

## Supporting Information

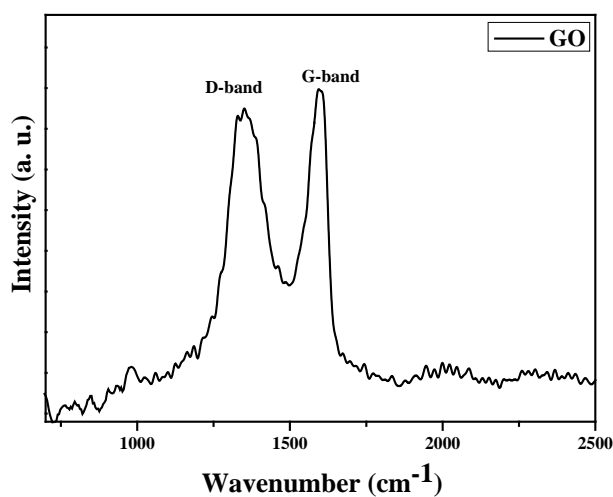
# Enhanced Photocatalytic Efficiency of AuPd Nanoalloy Decorated ZnO-Reduced Graphene Oxide Nanocomposites

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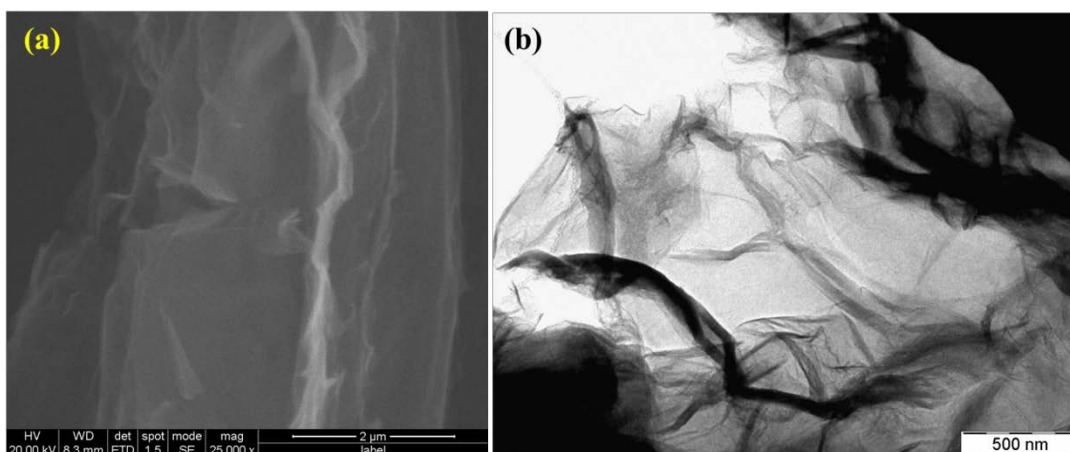
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New Delhi, India

