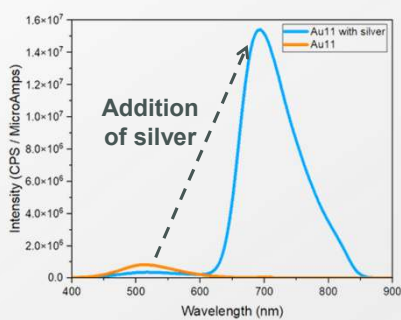


- By adding silver, the atoms rearrange, modifying the cluster structure, charge distribution, and atomic geometry.

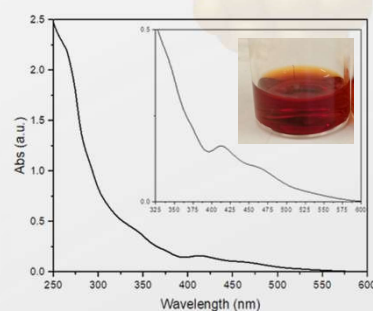
- Highly fluorescent 25-atoms metal nanoclusters** can be produced from 11-atoms gold nanoclusters, doped with silver complexes, to yield **Ag₁₃Au₁₂NCs**.



- Silver not only increases the emission intensity by also shifts it to longer wavelengths, allowing deeper tissue penetration.



Emission spectra of Au₁₁NCs with and without silver excited at 350 nm.



UV-Vis spectra of Au₁₁NCs. Inset: close-up to the spectra with an image of the Au₁₁NCs solution.

Acknowledgments

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