Electronic Supplementary Material (ESI) for RSC Advances.

Facile Fabrication of Highly Efficient Modified ZnO Photocatalyst with Enhanced Photocatalytic, Antibacterial and Anticancer Activity

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3.5 XPS Analysis

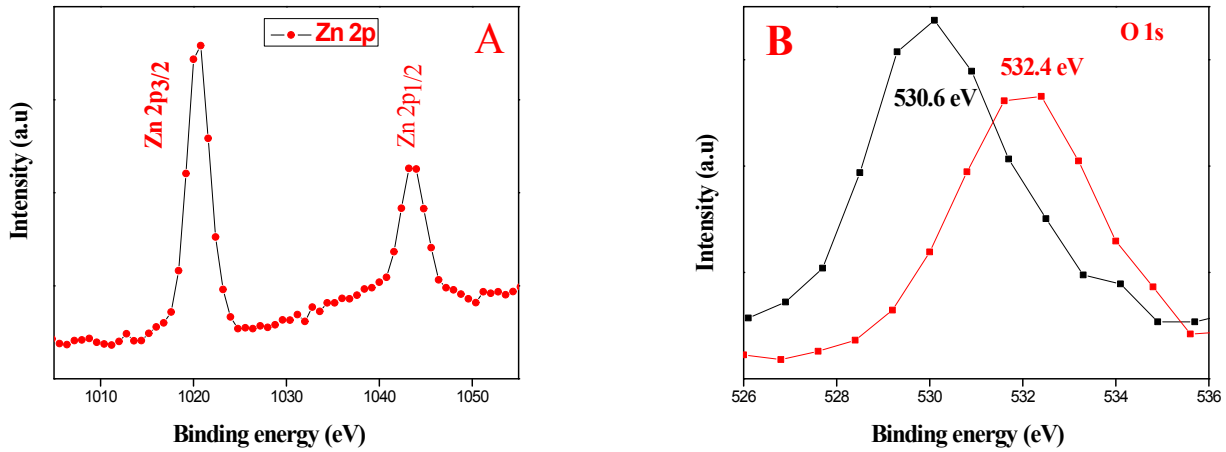


Fig. 1S XPS spectra of (A) Zn 2 p (B) O 1 s

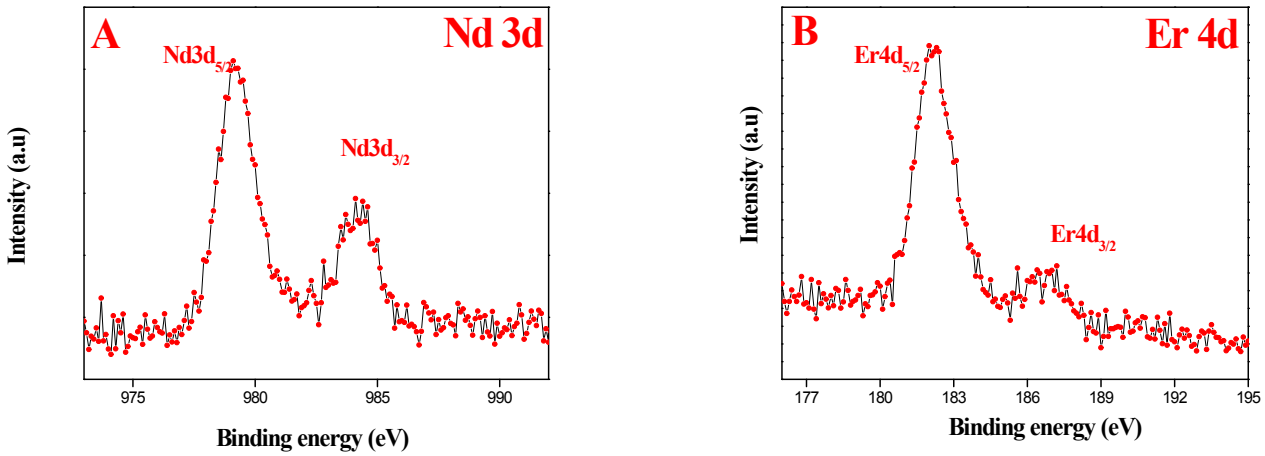


Fig. 2S XPS spectra of (A) Nd (B) Er-doped ZnO NPs

3.6 BET Analysis

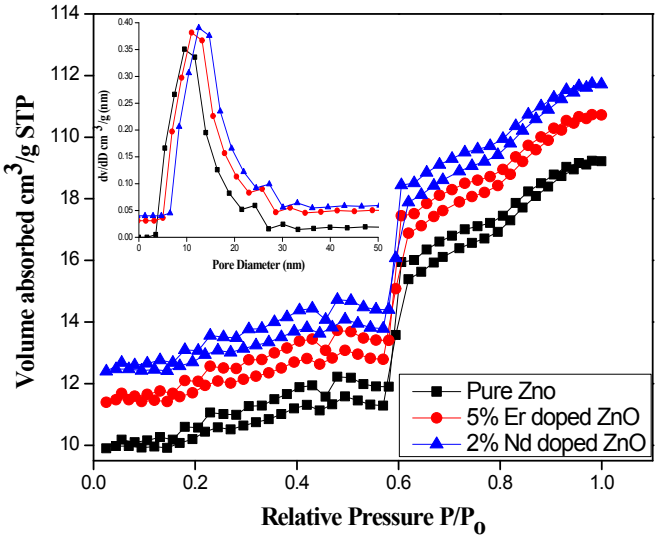


Fig. 3S Nitrogen adsorption/desorption isotherm and their corresponding pore size distribution curves (inset) of the pure and doped ZnO NPs

