

*Supplementary Materials*

## **Investigating the Performance of Lithium-Doped Bismuth Ferrite [BiFe<sub>1-x</sub>Li<sub>x</sub>O<sub>3</sub>]-Graphene Nanocomposites as Cathode Catalyst for the Improved Power Output in Microbial Fuel Cells**

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The catalytic activity of [BiFe<sub>1-x</sub>Li<sub>x</sub>O<sub>3</sub>]-graphene nanocomposite sample (x=0.02) against CIP has been studied as shown in Figure S1. No significant degradation is observed without light for x=0.02 sample.

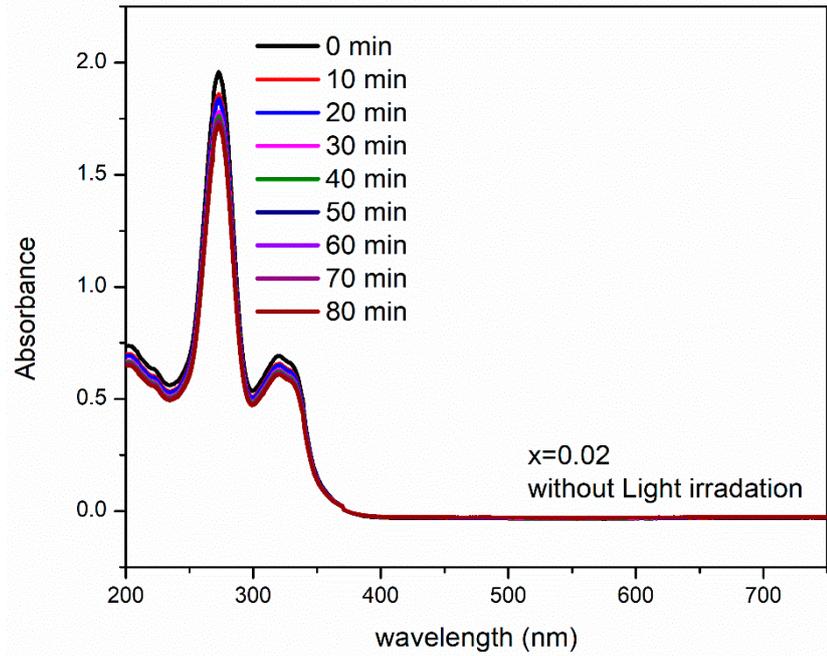


Figure S1: Catalytic degradation of CIP by using  $[\text{BiFe}_{1-x}\text{Li}_x\text{O}_3]$ -graphene nanocomposites without light irradiation for  $x=0.02$  sample.

We have also completed the studied on the structural properties of the catalysts before and after photocatalytic activity. The XRD and the FTIR results of the  $[\text{BiFe}_{1-x}\text{Li}_x\text{O}_3]$ -graphene nanocomposite are represented in Figure S2 and S3. No structural changes have been observed after the photocatalytic activity for the  $x=0.02$  sample.

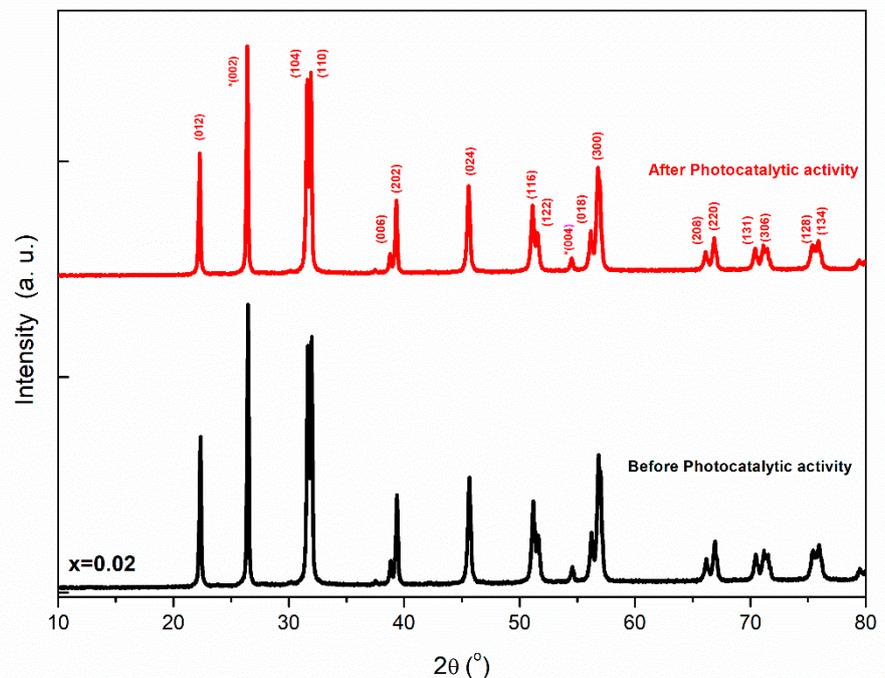


Figure S2: XRD of  $[\text{BiFe}_{1-x}\text{Li}_x\text{O}_3]$ -graphene nanocomposite before and after photocatalytic activity.

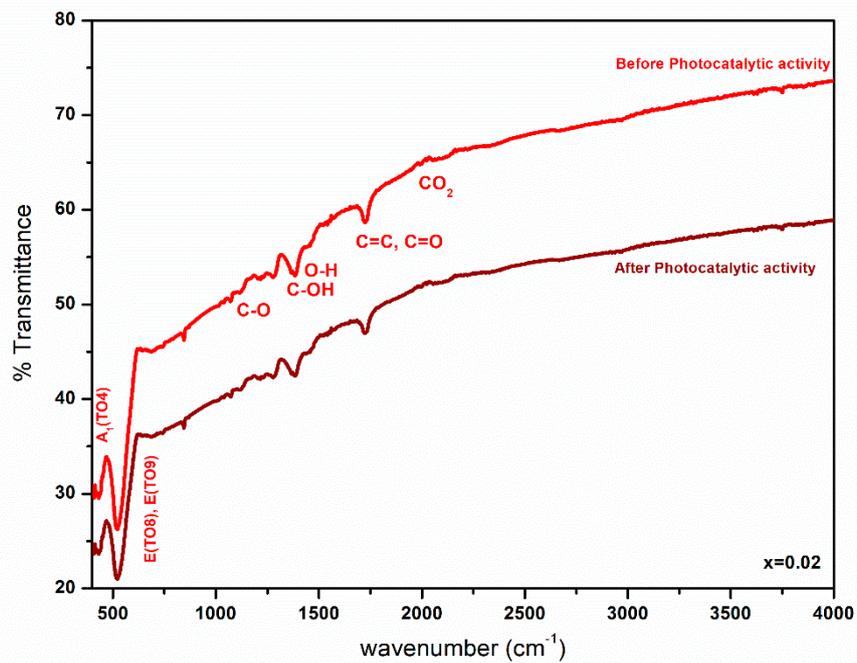


Figure S3: FTIR transmittance spectra of [BiFe<sub>1-x</sub>Li<sub>x</sub>O<sub>3</sub>]-graphene nanocomposite before and after photocatalytic activity.