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Enhanced Photocatalytic Activity of La^{3+} and Se^{4+} co-doped Bismuth Ferrites Nanostructures

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Table S1: The Crystallite size, DRS, BET results of La^{3+} and Se^{4+} co-doped BFO nanoparticles.

Samples	**Crystallite size (nm)**	**Band-gap (ev)**	**Surface area (m^2/g)**	**Pore size (nm)**	**Pore volume (cc/g)**
BFO	123	2.06	3.3	2.2	0.02
BLFO	90	1.94	7.3	2.5	0.06
BLFSeO-2	87	2.03	3.6	1.96	0.05
BLFSeO-5	83	1.99	3.9	1.96	0.05
BLFSeO-7.5	80	1.97	10	1.96	0.06
BLFSeO-10	82	2.11	4.5	3.07	0.03

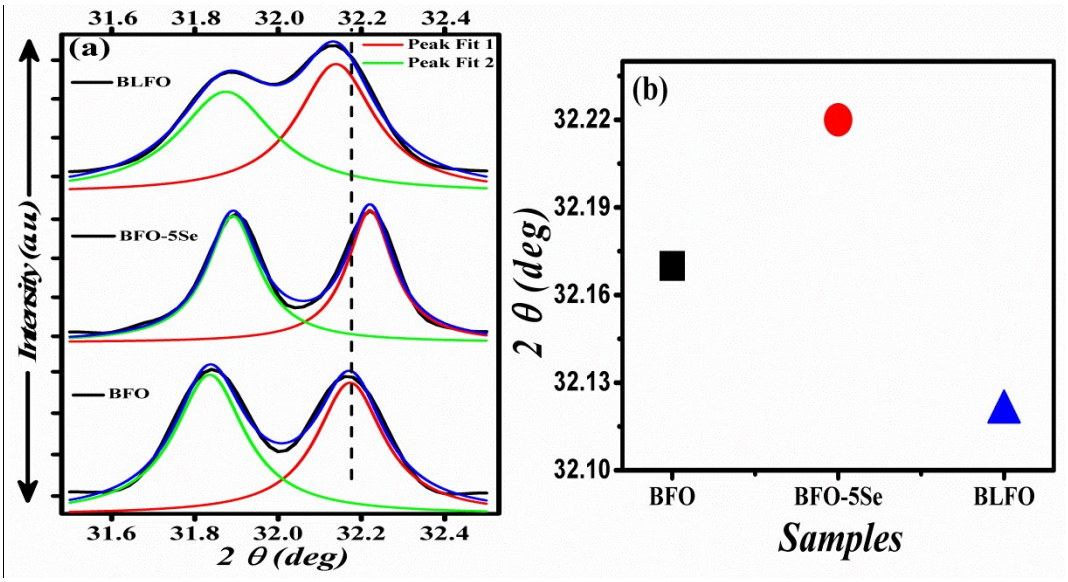

Fig. S1. (a) The Lorentz curves fitting for Pure BFO, BFO-5Se and BLFO which shows the shifting of peaks. (b) Peak shift for different samples.

From Fig. S1, It can be seen that peaks are shifted clearly, which confirms that the La^{3+} and Se^{4+} successfully doped into $BiFeO_3$ into Bi^{3+} and Fe^{3+}-site respectively.