3.8 Thermal analysis measurement (TGA, DTA and DSC)

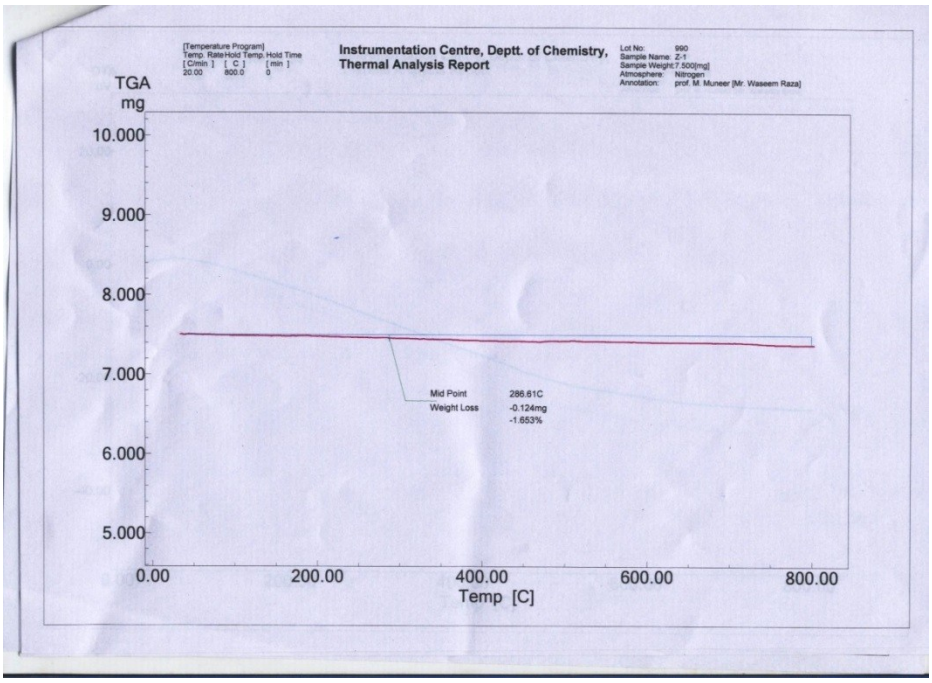


Fig. 4S TGA Plot of pure ZnO NPs

