Supplementary information

Novel GO hoisted SnO_2-BiOBr bifunctional catalyst for the remediation of organic dyes under the illumination of visible light and electrocatalytic water splitting

Manshu Dhillon, [a] *Abhishek Naskar,* [a] *Neha Kaushal,* [bc] *Shekhar Bhansali,*[d] *Avishek Saha,* [ce] *and Aviru K Basu* [*a].

a. Quantum Materials and Devices Unit, Institute of Nano Science and Technology, Mohali 140306, India

b. CSIR-Central Scientific Instruments Organisation (CSIR-CSIO), Sector 30 C, Chandigarh, 160030, India

c. Academy of Scientific and Innovative Research (AcSIR-CSIO), Ghaziabad-201002, India

d. Electrical and Computer Engineering, Florida International University, Miami, FL 33199, United States of America

e. CSIR-National Chemical Laboratory (NCL), Dr. Homi Bhabha Road, Pune, 411008, India

*Corresponding Author: Aviru Kumar Basu (aviru.basu@inst.ac.in)

Sample	Diffraction plane	FWHM
SnO_2	**(110)**	**1.08**
	(101)	**1.08**
	(211)	**1.08**
BiOBr	**(102)**	**0.426**
	(110)	**0.358**
	(200)	**0.34**
	(212)	**0.442**

SnO_2-BiOBr-rGO	**(110)**	**0.8**
	(101)	**0.8**
	(211)	**0.8**
	(102)	**0.292**
	(110)	**0.25**
	(200)	**0.278**
	(212)	**0.296**

Figure S1. Full Width at Half Maximum (FWHM) values for the different diffraction planes for SnO_2, BiOBr, and the final nanocomposite SnO_2-BiOBr-rGO.

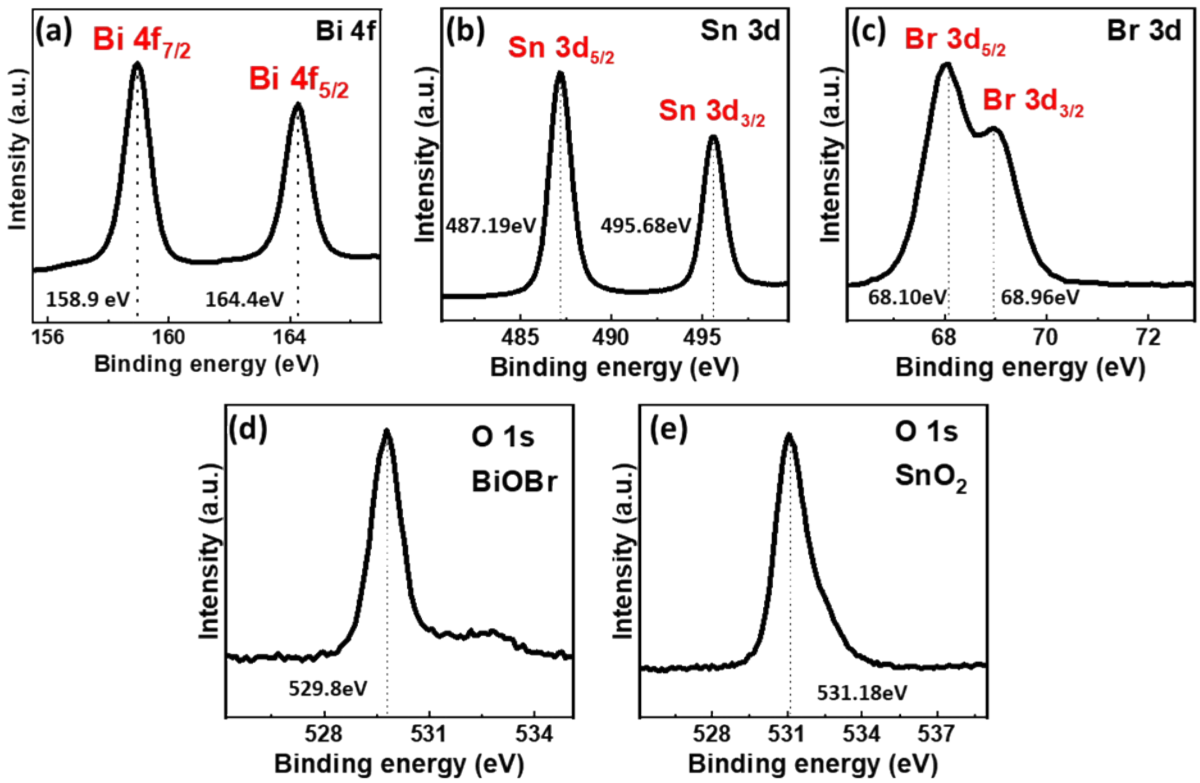

Figure S2. High-resolution XPS spectrum of (a) Bi 4f for pristine BiOBr, (b) Sn 3d for pristine SnO_2, (c) Br 3d for pristine BiOBr, (d) and (e) O1s for pristine BiOBr and SnO_2 respectively.

