Study on seed-mediated growth process for synthesis of multifunctional nanoparticles

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As a form of bifunctional nanomaterials, nanoparticles combining gold and iron oxides inherit from the two components excellent surface chemistry, special optical properties, and superparamagnetic properties, all of which would greatly enhance the potential and broaden the application of such composite nanomaterials. The synthesis of bifunctional gold/iron oxide nanoparticles are recognized as one of the major advances in nanobiotechnology. Seed-mediated growth process is well-known as an effective and controllable preparation method in nanoparticle preparation. In this study, we prepared Au and iron oxide NPs and, then, used them as the seed particles for further growth process to vary the particle size and develop the composite NPs. We investigated their morphologies and properties by TEM, XRD, UV-Vis and VSM measurements.