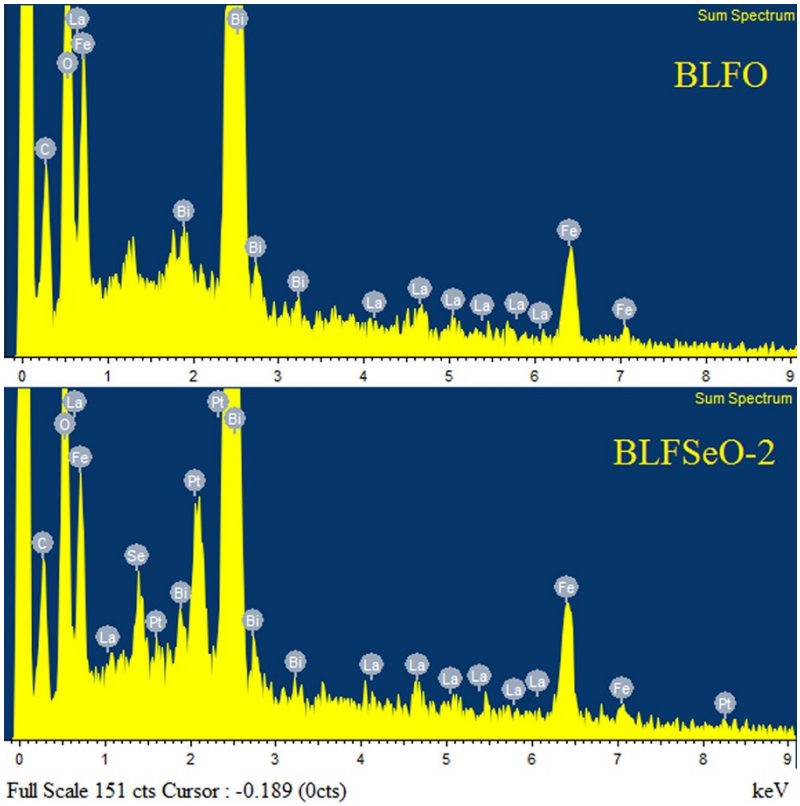

Fig. S2. EDS spectra of BLFO and BLFSeO-2 samples. (Note: the labeled elements of platinum (Pt) and carbon (C) in the EDS pattern should be detected from the conductive tape and sprayed metal during the specimen preparation for SEM measurement, respectively).

