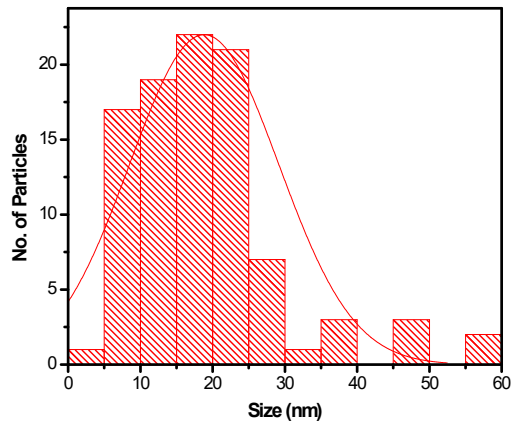


## SUPPLEMENTARY MATERIAL

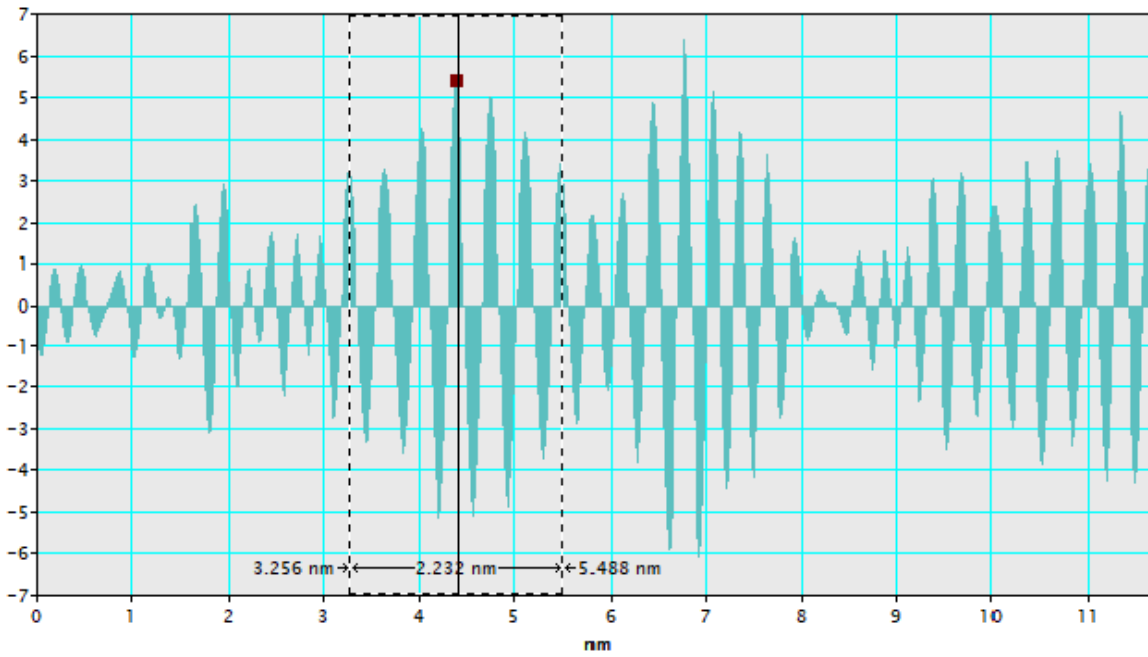
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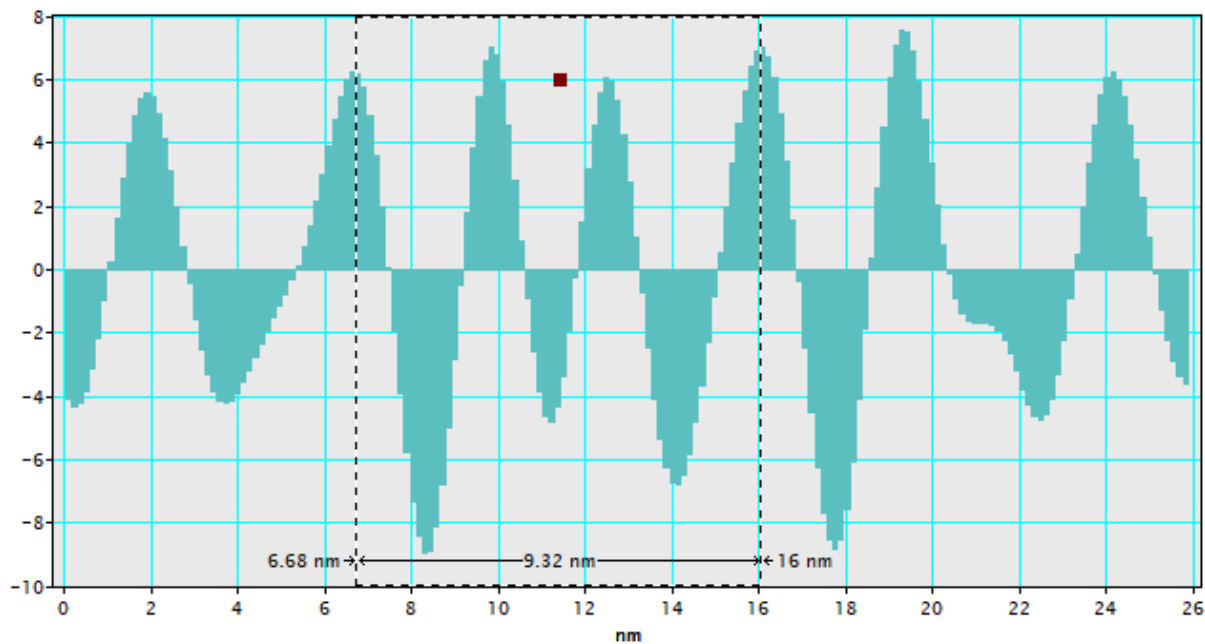
**Figure S1** Particle size distribution of the composite.