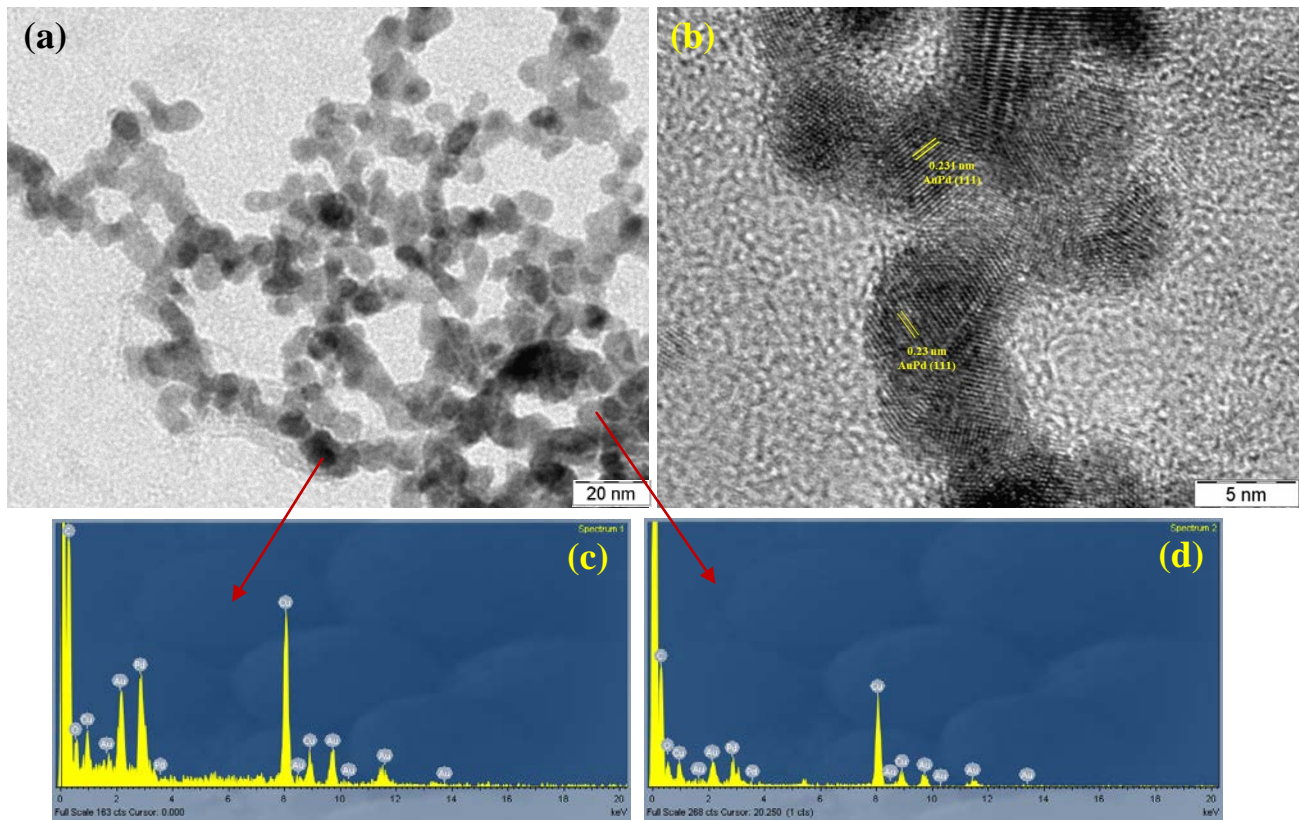
### Figures with Captions



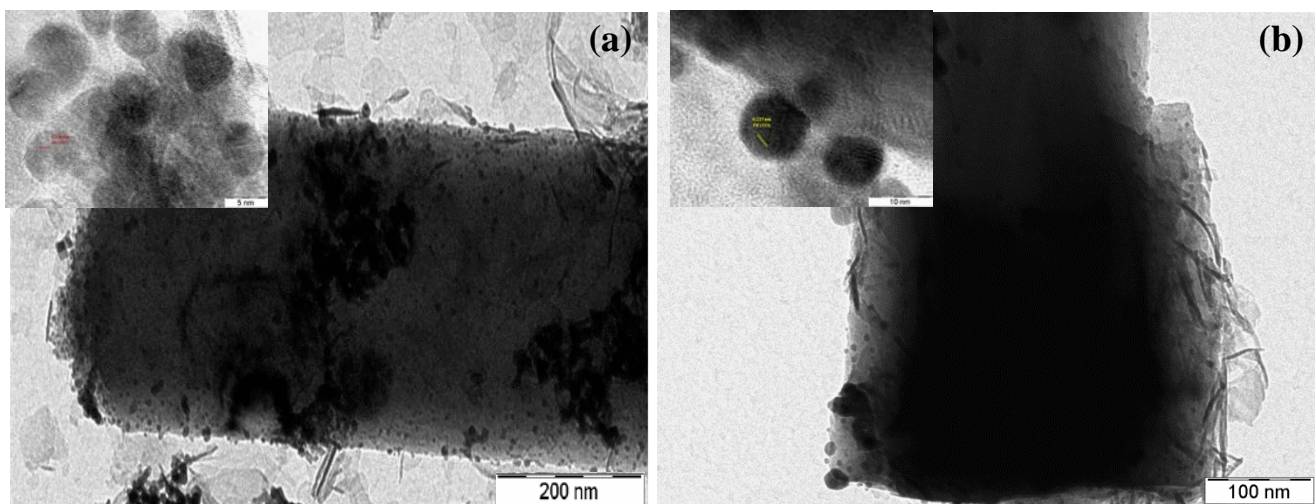
**S1:** Room-temperature micro-Raman spectra of as-prepared graphene oxide sheets.