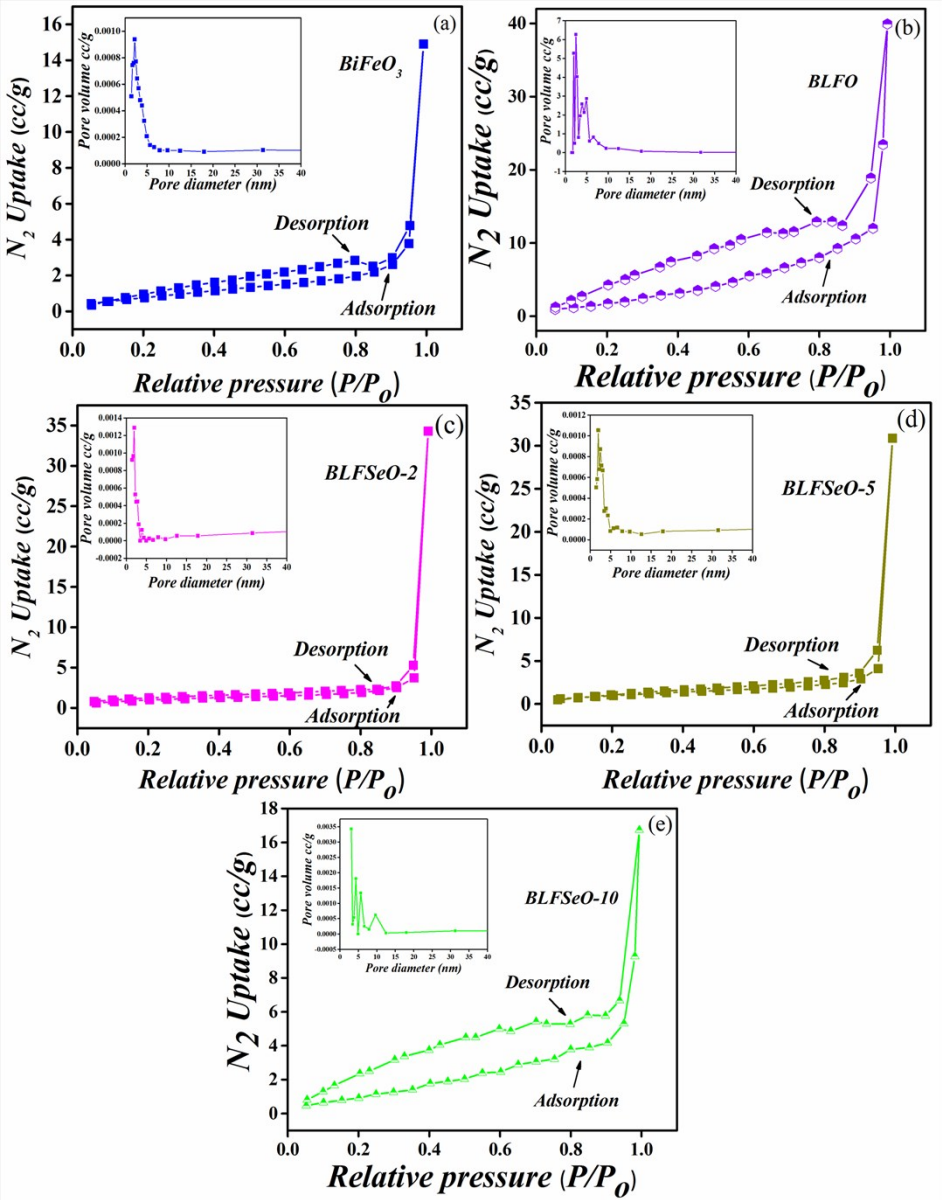

Fig. S3. Nitrogen adsorption/desorption isotherms of (a) BFO, (b) BLFO, (c) BLFSeO-2, (d) BLFSeO-5, and (e) BLFSeO-10 (Inset: differential pore size distribution curves from BJH method)

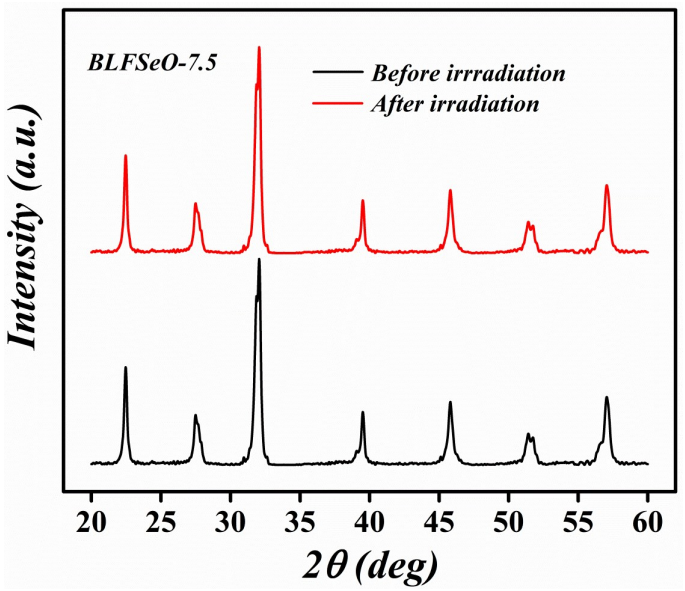

Fig. S4. X-ray diffraction patterns before and after the irradiation of light after five cycles.

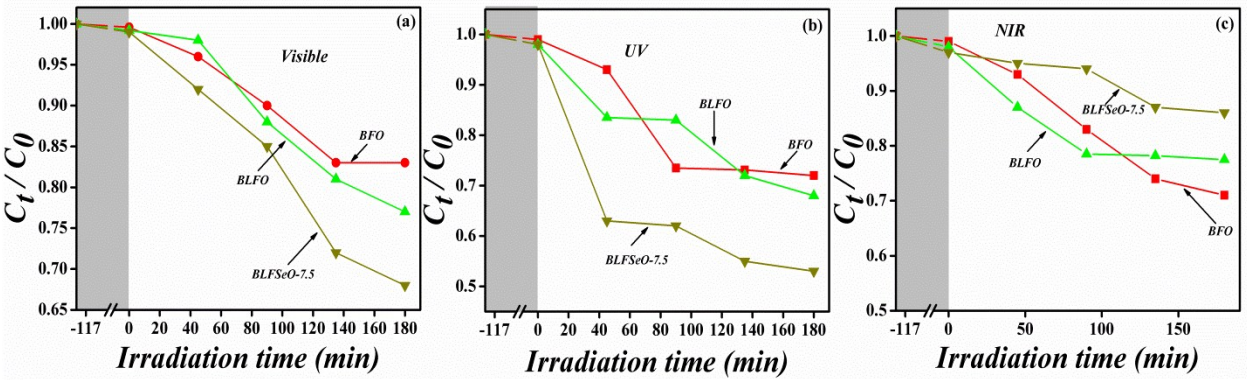

Fig. S5. Photocatalytic degradation efficiencies of Acetophenone in the presence of BFO, BLFO and BLFSeO-7.5 under **(a)** visible (**b**), UV (**c**), and near-infrared irradiation. The shaded area shows degradation of Acetophenone with catalyst in the dark for 2h.