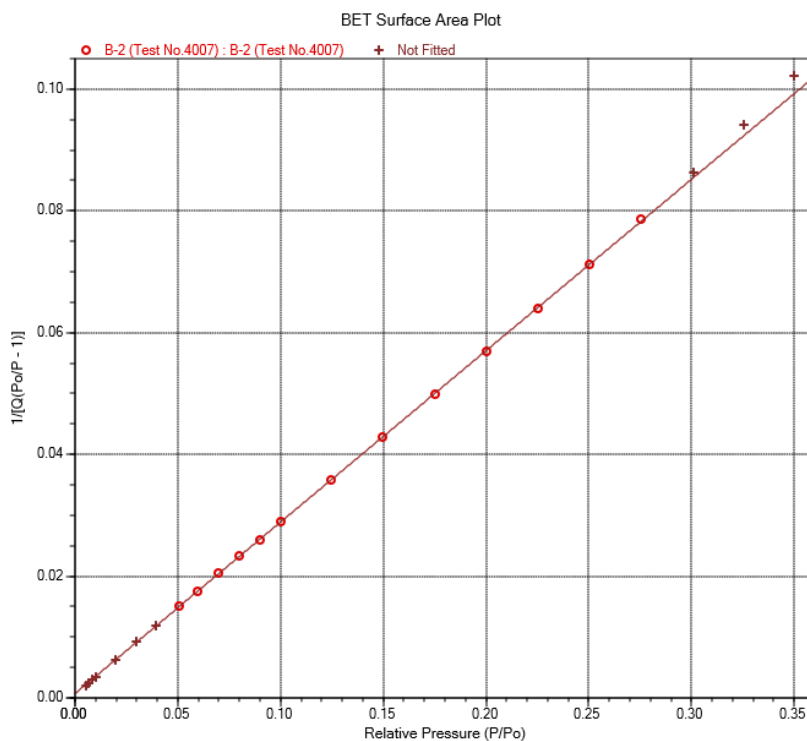
**Figure S2** IFFT images of the composite.



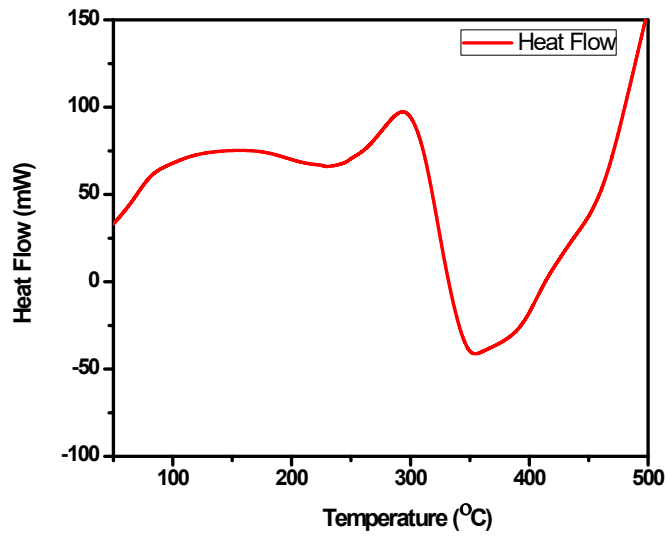
**Figure S3** IFFT images of CQDs.