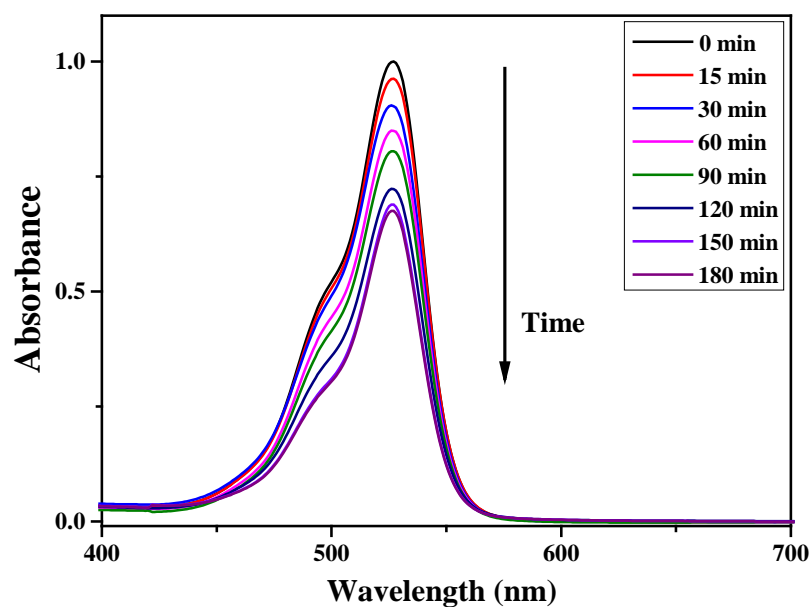
**S2:** (a) SEM and (b) TEM images of RGO sheets.



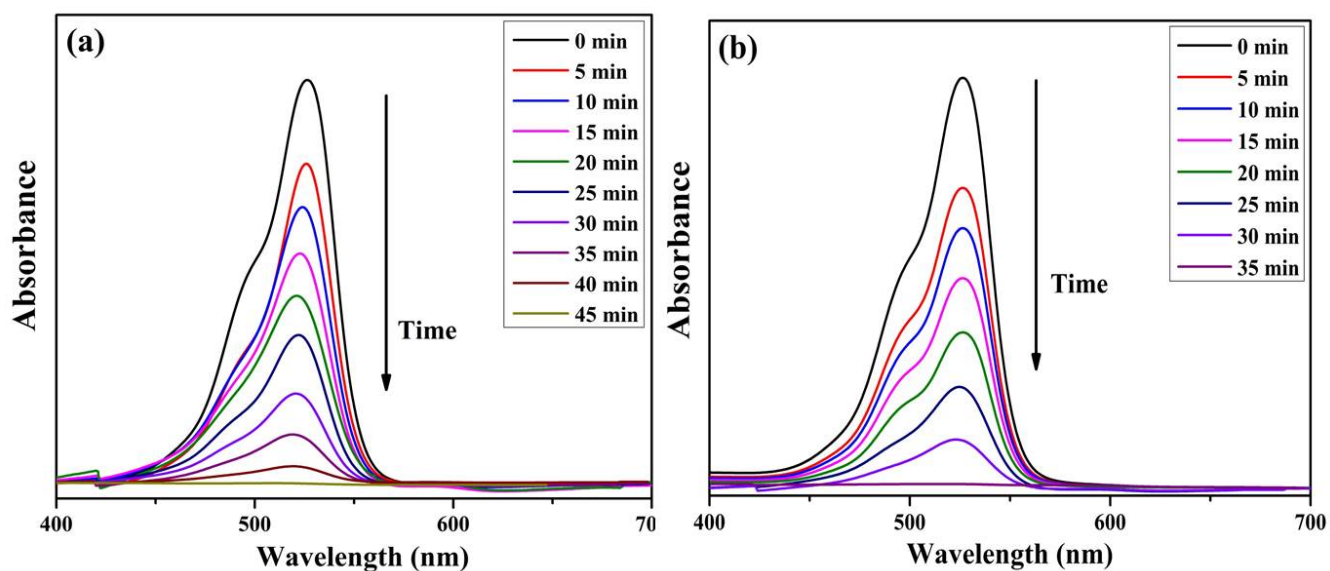
**S3:** (a) TEM, (b) HRTEM images of AuPd nanoalloy. (c) and (d) represent the EDS pattern of AuPd nanoalloy at different position.