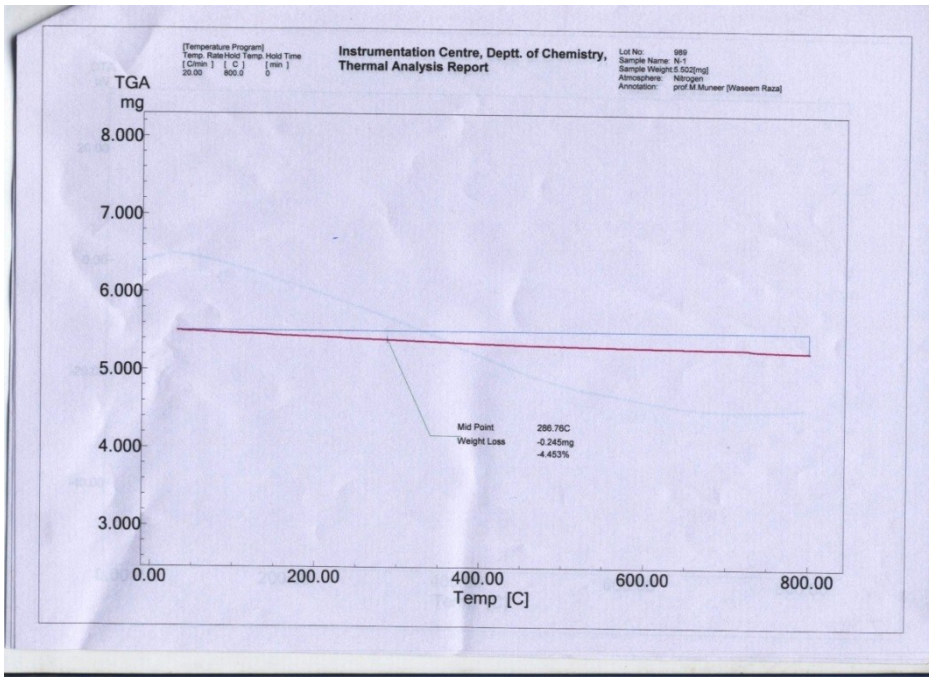


Fig. 5S TGA Plot of Er-Doped ZnO

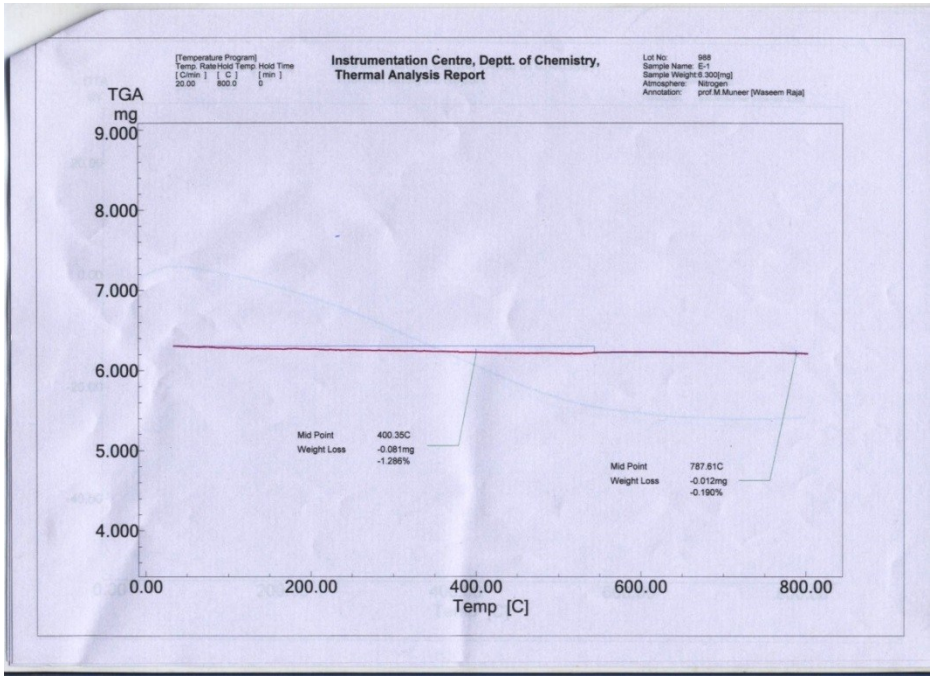


Fig. 6S TGA Plot of Nd-doped ZnO NPs.

