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A simple approach towards uniform spherical Ag-like nanoparticles

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Synthesis of Gold Nanorods: The gold nanorods are synthesized by the seed-growth technique. The gold nanoparticle seeds are first prepared by adding 0.6 ml of ice-cold 0.01 M NaBH₄ solution into 10 ml solution with a concentration of 0.5 mM tetrachloroaurate (III) acid (HAuCl₄) and 0.1 M cetyltrimethylammoniumbromide (CTAB). The solution is kept at 37 °C for 2 h in order to decompose any NaBH₄ residues before using as the seeds for the synthesis of gold nanorods. For a typical gold nanorods synthesis, 0.5 ml of 0.01 M HAuCl₄ is mixed with 4.5 ml of H₂O and 5 ml of 0.2 M CTAB. 20 μl of 0.04 M AgNO₃ and 70 μl of 0.0788 M ascorbic acid (AA) are added in sequence, resulting in a colorless solution. After adding 12 μl of gold nanoparticle seeds, the solution gradually develops a brown colour, indicating the formation of gold nanorods. The size of Au nanorods could be adjusted by adding amount of gold nanoparticle seeds.