

Gold Anisotropic Nanoparticles: Synthesis and Characterization

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The development of new synthetic methods to prepare nanoparticles with different morphological characteristics is critical for the successful application of nanotechnology. We are specially interested in new synthetic and functionalization methods for metal nanoparticles for developing biochemical sensors.

Gold nanotriangles were obtained by the photocatalytic reduction of hydrogen tetrachloroaurate (III) by triethanolamine using Sn (IV) meso-tetra(N-Methyl-4pyridyl)porphine tetratosylate chloride as the photocatalyst, and CTAB as the capping agent, in aqueous medium (pH = 6.5-8.0). pH and the concentration of CTAB and SntMepyP have a strong influence on the morphology of the nanoparticles. These factors were optimized for the preparation of nanotriangles with length ≈ 130 nm and 15-19 nm height. The combination of TEM, AFM and electron diffraction analysis allowed a thorough investigation of the nanotriangles morphology, resulting in further insight on the dependence of morphology on growth conditions, as well as the mechanisms of crystal growth.

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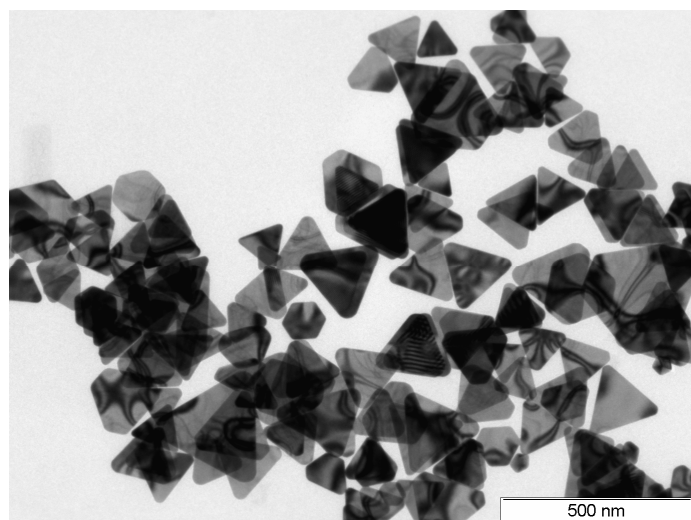


Fig. 1: Gold nanotriangles obtained in optimal conditions.