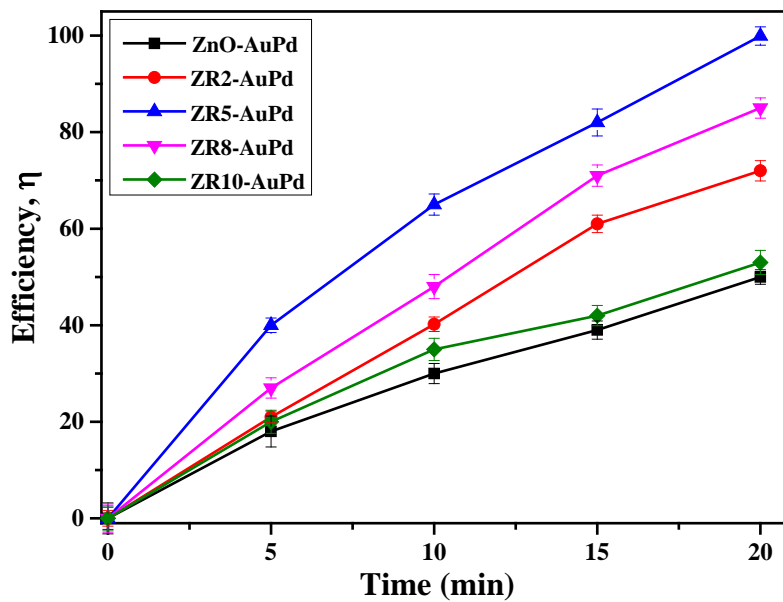
**S4:** TEM images of (a) ZR5-Au and (b) ZR5-Pd hybrid nanostructures with corresponding HRTEM images presented as inset.



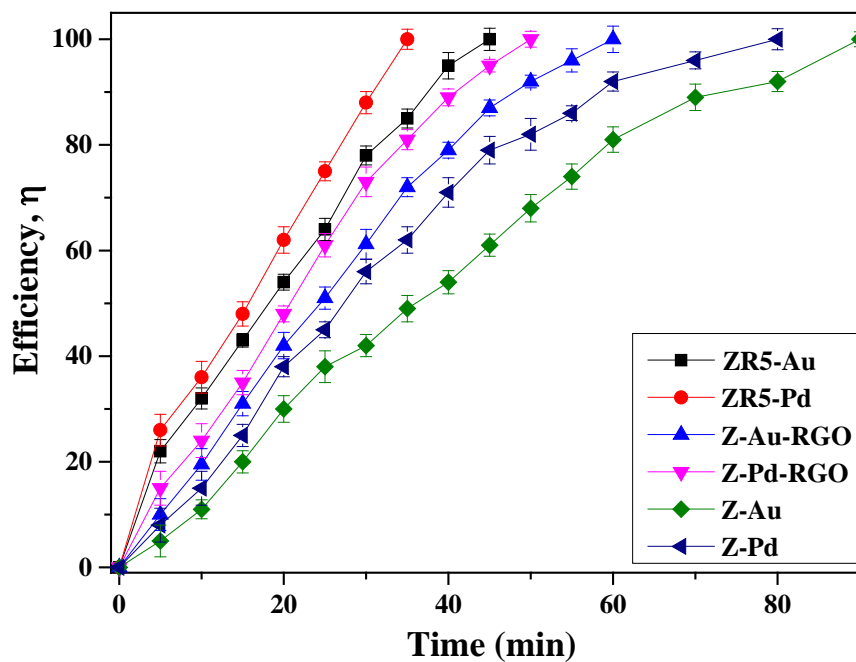
**S5:** Time dependent (UV light irradiation) UV-visible absorption spectra of R6G dye in the presence of ZnO nanorods as photocatalysts.



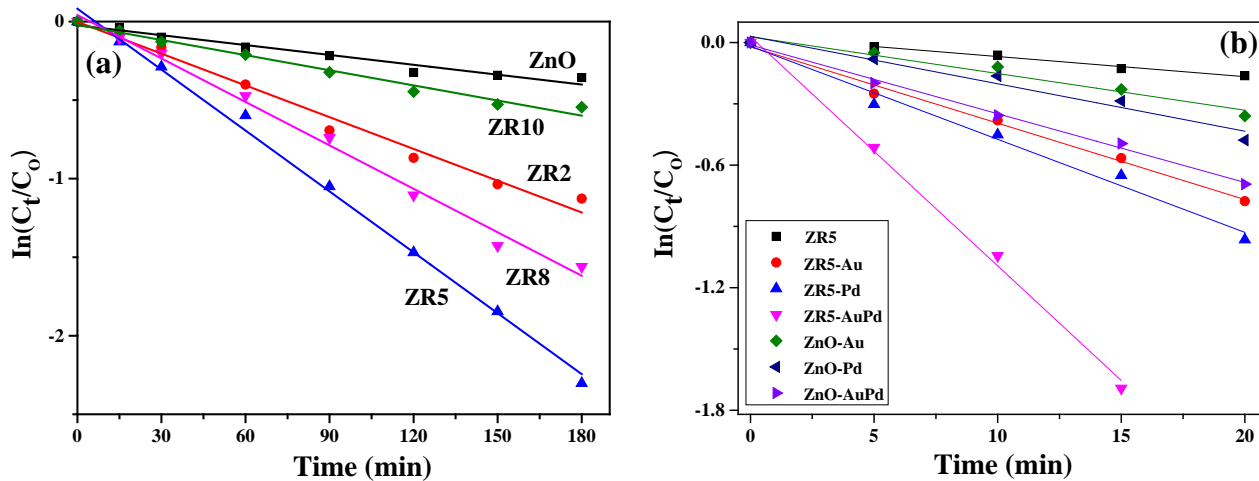
**S6:** Time dependent (UV light irradiation) UV-visible absorption spectra of R6G dye in the presence of (a) ZR5-Au and (b) ZR5-Pd hybrid nanostructures as photocatalysts.



