Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Plasmonic Enhancement of Dual Mode Fluorescence in Silver Nano Antenna - ZnO:Er^{3+} Hybrid Nanostructure

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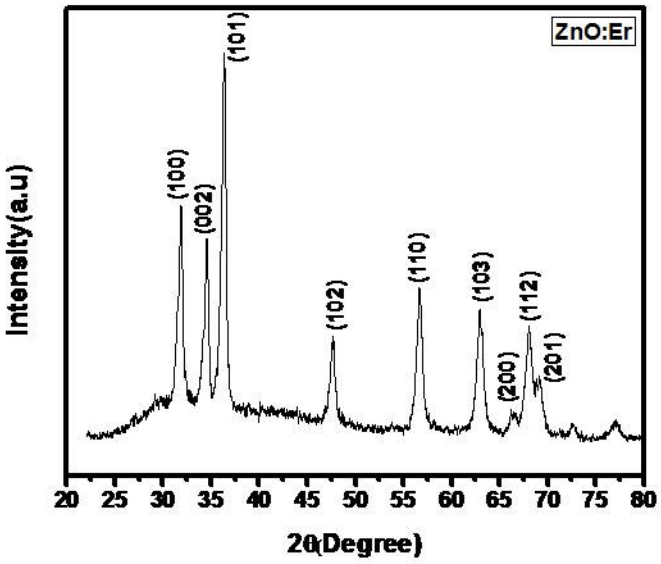
Supporting Information



FigS1: XRD pattern of ZnO:Er powders obtained by CPP method.

