Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting information section

Solar light driven photocurrent generation and catalytic disintegration of toxic compounds and ions using Au@Sn, F doped In_2O_3 core-shell nanostructure

Mrinmoy Misra[1*], Shambo RoyChowdhury[1] , Narinder Singh[2]

[1]Mechatronics Department, School of Automobile, Mechanical and Mechatronics, Manipal University Jaipur, India.

[2]Dr. Shanti Swarup Bhatnagar University Institute of Chemical Engineering and Technology, Panjab University, Chandigarh, 160014, India

Email id: mrinmoymishra@gmail.com

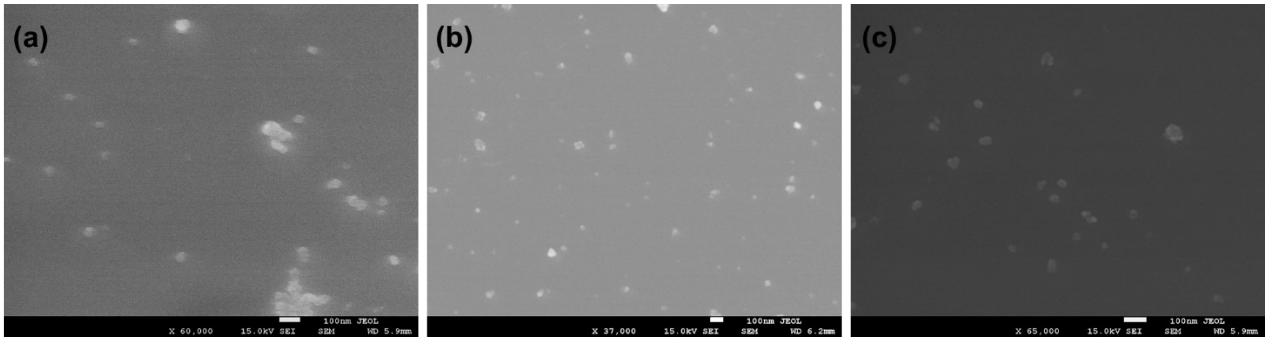

Figure SD1. (a) FE-SEM image of FTI NPs, (b) Au NPs and (c) AFTI NPs (sample S2).

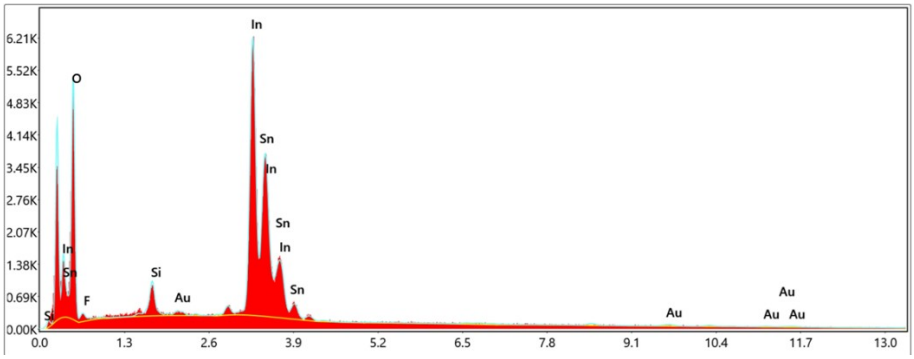

Figure SD2. EDX spectra of AFTI NPs (sample S2).

Figure SD2 shows the EDX spectra of AFTI NPs (sample S2). The EDX spectra is confirm the elemental composition of O, In, F, Sn, and Au in AFTI NPs (sample S2).

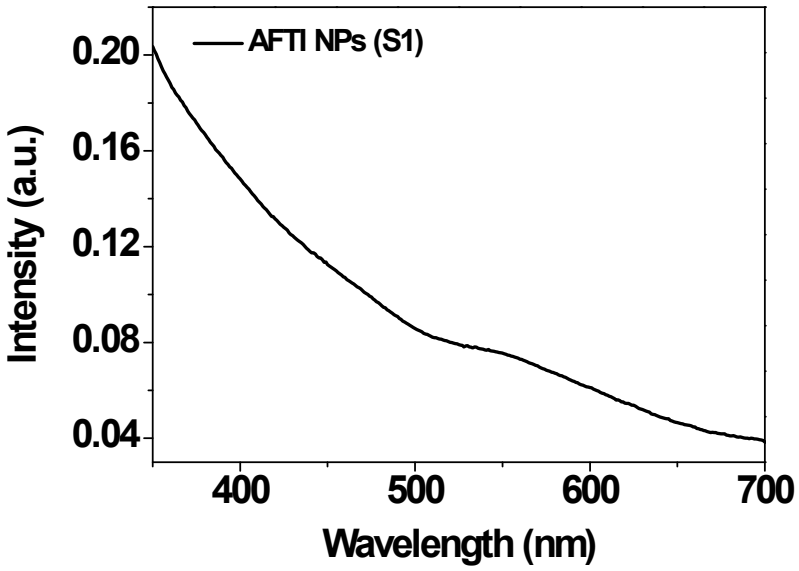

Figure SD3. UV–Vis. absorption of AFTI NPs (S1) in the range of 350-700 nm.

