

Supporting Information

The Gold-Copper Nano-Alloy, “*Tumbaga*”, in the Era of Nano: Phase Diagram and Segregation

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As a first stage, Au nanoparticles were synthesized by the polyol method: A volume of 25 mL of ethylene glycol (EG) and 2 gm of PVP (55K) was mixed and vigorously stirred in a round-bottom flask for 10 min and refluxed at 200 °C using a hot oil bath. 0.025 M of 2 mL HAuCl₄.xH₂O were added to the solution and the resulting mixture was stirred vigorously for 5 min. At this point the solution turned purple-red color, evidencing the formation of Au

nanoparticles. Afterwards, for the preparation of Cu-Au bimetallic nanoparticles, 14 mL of EG solution and 249 mM of PVP (55K) were mixed in a three-neck round-bottom flask and refluxed for 10 min. at a constant temperature of 200 °C under Argon ambient. The solution was mixed with 3 mL of Au seeds, and the mixture was kept under magnetic stirring for 10 min. Afterwards, a solution of 50 mM of CuSO_4 and 3 mL of EG was injected drop by drop using a syringe pump, and the resulting mixture was stirred vigorously for 1h at 200 °C in Argon ambient. After 1h the mixture solution turned brown-blue color, evidencing the formation of the bimetallic nanoparticles.