**Figure S4** The surface area plot of the composite



**Figure S5** DSC analysis of the composite



**Figure S6** Bar graph representation of variation of dye concentration with decay rate.

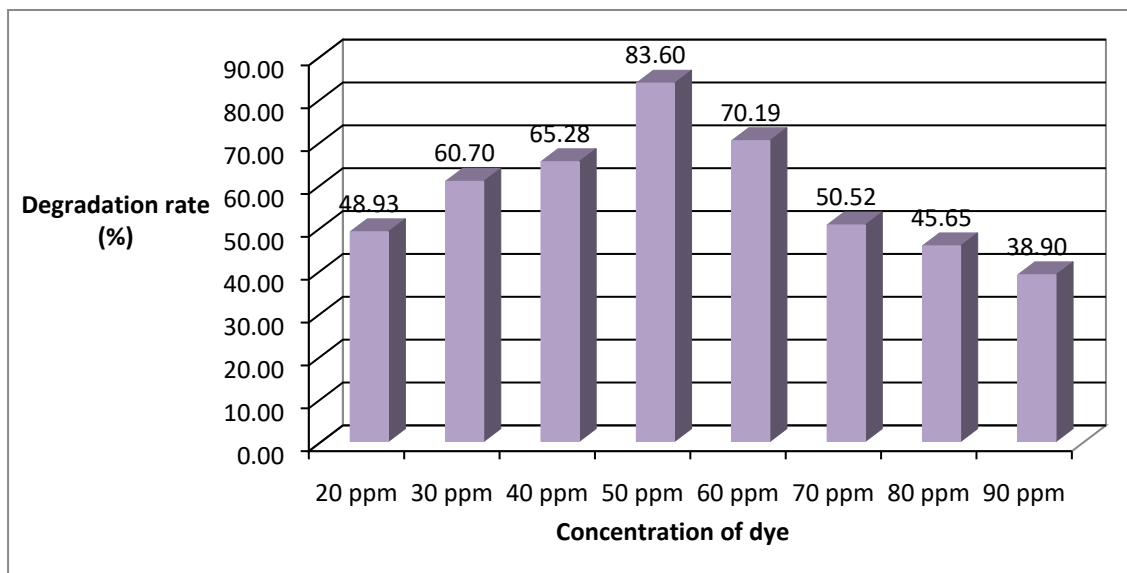


Figure S7 Representing the effect of light intensity on the decay rate.

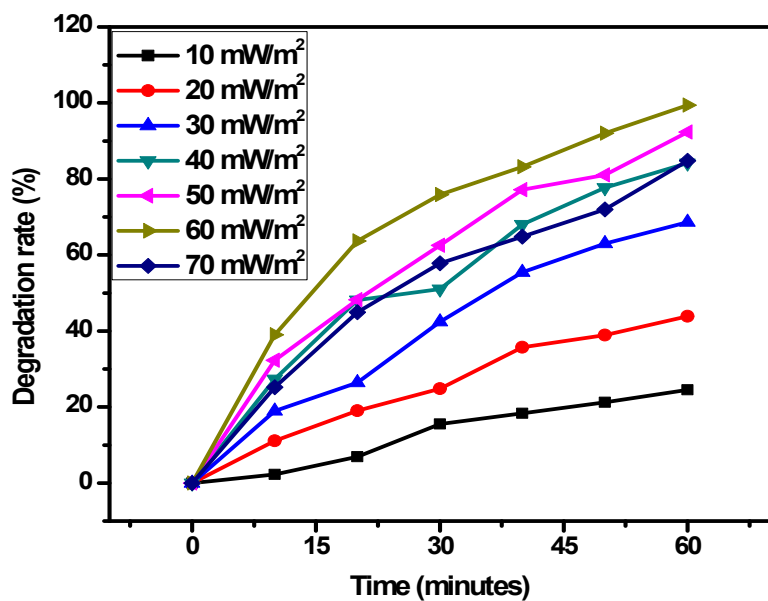


Figure S8 Test of different scavengers on decay rate.

