Electronic Supplementary Information (ESI) for RSC Advances

Graphene based Nanoassembly for simultaneous Detection and Degradation of Harmful Organic Contaminants from Aqueous Solution

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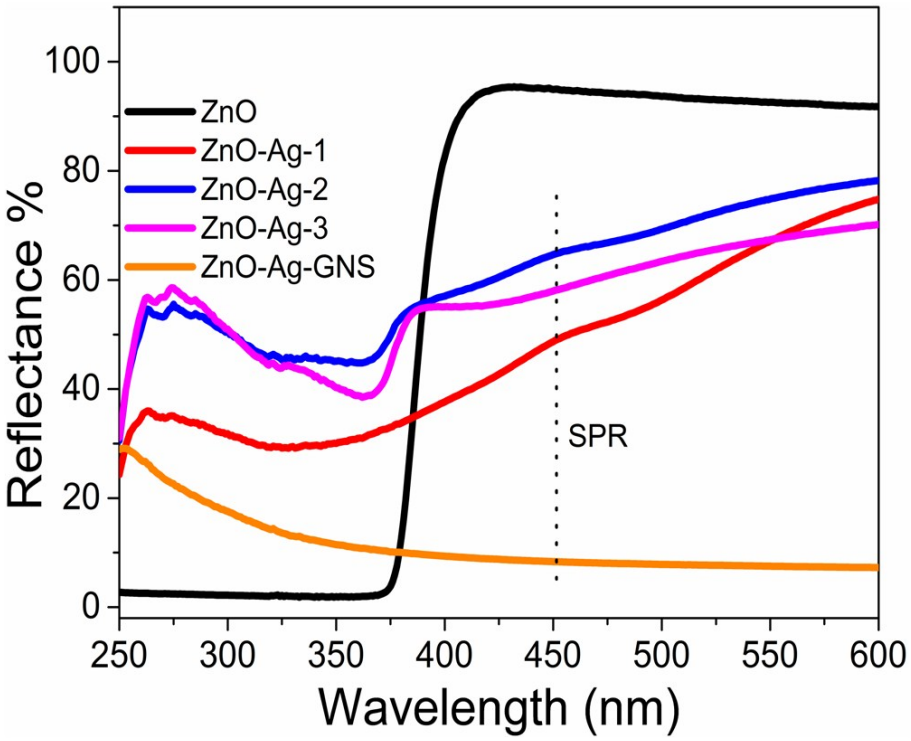

Fig. S1. UV-Vis DRS spectra of as-prepared ZnO, ZnO-Ag-1, ZnO-Ag-2, ZnO-Ag-3 core-shell nanostructures and ZnO-Ag-GNS hybrid nanoassembly.

Fig. S1 shows the UV-Vis DRS spectra of the as-prepared pure ZnO, ZnO-Ag-1, ZnO-Ag-2, ZnO-Ag-3 core-shell nanostructures and ZnO-Ag-GNS hybrid nanoassembly. ZnO displays strong absorption band in the UV region, and the threshold of light absorption is nearly 385 nm, as revealed in fig S1. For, ZnO-Ag core-shells, increase in Ag concentrations, the absorption intensity increases gradually as compared to that of lower Ag concentration. In the

meantime, a surface plasmon resonance band is obtained nearly at 450 nm. Interestingly, Ag showing Localized Surface Plasmon resonance effect (LSPR) improves Raman scattering of organic contaminants and thus facilitates the sensing through surface enhanced Raman spectroscopy (SERS). For ZnO-Ag-GNS hybrid nanoassembly, the optical absorption band position in the range of >385 nm is mostly from the absorption of the GNS whose bandgap is 0 eV. A weak SPR band is observed due to the absorption of Ag nearly at 455 nm.