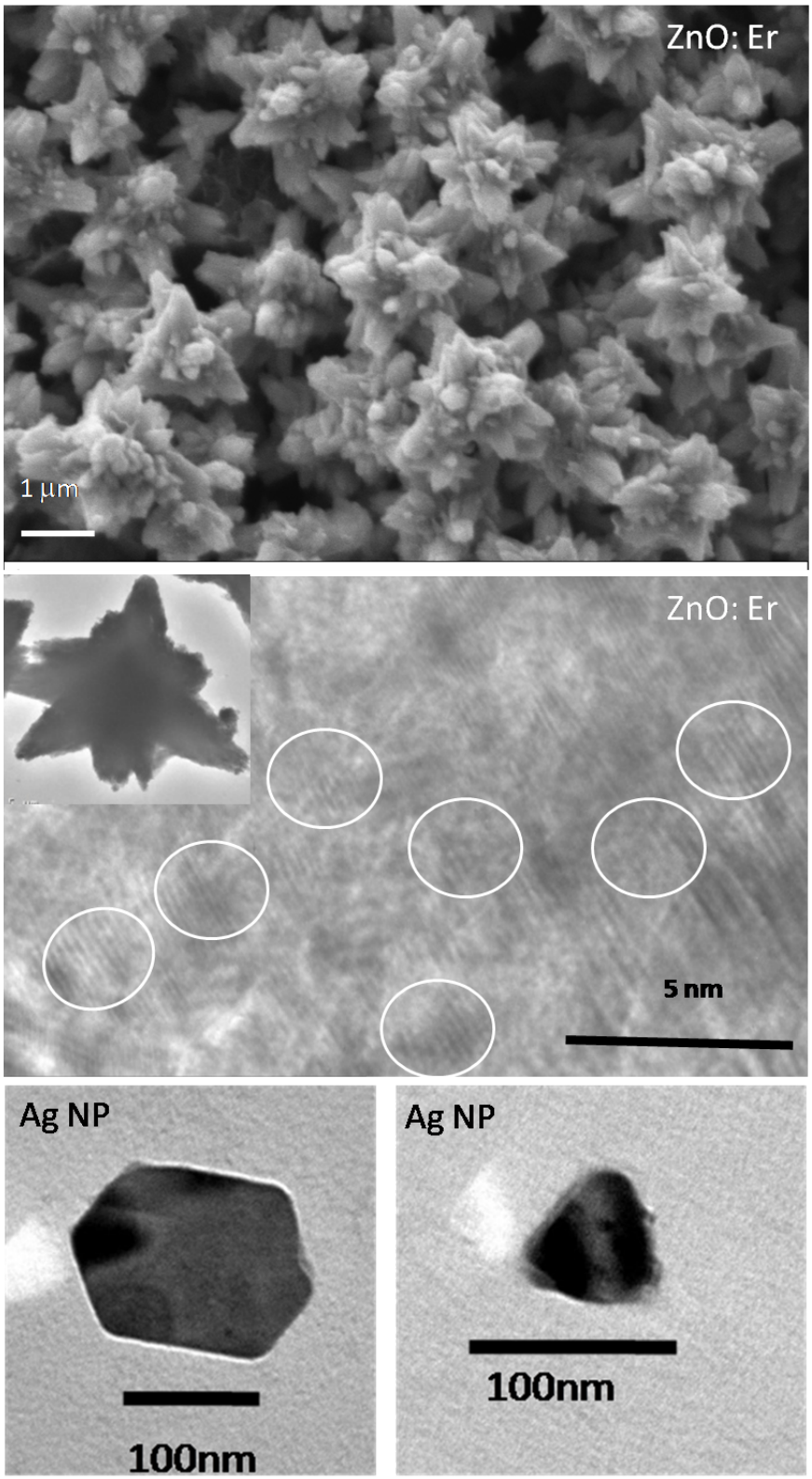
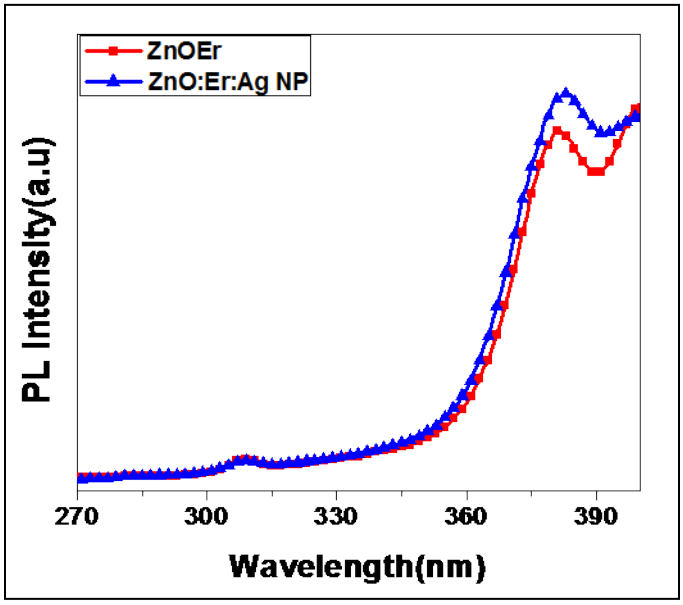


Fig. S2 SEM image of ZnO:Er^{3+} and TEM images of Ag NPs



FigS3: Excitation spectra of (i) ZnO:Er & (ii) ZnO:Er;Ag NP integrated hybrid structures.

FDTD Simulation parameters

The FDTD simulations on silver nanohexagon (50nm) were performed by importing real TEM micrograph for calculating generated near field and extinction spectra. The mesh size for simulation was set to 0.8nm[1]and Conformal Variant 1 meshing attribute was employed[2] to eliminate stair casing effects. A total field scattering field source (TFSF) used to calculate absorption and scattering in X,Y and Z-directions respectively with standard PML boundaries. The sample was excited with a plane wave at desired frequencies and the field was allowed to evolve for 200fs for all the FDTD simulations.

The figure S4 represents the absorption and scattering spectra of Ag NPs under investigation in X and Y-directions respectively. The figures indicate the variation of the spectra with the direction of incident light. The material fit of the FDTD data correlating background index 1.33 is also shown in Figure S4 which is well fitted with Palik's material model over 0-2μm range (Source www.lumerical.com/fdtd.)