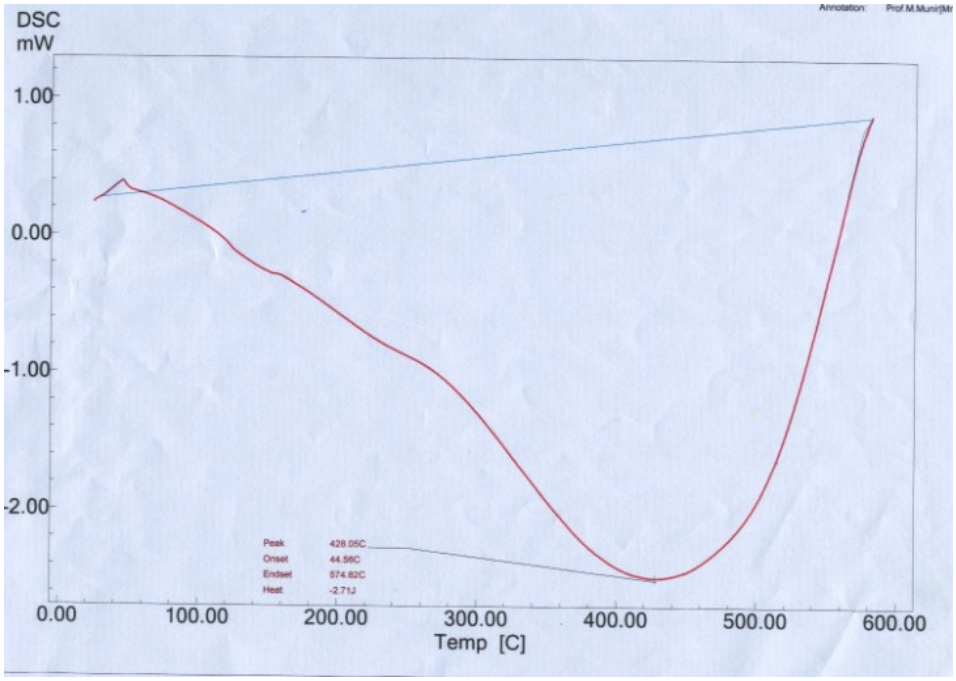


Fig.7S DSC curve of pure ZnO

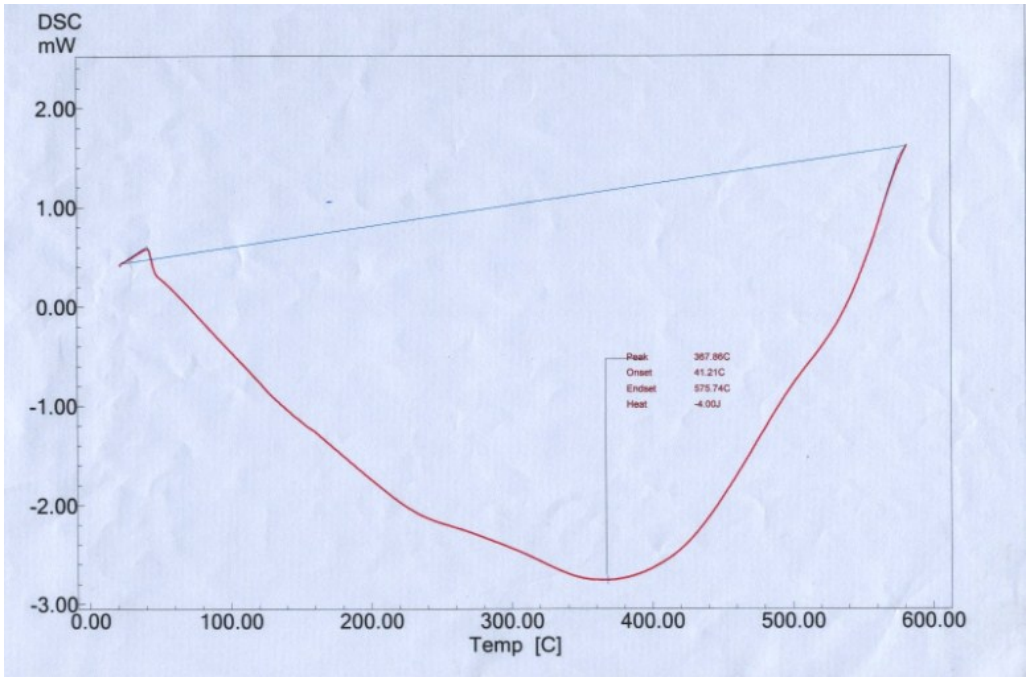


