

Bio-conjugation of Various Shapes of Gold Nanocrystals to SOD1

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Control of metal nanostructure morphology has received a great deal of attention over the past decades due to the interest in precise tuning of electronic, optical, and catalytic properties. In particular, gold nanocrystals (AuNCs) have been widely studied because of their high chemical and thermal stability, intense surface plasmon scattering character, and ease in synthesis. In this study, we use the modified seed-mediated process for the rational shape and size control. The various shapes of AuNCs (Φ - and Y shaped) have been synthesized via excess ascorbic acid and controlling cetyltrimethyl ammonium bromide (CTAB) concentration at 0°C. Resulting AuNCs (sphere, rod, multi-pod, Φ - and Y shaped) were conjugated with Cu, Zn-superoxide dismutase (SOD1) molecules for the application as a smart probe, which allows one to detect the change of the local refractive index in the vicinity of the colloid surface. This provides the possibility for the smart detection of various bio-interaction, based on unique optical properties of different shaped AuNCs.