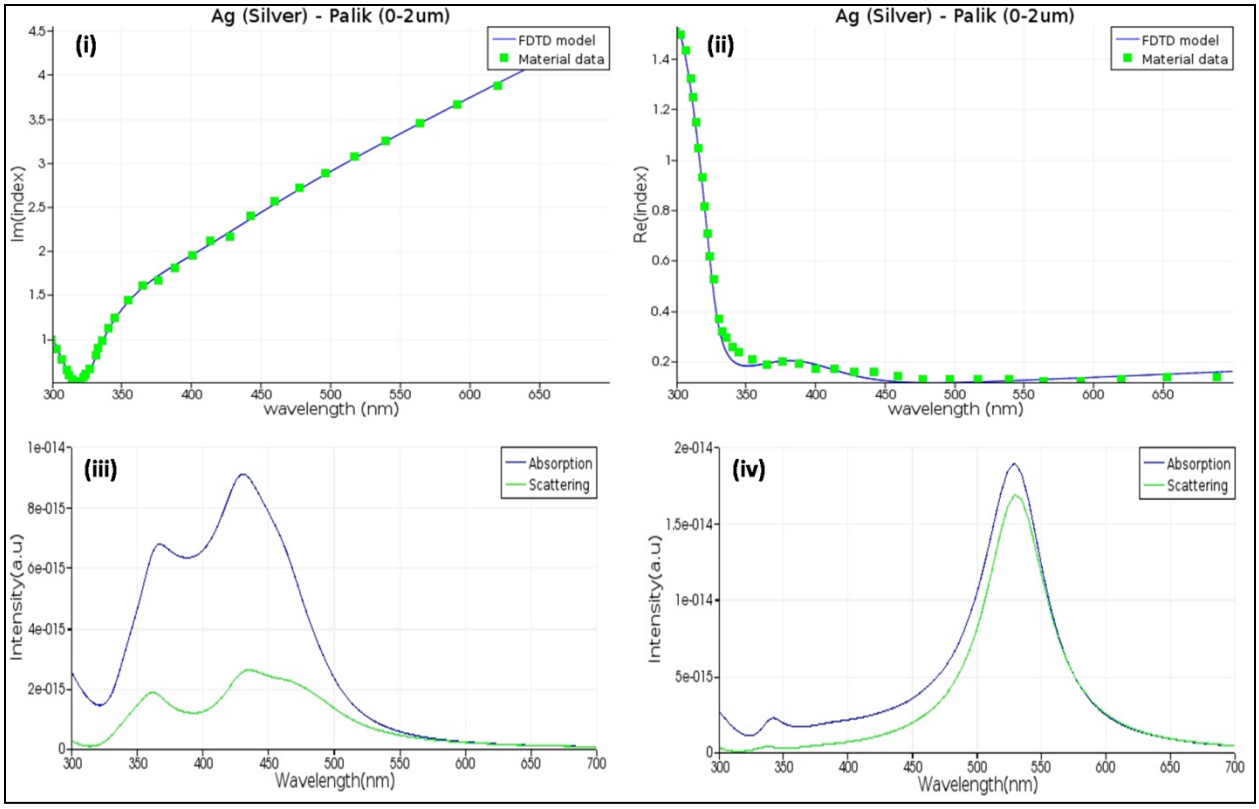


Fig S4: The real and imaginary part of dielectric function of Ag NP (i)&(ii) from Palik's model and the corresponding FDTD model fit. The FDTD simulated absorption and scattering spectra of Ag NP (iii)&(iv) in X and Y-direction respectively.

1. F.K.Guedje, M.Giloan, M. Potara, M.N.Hounkonnou and S.Astilean , Phys Scr. **86**, 055702 (2012).
2. Lumerical FDTD Solutions 8.7.1, FDTD Solutions Getting Started, Release 8.7.1.