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Supplementary Information

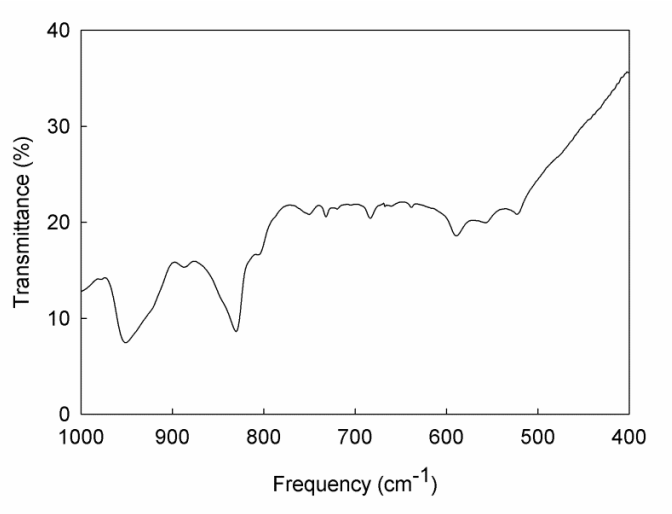


Fig.S1: FTIR spectrum of ZnO nanoparticles synthesized at W_o=13.34.

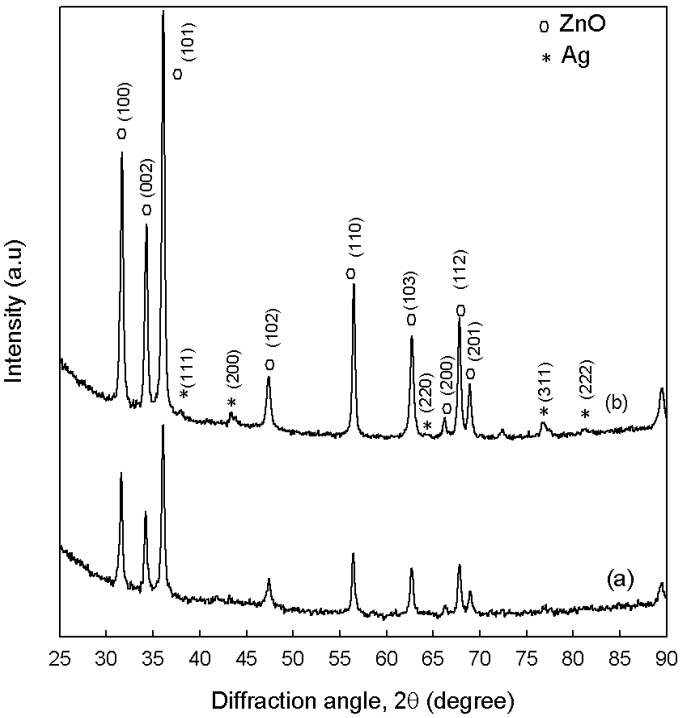


Fig.S2: XRD diffractograms of (a) ZnO nanoparticles and (b) ZnO@Ag core@shell nanoparticles synthesized at W_o=13.34.

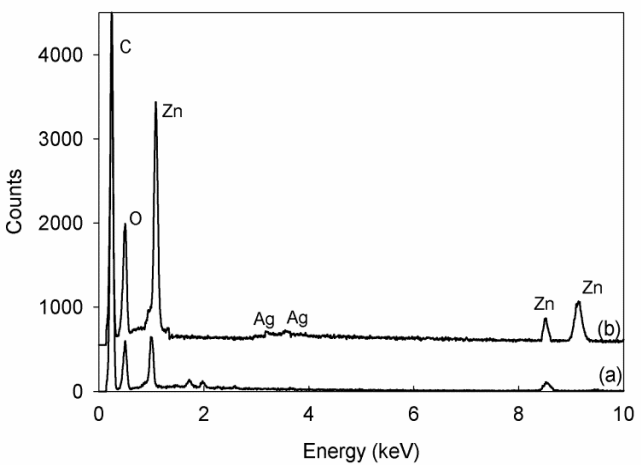


Fig.S3: EDX spectra of (a) ZnO nanoparticles and **(b)** ZnO@Ag core@shell nanoparticles synthesized at W_o=13.34.

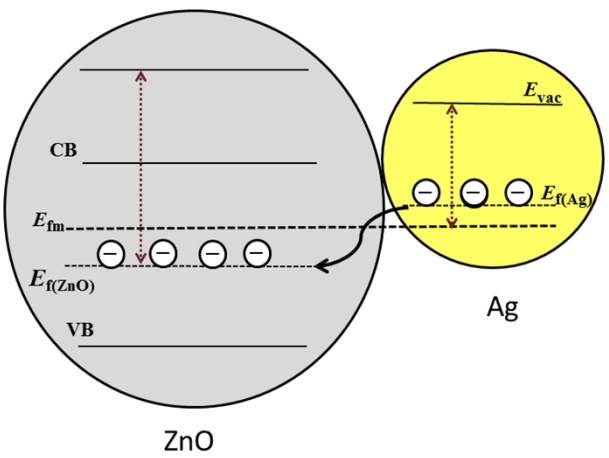


Fig.S4: Energy band structure of Ag and ZnO showing formation of new Fermi level by back-donation of electrons.