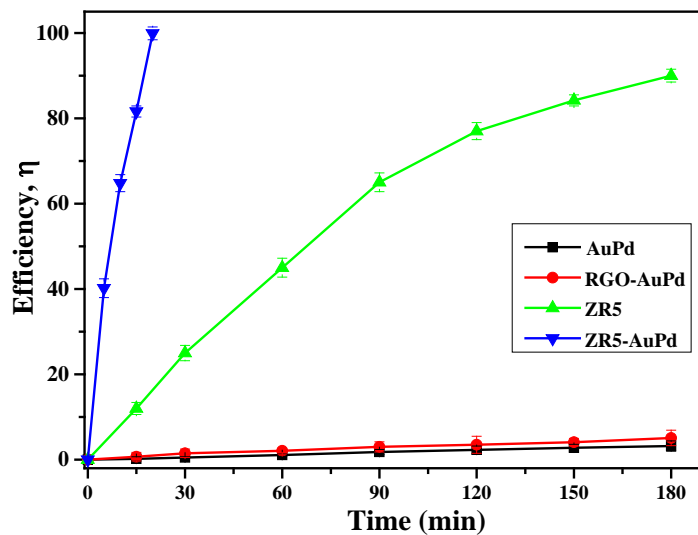
S7: Photocatalytic activity of ZnO-RGO-AuPd hybrid nanostructures with various (2-10) wt% of RGO.



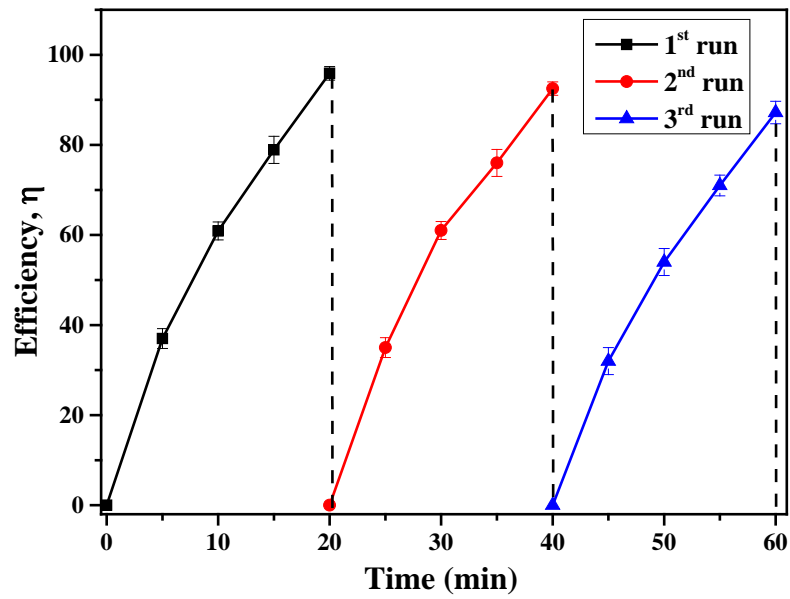
S8: Photocatalytic activity of different hybrid nanostructures.



S9:  $\ln(C_t/C_0)$  vs time 't' plot for the kinetic studies of the reduction reaction of R6G dye.



S10: Photocatalytic activity of AuPd, RGO-AuPd, ZR5 and ZR5-AuPd to degrade R6G dye.



**S11:** Recycled photocatalytic activity of ZR5-AuPd photocatalyst towards degradation of R6G dye.