Fig.8S DSC curve of Er-Doped ZnO

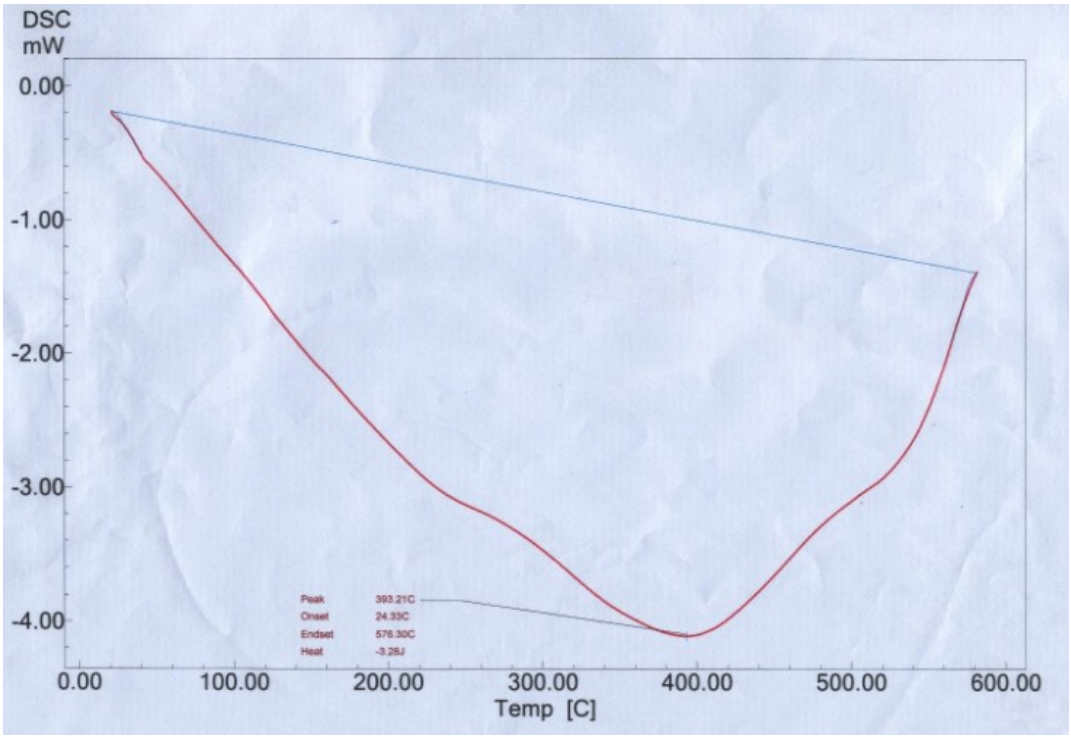
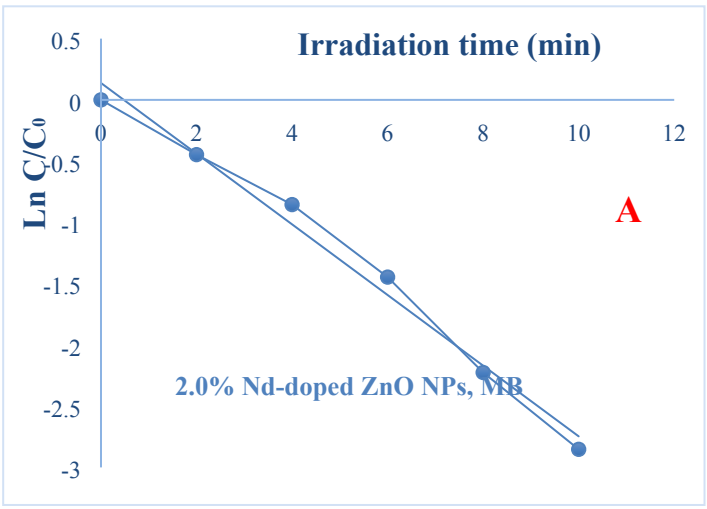