The UV–Vis. absorption of AFTI NPs (S1) in the range of 350-700 nm is shown in figure SD1. The absorption of Au core is clearly observed in this figure. The absorption of Au core is become wide due to change in the dielectric constant of FTI shell.

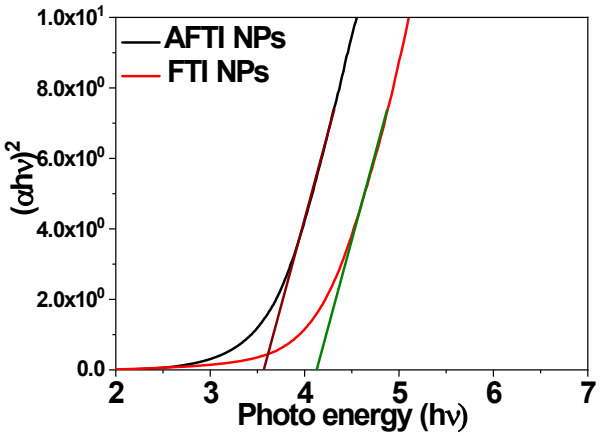

Figure SD4. Band gap energy of FTI and AFTI (sample S1) NPs.

Figure SD4 shows the band gap energy of FTI and AFTI (S1) NPs. It has been observed that the with Au core the band gap energy of AFTI suppress drastically. The FTI NPs shows band gap of 3.33 eV whereas the AFTI NPs shows band gap of 2.83 eV.

Table S1. Photocatalytic rate constant of catalyst material for the degradation MO dye:

Sample name	Rate constant (min^{-1})
FTI	0.00476
P25	0.00309
AFTI (sample S1)	0.1941
AFTI (sample S2)	0.01272

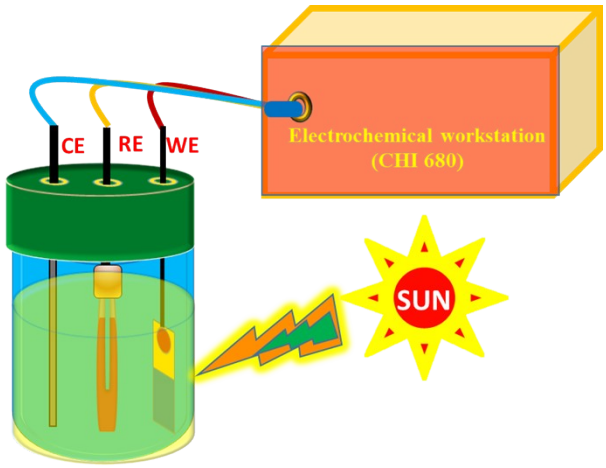

Figure SD5. Schematic measurement setup for the photocurrent generation.

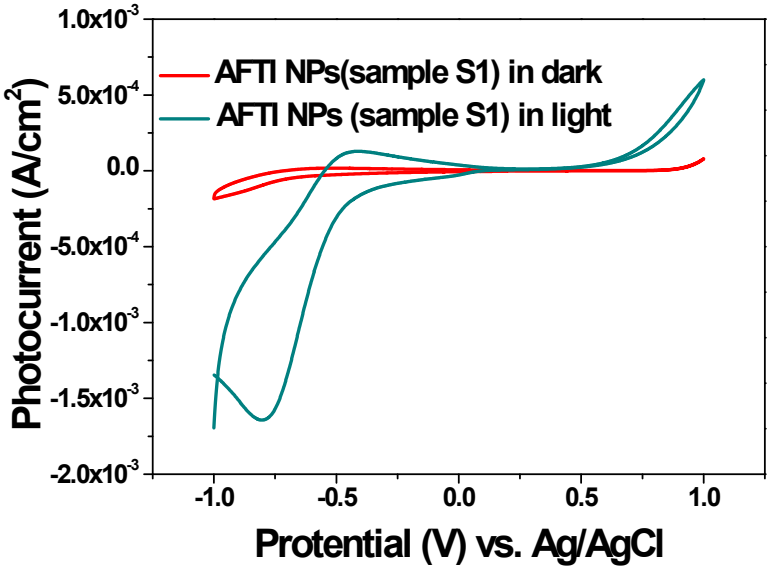

Figure SD6. Cyclic voltammogram (C-V) of AFTI NPs(S1) thin film under dark and illumination of light.