

Synthesis of gold nanorods by One-pot method and the critical roles of shape

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A one-pot, no surfactant-assisted method has been utilized for monodisperse gold crystals with size 5–10nm under high concentration by using poly (ethylene imine) (PEI) as capping agent and reductant. On the base of this one-pot method, we synthesized nanorod gold crystals by using hexadecyl trimethyl ammonium bromide (CTAB) as a surfactant, ascorbic acid (AA) as an assisted-reductant, and PEI as reductant at room temperature. The results showed that concentration of CTAB and HAuCl_4 played crucial roles in formation of gold nanorod crystals. Simultaneously, the adding time of reductant PEI was important for the nanorod gold crystals. And the size, size monodispersity and shape of resulted gold crystals were dependent on the additives sodium chloride (NaCl).