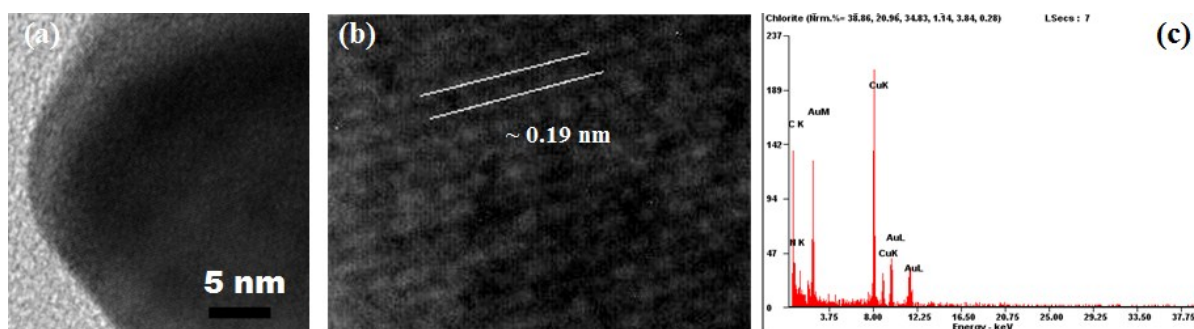
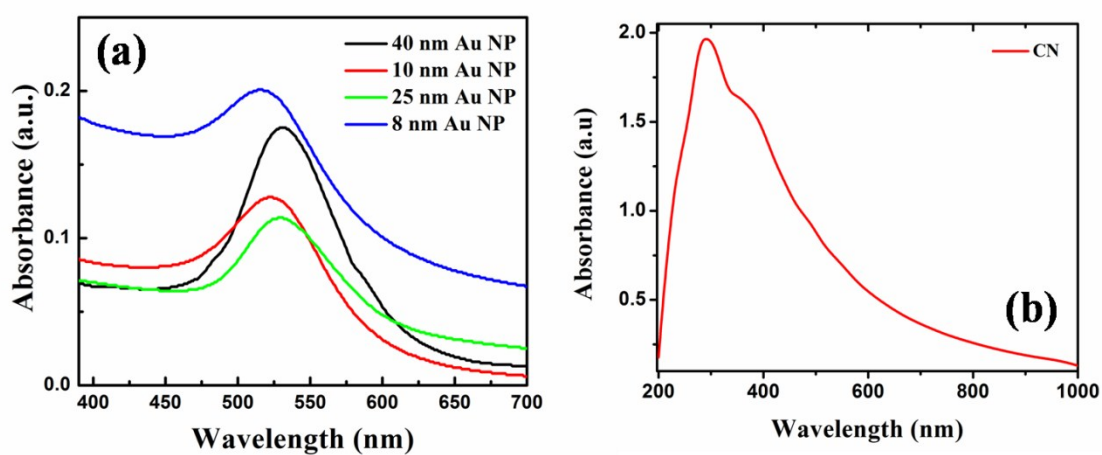


## Supporting Information



**Fig. S1**(a) A closer view of Au nanostructure in AuCN sample. (b) HRTEM image of the nanostructure. (c) EDAX spectra of AuCN sample.



**Fig. S2** UV-visible absorption plot (a) various sized Au nanoparticles and (b) bare g-C<sub>3</sub>N<sub>4</sub>.

It is seen that surface plasmon absorption peak of different sized nanoparticles vary from 515 to 540 nm range, whereas, bare CN exhibits a characteristic absorption peak due to  $\pi$ - $\pi^*$  transition at  $\sim$  400 nm.

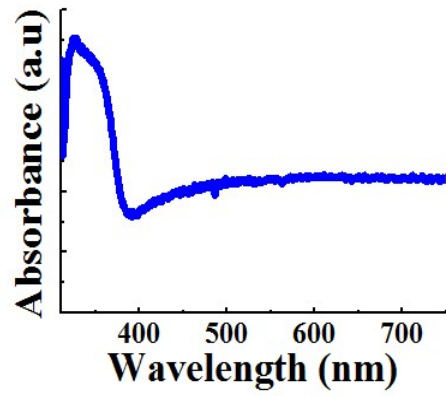


Fig.S3 UV-visible absorption spectrum of bare ZnO thin film.

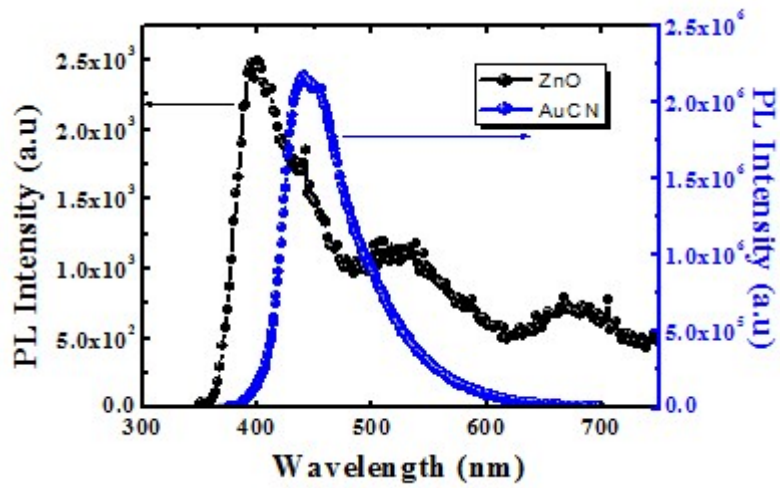


Fig.S4 PL spectra of bare ZnO and AuCN at 325 nm excitation.

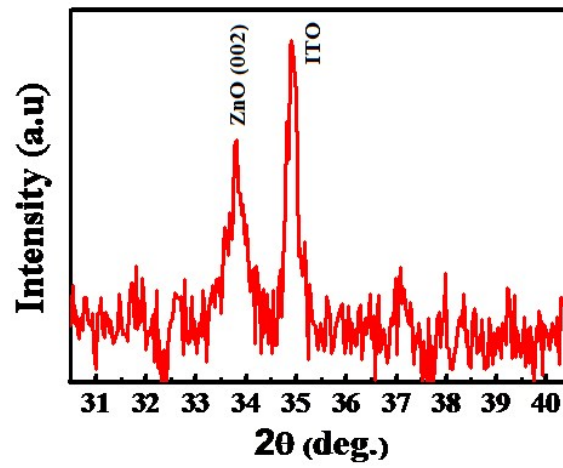


Fig.S5 XRD pattern of bare ZnO film grown on ITO coated substrate.

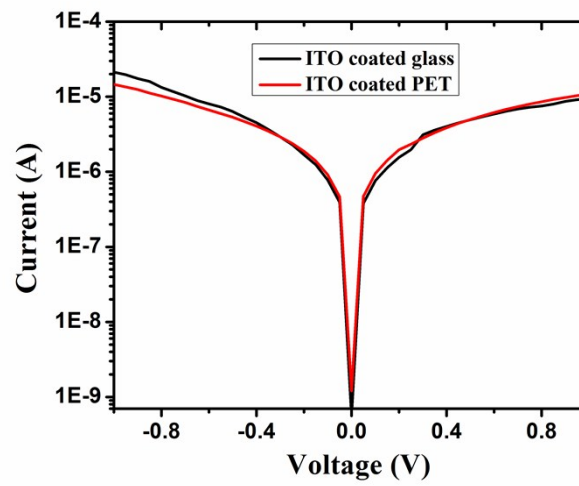


Fig. S6 I-V response of ACCZ device for ITO coated glass and PET substrate.