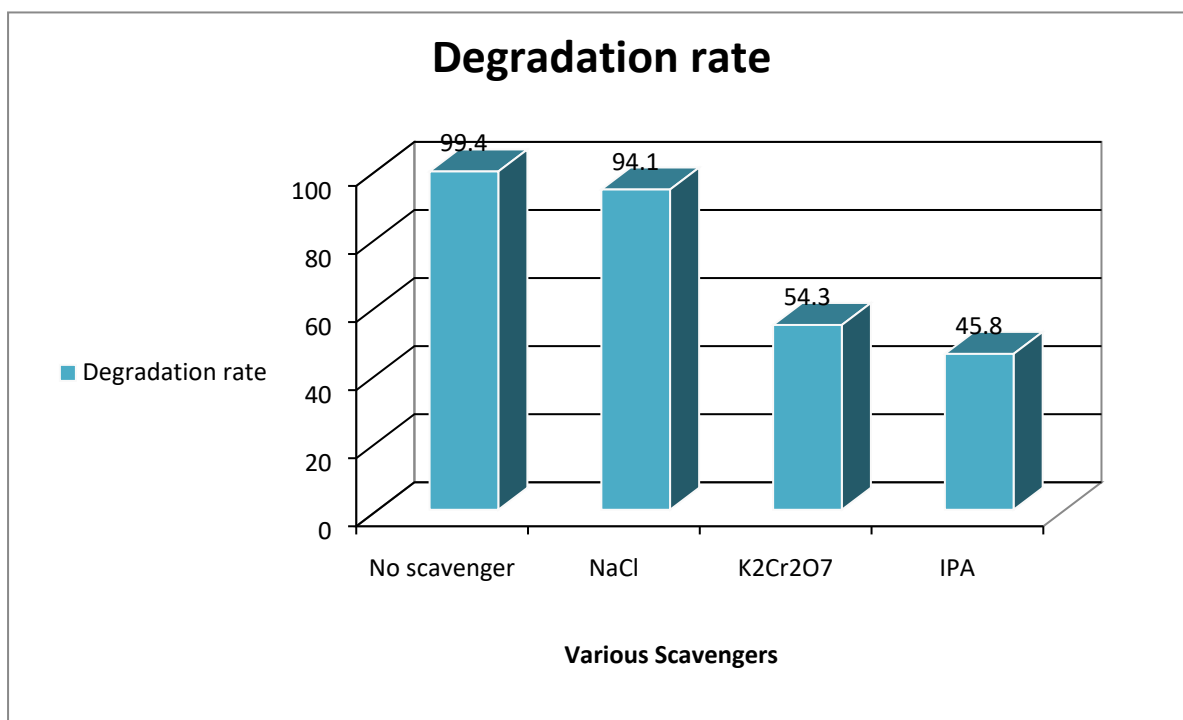
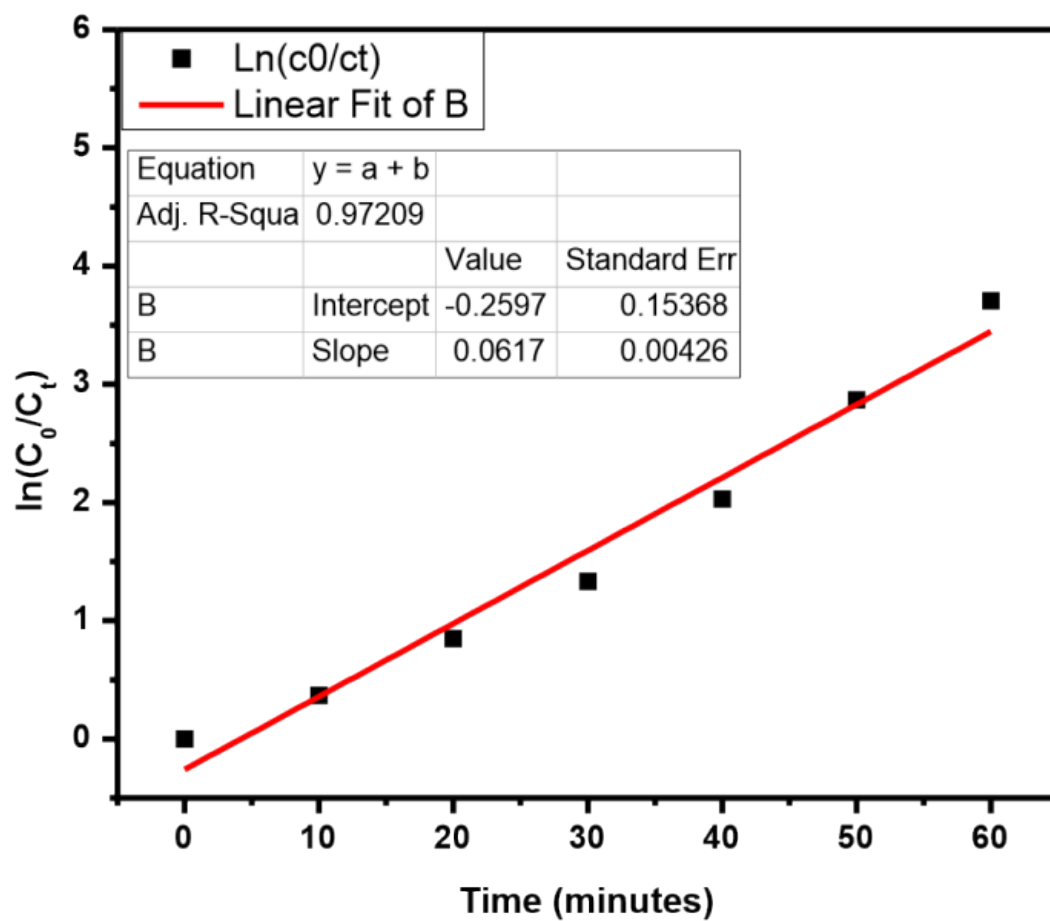
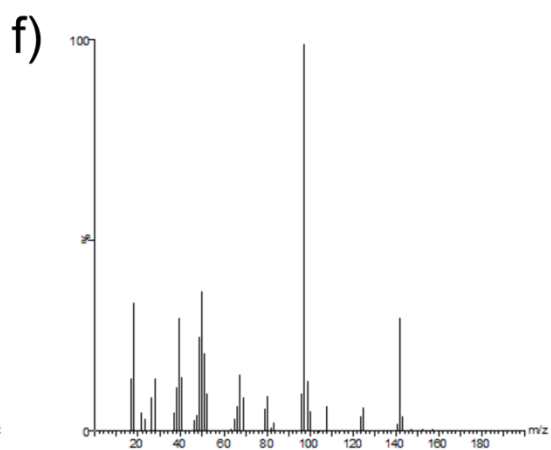
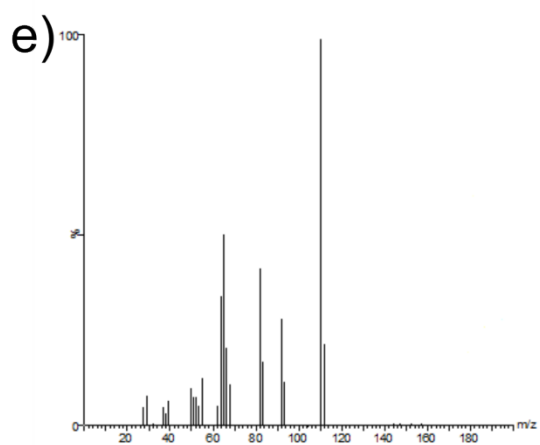
