

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Comparison of photoluminescence properties of HSA-protected and BSA-protected Au₂₅ nanoclusters MASATO TSUKAMOTO, HIDEYA KAWASAKI, TADASHI SAITOH, MITSURU INADA, Kansai Univ., KANSAI UNIV. COLLABORATION, KANSAI UNIV. COLLABORATION — Gold nanoclusters (NCs) have attracted great interest for a wide range of applications. In particular, red light-emitting Au₂₅ NCs have been prepared with various biological ligands. It has been shown that Au₂₅ NCs have Au₁₃-core/6Au₂(SR)₃-semiring structure. The red luminescence thought to be originated from both core (670 nm) and semiring (625 nm). It is important to reveal a structure of Au₂₅ NCs to facilitate the progress of applications. However, the precise structure of Au₂₅ NCs has not been clarified. There is a possibility of obtaining structural information about Au₂₅ NCs to compare optical properties of the NCs that protected by slightly different molecules. Bovine and human serum albumin (BSA, HSA) are suitable one for this purpose. It has been suggested that rich tyrosine and cysteine residues in these molecules are important to produce the thiolate-protected Au NCs. If Au₂₅ NCs have core/shell structure, only the luminescence of the semiring will be affected by the difference of the albumin molecules. We carefully compared PL characteristics of BSA- and HSA- protected Au₂₅ NCs. As a result, there was no difference in the PL at 670 nm (core), while differences were observed in the PL at 625 nm (semiring). The results support that Au₂₅ NCs have core/semiring structure.

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Date submitted: 06 Nov 2015

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