Fig.9S DSC curve of Nd-Doped ZnO

3.10 Photocatalytic Activity



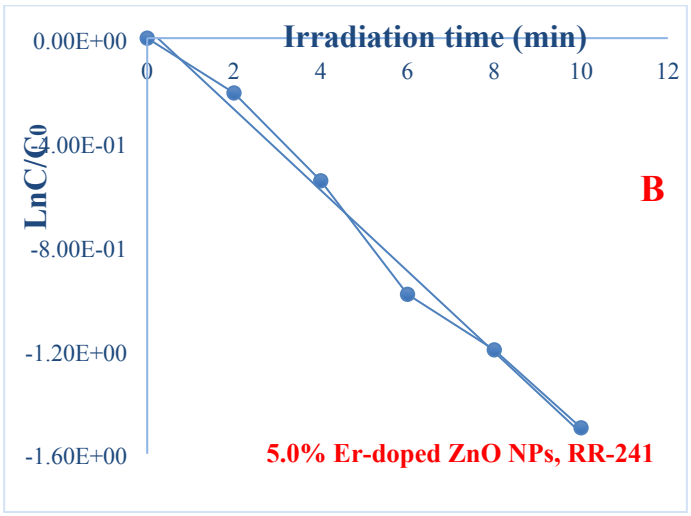


Fig.10S The plot of ln C/C_0 Vs. irradiation times indicating dye photodegradation follow pseudo 1st order kinetics.