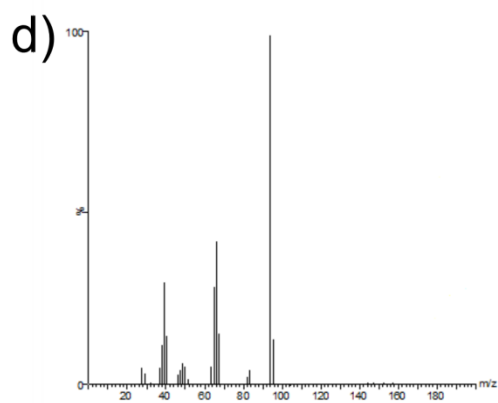
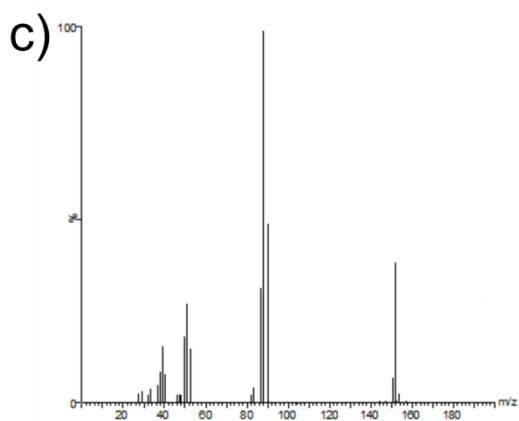
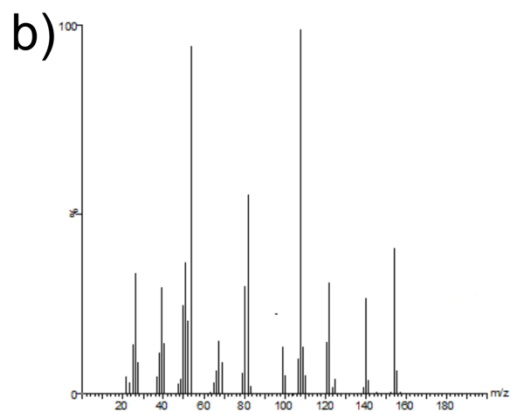
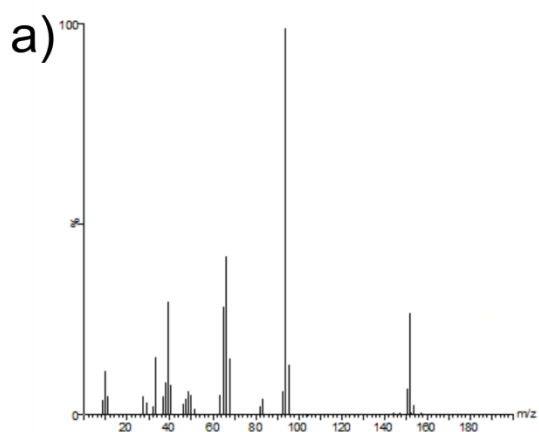