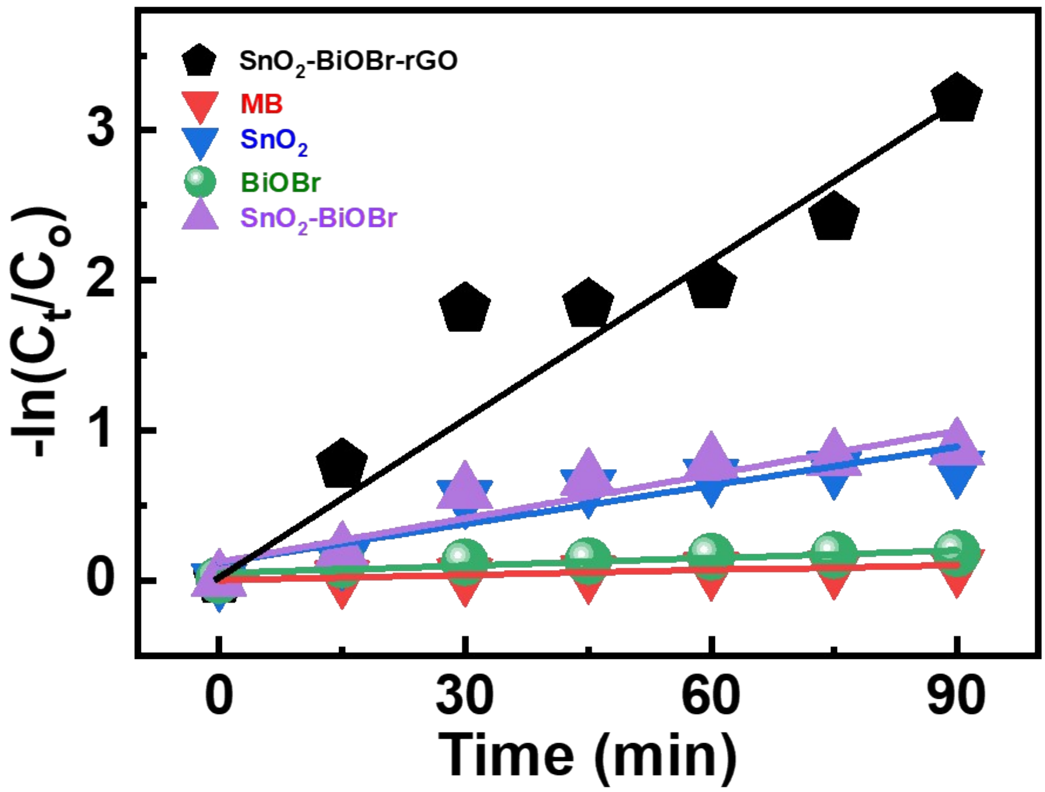

Fig. S3: First-order kinetics followed for the degradation process of MB dye.