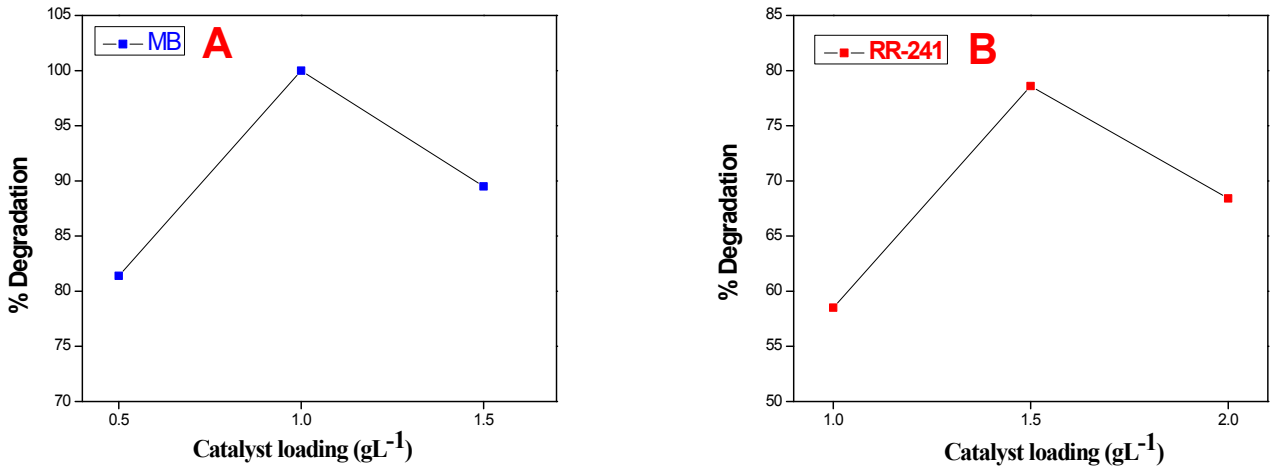


Fig. 11S Effect of catalyst loading on % degradation of **(A)** MB in the presence of 2.0% Nd-doped ZnO NPs **(B)** RR-241 in the presence of 5.0% Er-doped ZnO NPs.

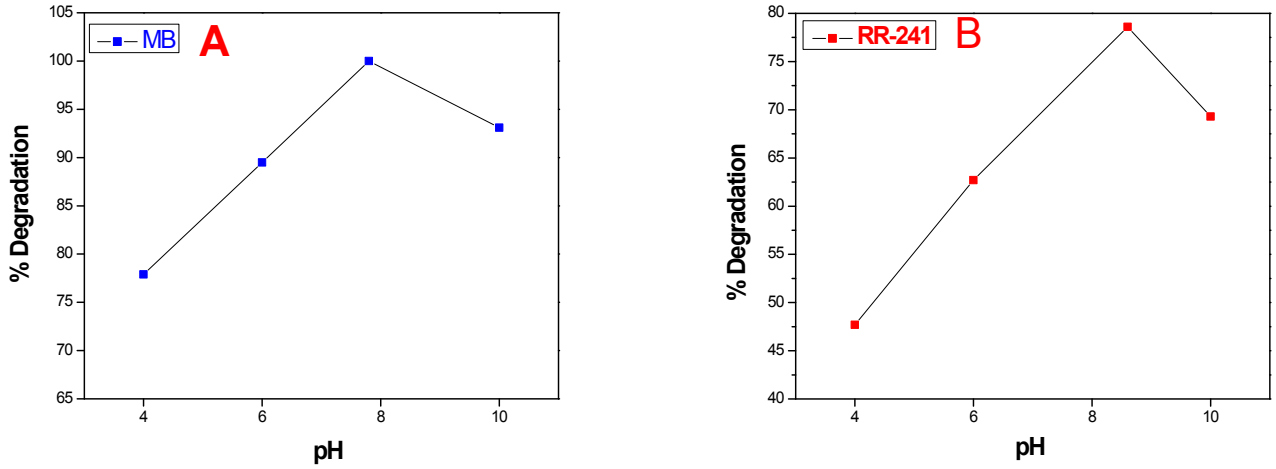


Fig. 12S Effect of pH on the % degradation of **(A)** MB in the presence of 2.0% Nd-doped ZnO NPs **(B)** RR-241 in the presence of 5.0% Er-doped ZnO NPs.

Photocatalyst	K x 10^{-2} value	R^2 value
Pure ZnO NPs	3.5	0.9981
0.5% Nd ZnO NPs	13.5	0.9656
1.0% Nd ZnO NPs	18.3	0.9684
1.5% Nd ZnO NPs	21.3	0.9699
2.0% Nd ZnO NPs	28.8	0.9863
2.5% Nd ZnO NPs	22.7	0.9797

Table 1S. Apparent rate constant (K) and R^2 value for degradation of MB in the presence of different loading of Nd-doped ZnO NPs.

Photocatalyst	K x 10^{-2} value	R^2 value
Pure ZnO NPs	2.1	0.9915
1% Er ZnO NPs	10.0	0.9744
3% Er ZnO NPs	11.3	0.9868
5% Er ZnO NPs	16.2	0.9929
7% Er ZnO NPs	13.4	0.989

Table 2S. Apparent rate constant (K) and R^2 value for degradation of RR-241 in the presence of different loading of Er-doped ZnO NPs.