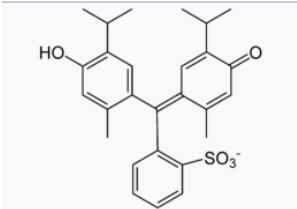
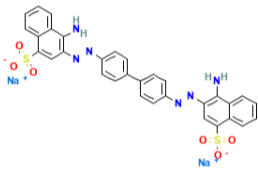
Figure S9 Kinetic study of the decay of CR.



**Figure S10** GCMS Spectra of Degraded Dye Products.



**Table S1: Details of dyes including structure, CI number, and M.W.**

Sr. No.	Dye	Dye structure	Molecular Formula	M.W. g/mol	The Wavelength of Maximum absorbance ( $\lambda_{\max}$ )	Procured from	CI No.
1.	Thymol Blue		$C_{27}H_{30}O_5S$	466.59 g/mol	595 nm	Himedia	51010
2.	Congo Red		$C_{32}H_{22}Na_2N_6O_6S_2$	696.66 g/mol	497 nm	Himedia	22120



**Table S2: Various bounds of water specimen evaluated before and after photocatalytic decay of TB.**

<b>Bounds</b>	<b>Prior decay</b>	<b>After photocatalytic decay</b>
pH	5.5	6.9
DO (ppm)	0.3	7.5
Salinity (ppt)	0.07	0.89
TDS (ppm)	39.8	282
Conductance ( $\mu$ S)	78	512
COD (mg/L)	495	47.8

**Table S3: Various bounds of water specimen evaluated before and after photocatalytic decay of CR.**

<b>Bounds</b>	<b>Prior decay</b>	<b>After photocatalytic decay</b>
pH	6.5	7.2
DO (ppm)	0.2	7.4
Salinity (ppt)	0.08	0.86
TDS (ppm)	48.3	276
Conductance ( $\mu$ S)	83	509
COD (mg/L)	432	38.8

**Scheme S1: Mechanism trail of TB's decay via GCMS examination.**