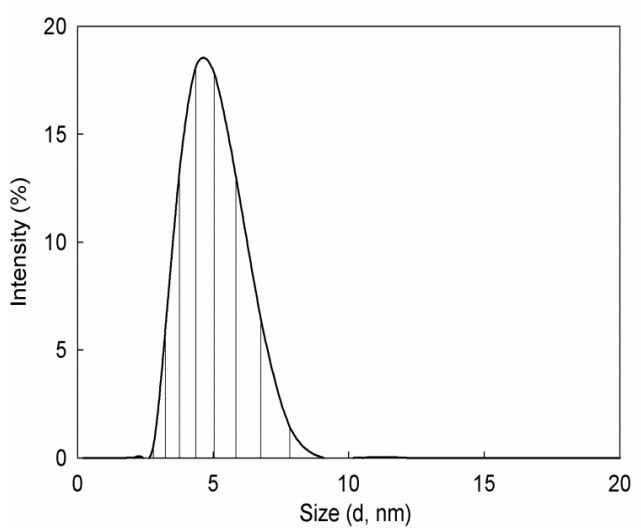
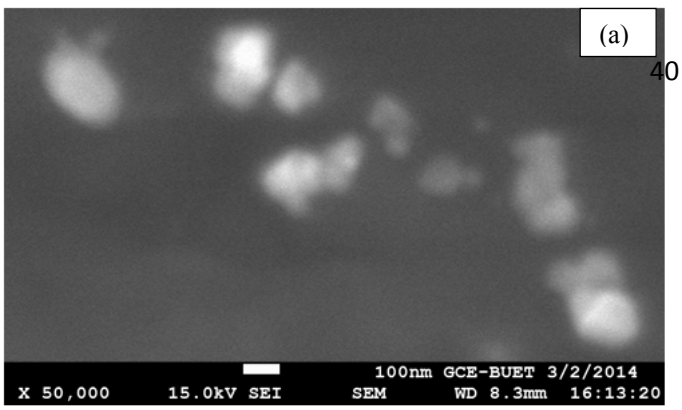


Fig.S5: Size distribution of the reverse micelle in w/o microemulsion of TX-100/hexanol/cyclohexane at W_o=13.34.



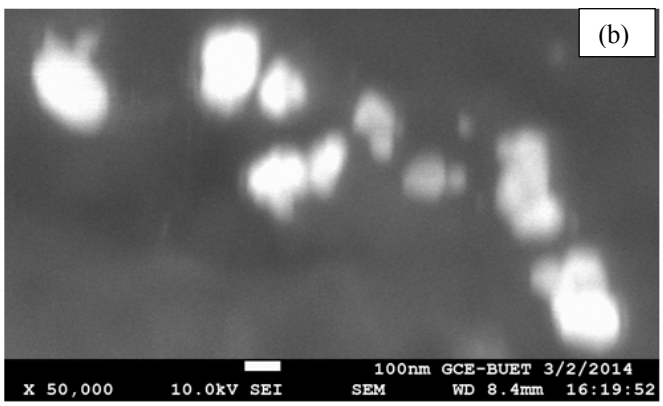


Fig.S6: FESEM image of ZnO@Ag core@shell nanoparticles synthesized at W_0= 13.34 taken at (a) high (15 kV) and (b) low (10 kV) accelerating voltage revealing the size of the core and the shell.

XRD instrumentation

Philips PW 1724 X-ray generator using XDC-700 Guinier-Hagg focusing camera with strictly monochromatized Cu Kα, radiaton (λ = 1.540598 A°).

Exposure time was 15 minutes at 40 kV-30 mA on an image plate. After exposure, the image plate was scanned using HD-CR 35 NDT/CR 35 NDT scanner.

Scanning Electron Microscope instrumentation

JEOL analytical scanning electron microscope, model JSM-6490LA

Energy Dispersive X-Ray (EDX) instrumentation

JEOL analytical scanning electron microscope, model JSM-6490LA

Field Emission Scanning Electron Microscope instrumentation

FESEM JEOL 7600F

Particle Size Analyzer

Nano ZS90, ZEN 3690

Fourier Transform Infrared (FTIR) Spectrometer

Perkin Elmer FTIR-NIR spectrometer

UV-visible Spectrometer

UVD-500 (Labomed, USA)