

Supplementary Information

Energy-dispersive X-ray spectrum:

<i>Element</i>	<i>Wt%</i>	<i>At%</i>
OK	06.31	21.59
ZnK	93.69	78.41
Matrix	Correction	ZAF

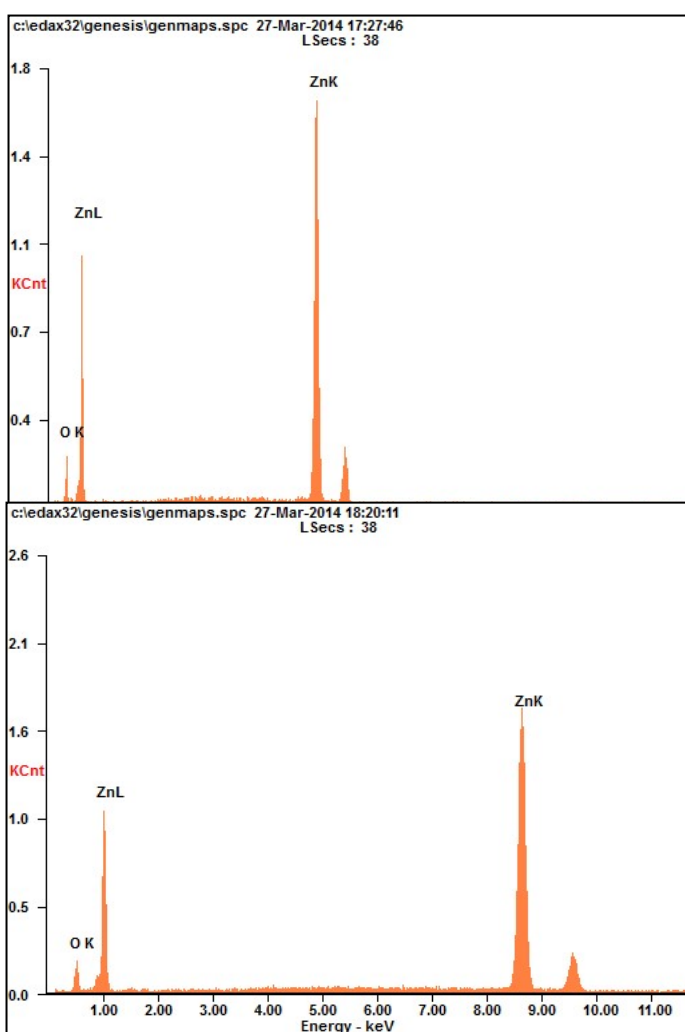


Fig.S1 (a): EDX spectrum for Zn(NP)/ZnO(R)

<i>Element</i>	<i>Wt%</i>	<i>At%</i>
OK	07.19	24.04
ZnK	92.81	75.96
Matrix	Correction	ZAF

Fig.S1 (b): EDX spectrum for Zn(NP)/ZnO(S)

Raman spectra:

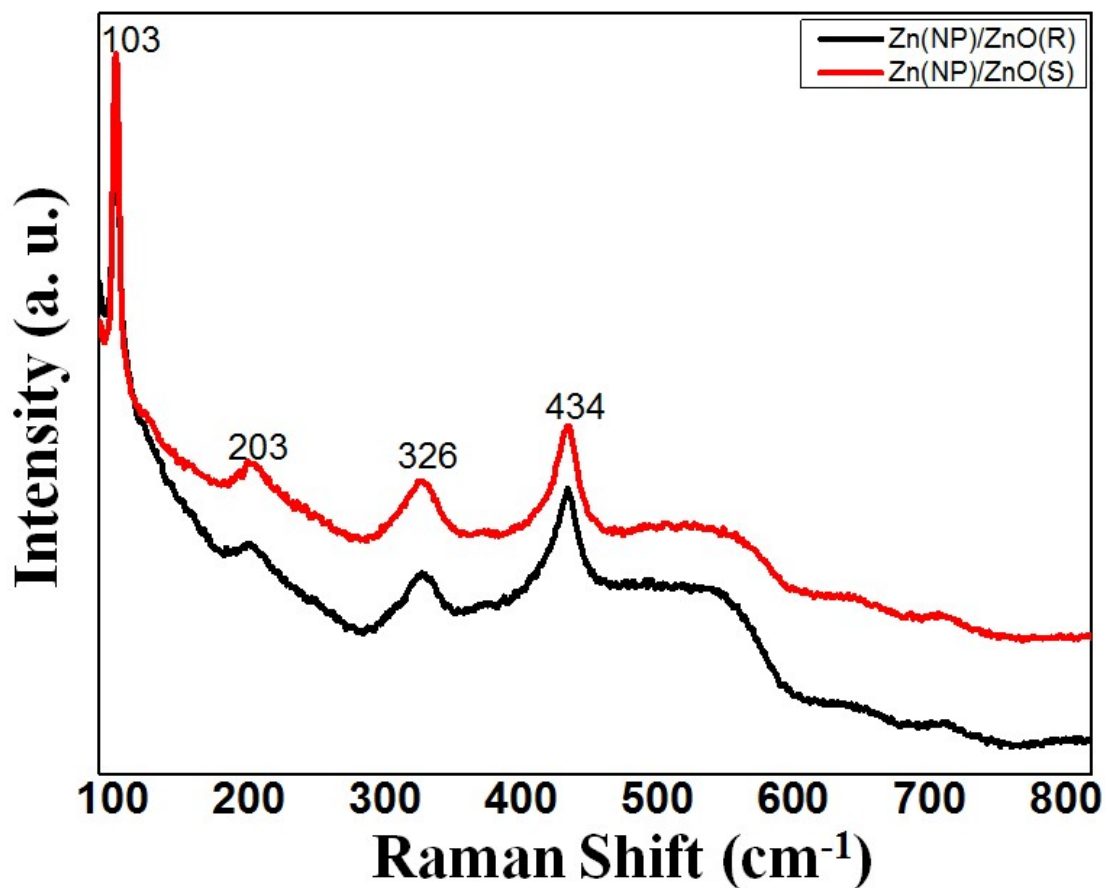


Fig. S2: Raman spectra for Zn(NP)/ZnO(R) and Zn(NP)/ZnO(S)

