ELECTRONIC SUPPORTING INFORMATION (ESI)

ZnO Nanocontainers: Structural Study and Controlled Release

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Electron microscopy of massive ZnO nanoparticles. If the microemulsion-based synthesis was performed without the addition of TU to the polar phase, the formation of massive ZnO nanoparticles was observed only. These massive particles exhibit a much larger size and size distribution as compared to the nanoscale hollow spheres. The particle diameter was observed with 40–200 nm (Figure S1). While these massive ZnO nanoparticles were obtained under similar experimental conditions, they are well-suited as a reference to compare with the TU@ZnO hollow spheres.

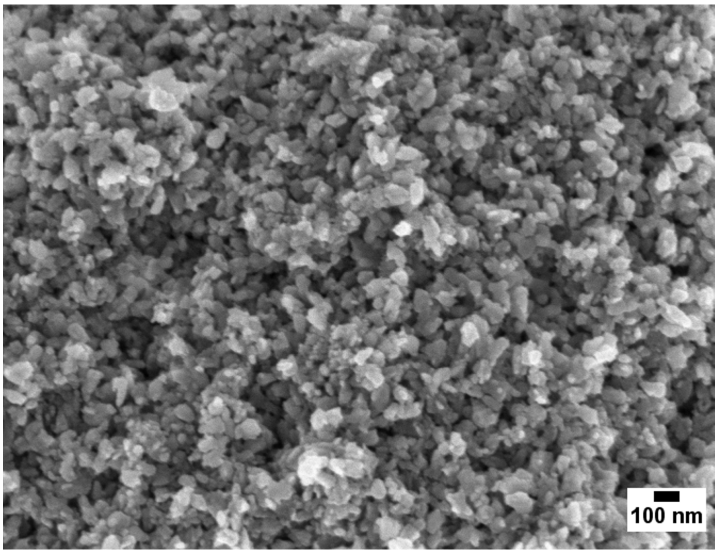

Figure S1. SEM image of massive ZnO nanoparticles as preprared via the microemulsion approach.

UV-VIS spectroscopy of nanoscale ZnO hollow spheres and massive ZnO nanoparticles. The optical properties of TU-filled nanoscale hollow spheres and massive ZnO nanoparticles were investigated via UV-VIS (Figure S2). Both materials exhibit a very similar absorbance in the visible spectral range with just a slight shift of the absorption. Comparing with the band gap of bulk-ZnO (3.37 eV)[1] indicates only a minor deviation for the hollow spheres TU@ZnO (3.42 eV) and the massive ZnO nanoparticles (3.54 eV). In the latter cases, the band gap was deduced from the inflection point computed by the second derivation of absorbance.

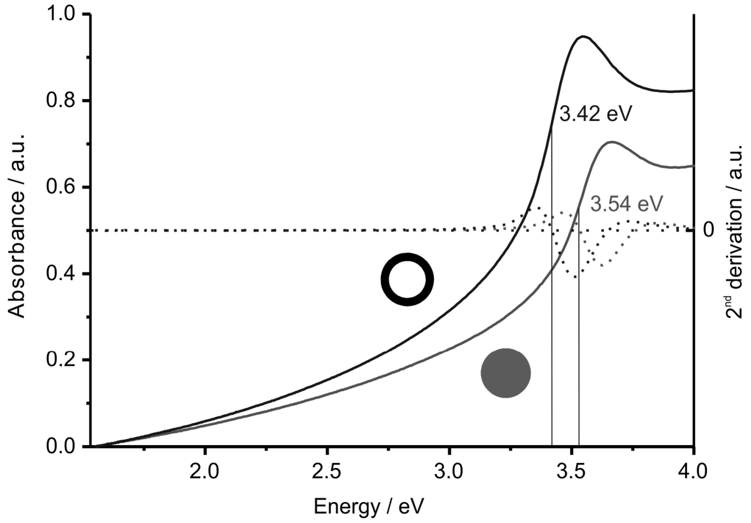

Figure S2. UV-VIS spectra of TU@ZnO hollow spheres (black) and massive ZnO nanoparticles as a reference (grey).

References

1 J. Wu and D. Xue, *Sci. Adv. Mater.*, **2011**, *3*, 127.