Introducing Students to Surface Modification and Phase Transfer of nanoparticles with a Laboratory Experiment

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A simple, reliable and cost effective experiment is presented in which students synthesized citrate-capped gold nanoparticles functionalized them with poly (ethylene glycol) (PEG) and transferred the PEG-GNPs from water to the organic phase dichloromethane. The experiment introduces students to nanotechnology with foci on important concepts including surface modification of nanoparticles colloidal stability, and phase transfer. The proposed experiment was evaluated at three different universities to confirm its reproducibility and versatility. Collectively, the proposed experiment is suitable to be implemented into colloid- or nanoscience- related curricula.