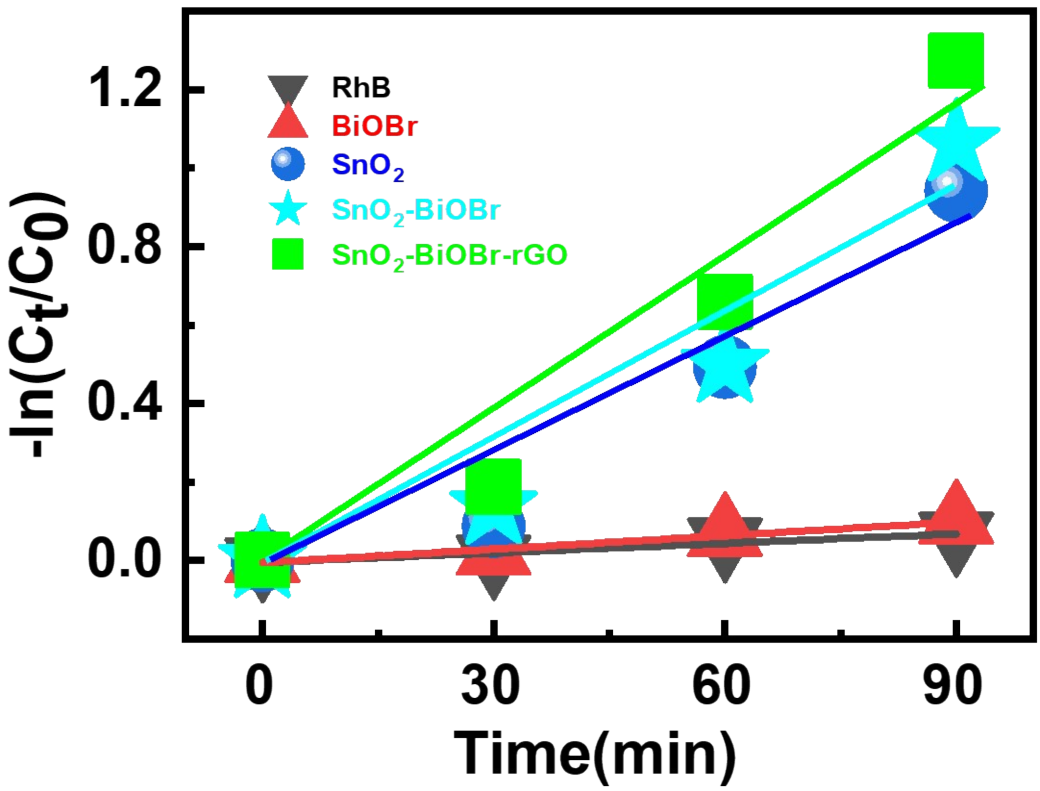

Fig. S4: First-order kinetics followed for the degradation process of RhB dye.

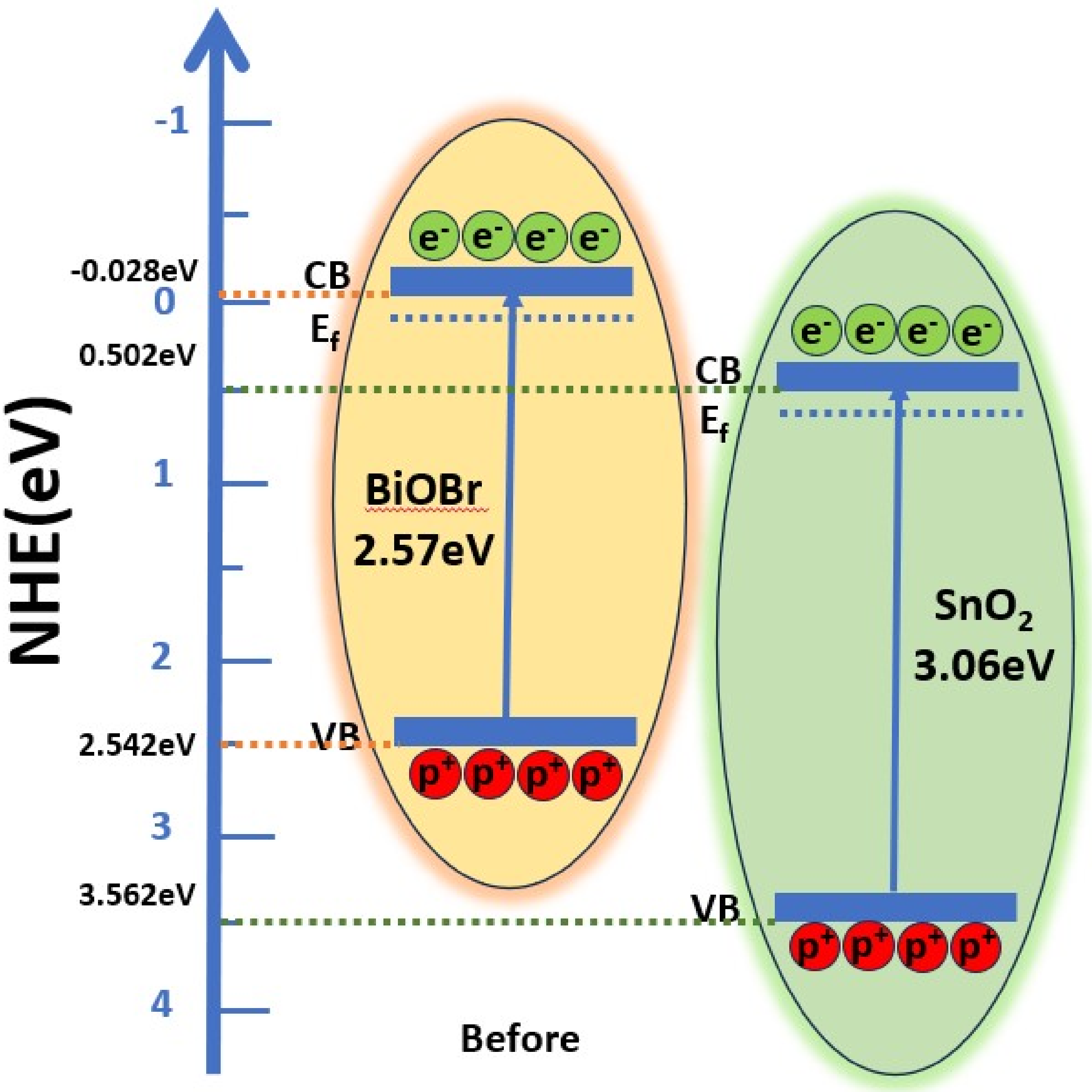

Figure S5. Schematic illustration of energy level diagram for BiOBr and SnO_2 before heterojunction formation.