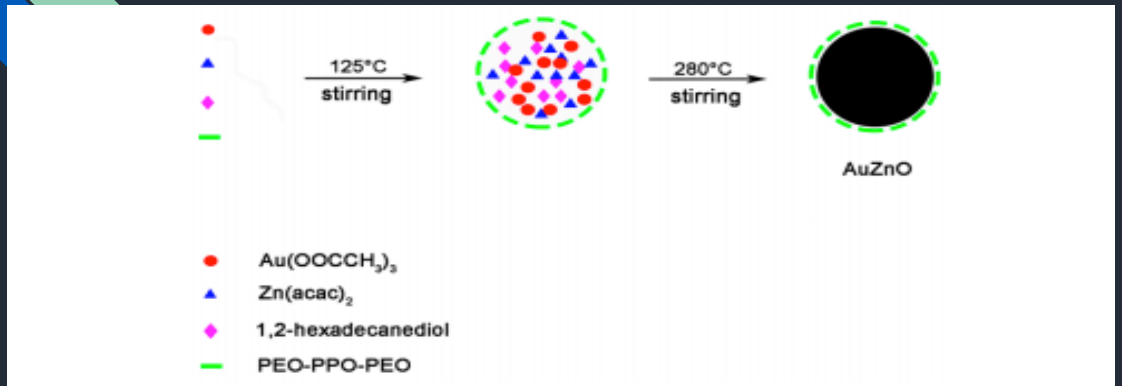
Photocatalytic Activity of Monosized AuZnO Composite Nanoparticles

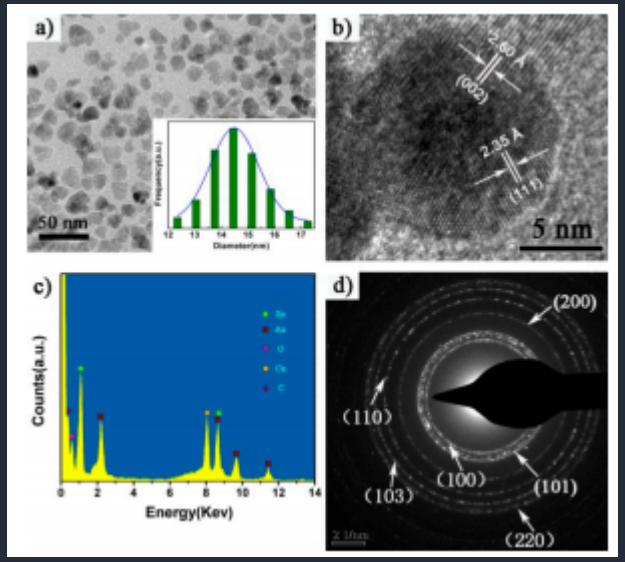
Sample Preparation



Scheme 1. Schematic route for the growth of the AuZnO composite nanoparticles in the nano-micelles formed by the poly(ethylene glycol)-block-poly(propylene glycol)-block-poly(ethylene glycol) (PEO-PPO-PEO) macromolecules.

Analytical Results

The composite nanoparticles are highly crystalline, uniform, and nearly spherical. The histogram reveals that the composite nanoparticles have a narrow particle size distribution and are consistent with the Gaussian distribution with a particle size of ~14.5 (±0.9) nm. Figure 1b shows the HRTEM image of a single AuZnO composite nanoparticle. Highly regular lattices are uniformly distributed on the composite nanoparticle, as labeled, with the spacing of 2.35 Å indicating the projection of the Au (111) plane, whereas the spacing of 2.60 Å corresponds to the ZnO (002) plane.



Transmission electron microscope (TEM) image of AuZnO composite nanoparticles. (a) Bright-field TEM particle size distribution (histogram) with Gaussian function fit (in curve) of the composite nanoparticles; (b) HRTEM of a single nanoparticle; (c) point-detection energy dispersive TEM X-ray analysis (TEM-EDX) analysis chart; (d) selected-area electron diffraction pattern of the nanoparticles.

Reference: Ma, C., Wang, X., Zhan S., Li, X., Liu, X., Chai, Y., Xing, R., Liu H, (2018), *Photocatalytic Activity of Monosized AuZnO Composite Nanoparticles*, Applied Sciences (Switzerland), Volume 9, Issue 1