

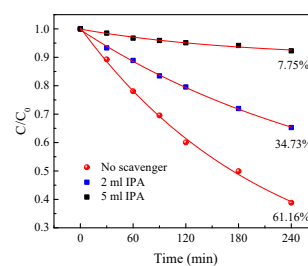
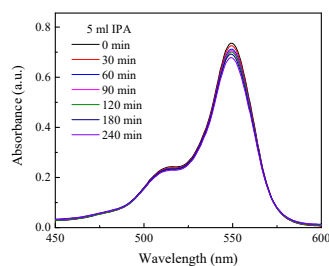
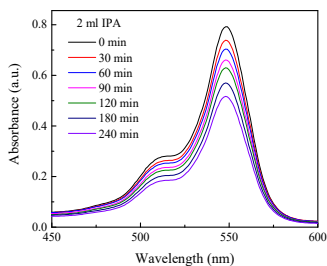
Supplementary Information

Thermally Synthesized Hematite ($\alpha\text{-Fe}_2\text{O}_3$) Nanoparticles as Efficient Photocatalyst for Visible Light Dye Degradation

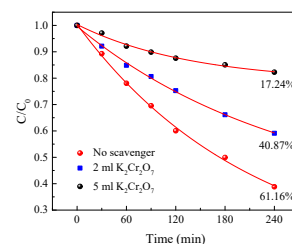
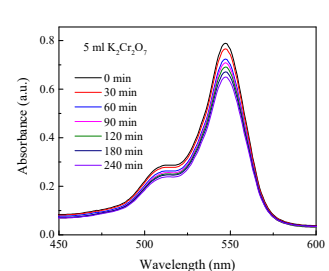
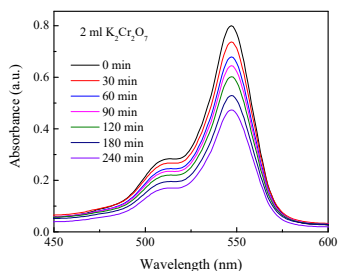
Sani Kundu, Toton Sarkar, Ahmad Aziz Al-Ahmadi, Enas Ali, Ashis Bhattacharjee*

Scavenger test

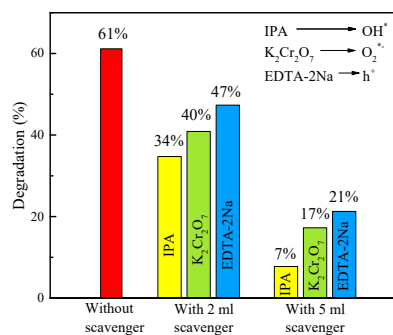
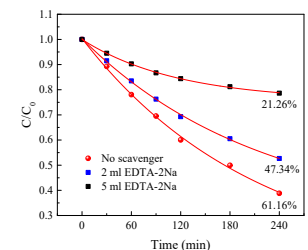
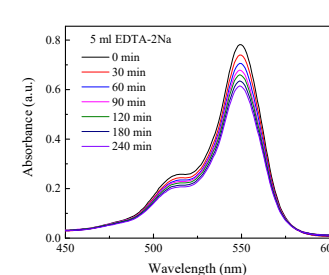
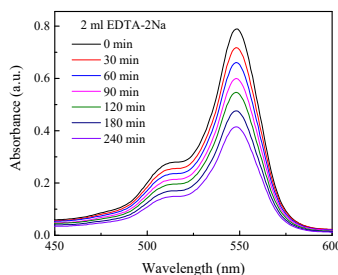
Isopropanol (IPA)



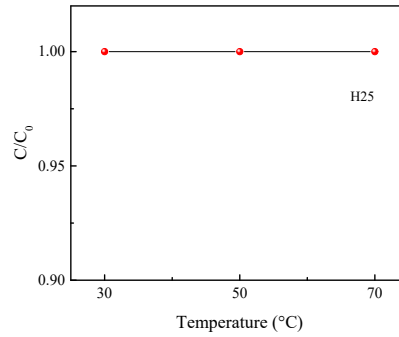
Potassium dichromate ($\text{K}_2\text{Cr}_2\text{O}_7$)



EDTA-2Na



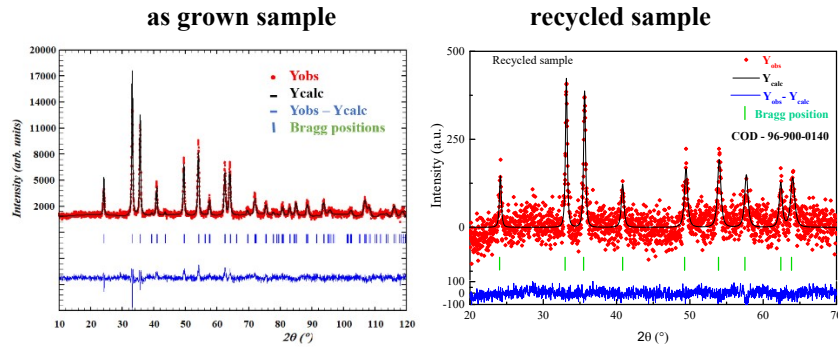
Verification of Thermal Reaction



Authors made absorption studies keeping the RB dye solution in dark at different dye solution temperatures. In dark, the intensity of RB dye solution in presence of catalyst remains unaffected by temperature indicating no thermal reactions occurred. The results obtained are summarized in the above-shown figure.

XRD study of as grown and recycled sample

To verify any change in the structure of the hematite used as catalyst we have compared powder XRD patterns of H25 before and after photocatalysis (shown below). The patterns have been analysed and the results are presented in the Table below. Considering the similarity of the XRD patterns and the values of the analysed parameters, we do not find any difference in these samples which confirm that there is no structural change of the hematite nanoparticles used as catalyst after the repeated use in the photocatalysis of dye.



H25	Composition	Space group	Lattice parameters			<i>D</i> (nm)
			<i>a</i> (Å)	<i>c</i> (Å)	<i>V</i> (Å ³)	
As grown	Hematite (100%)	<i>R</i> 3̄ <i>c</i>	5.0351	13.7586	302.07	25.3
After recycle	Hematite (100%)	<i>R</i> 3̄ <i>c</i>	5.0342	13.7587	301.97	25.5