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

Supplementary information

Comparison of the structure-property relationships between sillenite and perovskite phases of $Bi_{0.9}Dy_{0.1}FeO_3$ nanostructures

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Table S1: The structural variables and constituent phases (in wt%) calculated from the Rietveld refned XRD spectra of the as-synthesized materials

Sample	Crystal structure	Lattice parameters	Volume (Å)^3	R factors
BDFO(HT)	$BiFeO_3$ (Perovskite) (*R3c*;Rhombohedral) Fract(%):10.32(0.18)	a=b = 5.5732(1) c = 13.8576(3)	374.353(0.024)	$\chi^2 = 17.3$ $R_p = 6.69$ $R_{wp} = 9.2$
	$Bi_{25}FeO_{40}$ (Sillenite) (*I23*;Cubic) Fract(%):76.89(0.16)	a=b=c= 10.1564(1)	1048.912(0.017)	
	$Bi_2Fe_4O_9$ (Mullite) (*pbam*;Orthorhombic) Fract(%):12.79(1.24)	a= 8.2788(1) b= 8.3455(1) c= 6.0574(3)	418.418(0.270)	
BDFO(SG)	$BiFeO_3$ (Perovskite) *(R3c*;Rhombohedral) Fract(%):98.71(1.30)	a=b=5.56912(1) c= 13.82938(3)	371.456(0.044)	$\chi^2 = 5.18$ $R_p = 4.36$ $R_{wp} = 2.84$
	$Bi_{25}FeO_{40}$ (Sillenite) (*I23*;Cubic) Fract(%):1.29(0.01)	a=b=c= 10.14769(1)	1044.963(0.000)	

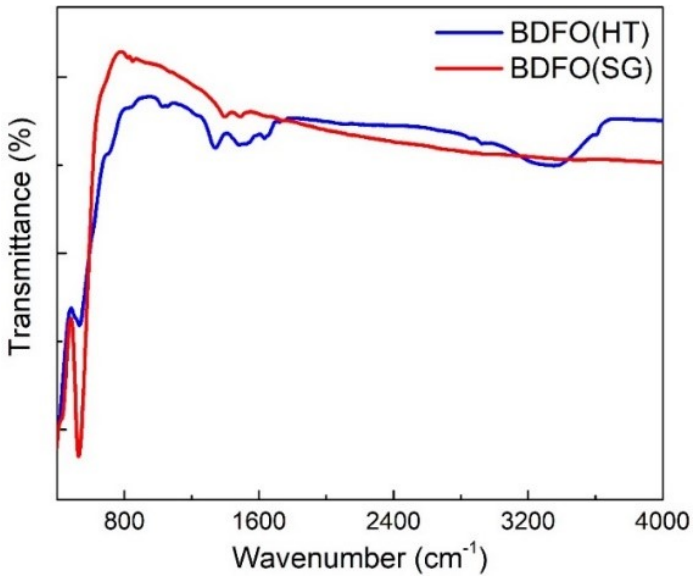

Fig. S1. FTIR spectra of BDFO(HT) and BDFO(SG) samples.

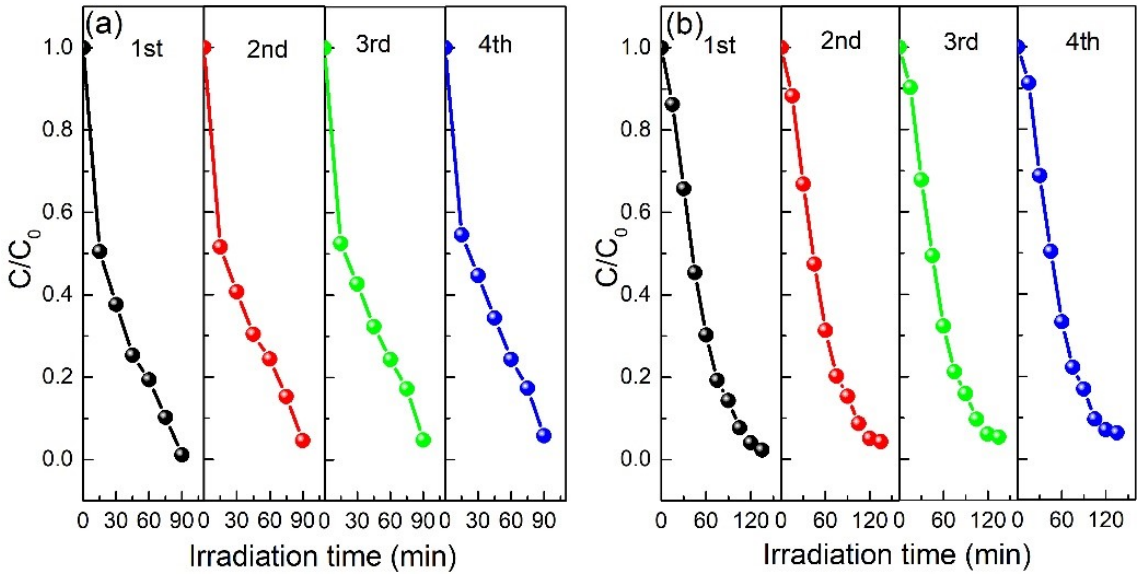

Fig. S2. Reusability tests using (a) BDFO(HT) and (b) BDFO(SG) photocatalysts up to four RhB degradation cycles.

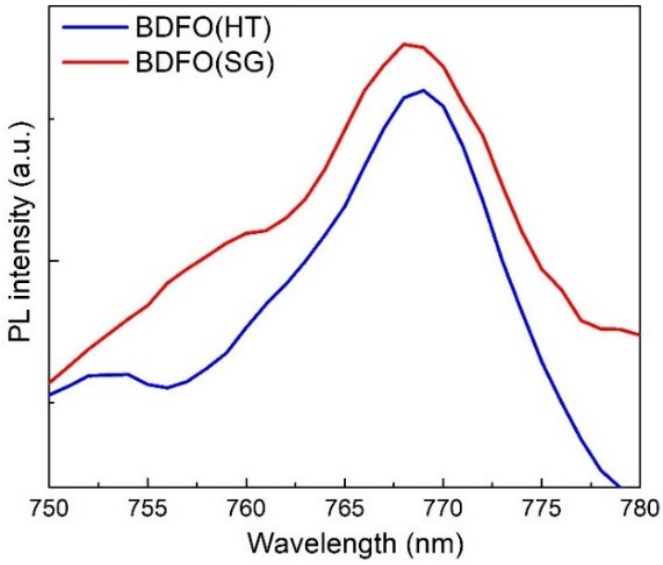

Fig. S3. PL spectra of BDFO(HT) and BDFO(SG) samples.