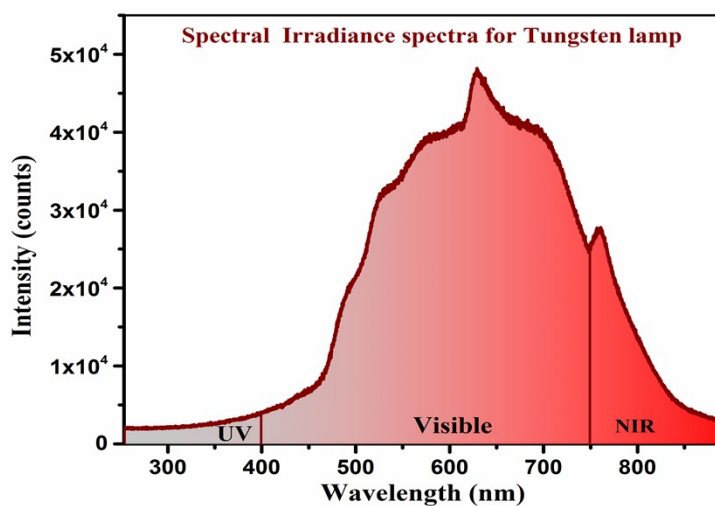


Fig. S3 . Irradiance spectra of Tungsten lamp.

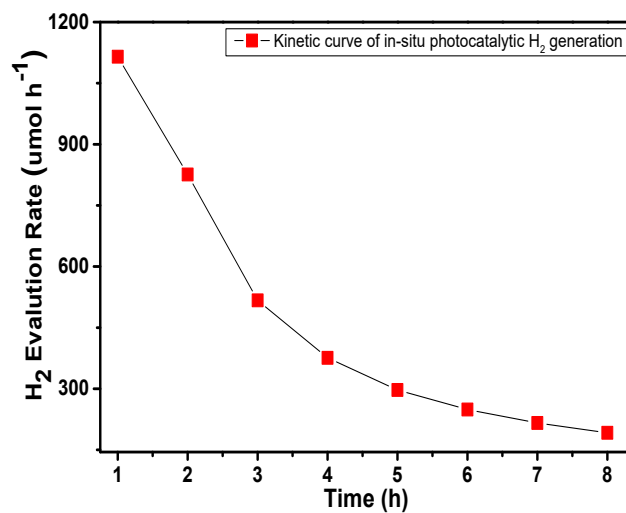


Fig. S4 Hydrogen evolution rate Vs. Time

Table S1: Change in Hydrogen evolution rate increasing with time

Time (hour)	Hydrogen Evolution rate (μmol h ⁻¹)
1	1115
2	826
3	517
4	376
5	297
6	249
7	216
8	192

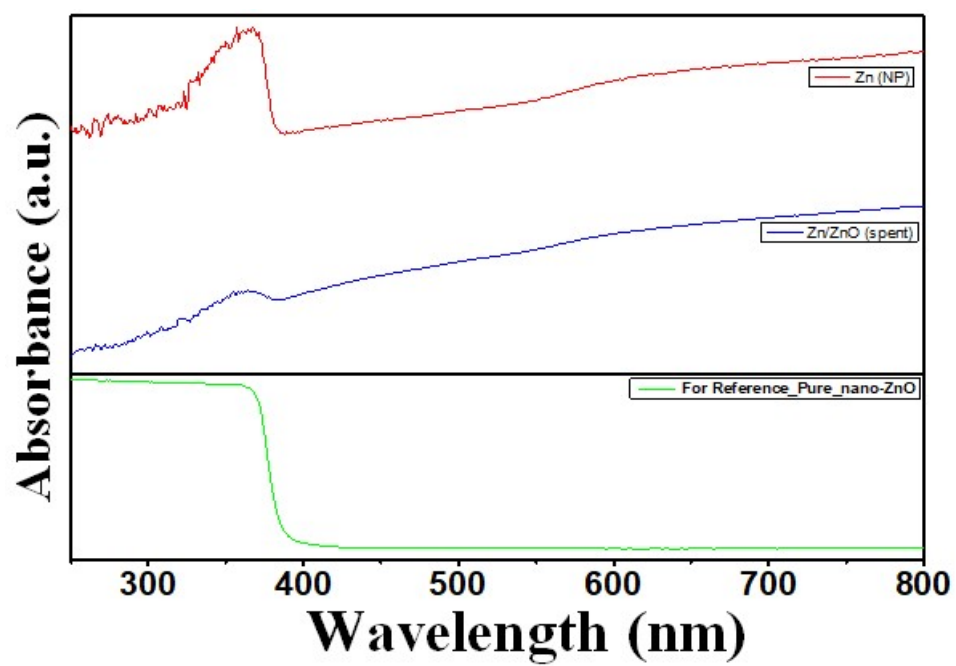


Fig. S5. UV-visible absorbance spectra for Zn (NP), Zn/ZnO (spent), and Pure nano-ZnO for comparison.