Electronic Supplementary Material (ESI) for New Journal of Chemistry.

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Electronic Supplementary Information for:

Improving the photocatalytic activity of polyaniline and a porphyrin *via* oxidation to obtain a salt and a charge-transfer complex.

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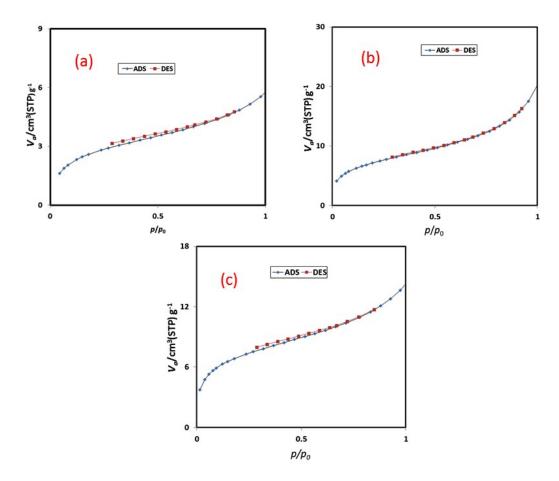


Fig. S1 Adsopprtion and desorption isotherms of (a) PANI- H_2SO_4 (b) PANI- H_2SO_4 -TKHP-50 (c) PANI- H_2SO_4 -TKHP-100.

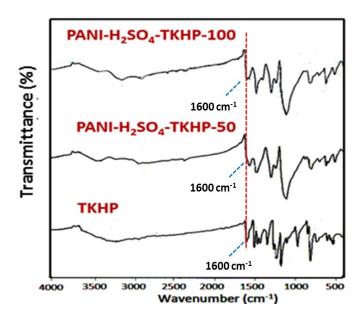


Fig. S2 FT-IR spectra of TKHP, PANI-H₂SO₄-TKHP-50 and PANI-H₂SO₄-TKHP-100.

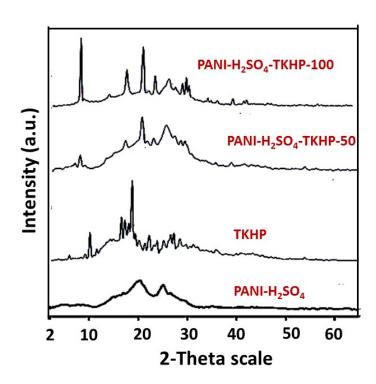


Fig. S3 XRD patterns of PANI- H_2SO_4 , TKHP, PANI- H_2SO_4 -TKHP-50 and PANI- H_2SO_4 -TKHP-100.

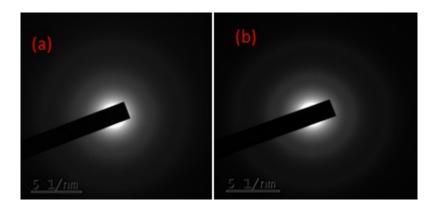


Fig. S4 SAED patterns of the (a) PANI- H₂SO₄-TKHP-50 (b) PANI-H₂SO₄-TKHP-100.

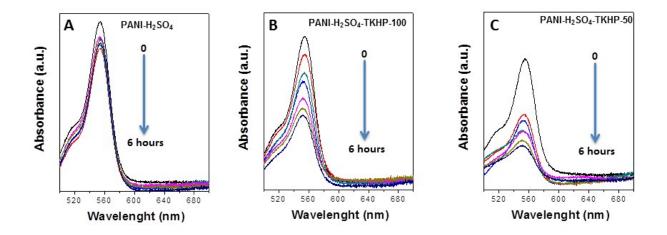


Fig. S5 UV-vis spectra of RhB degradation by PANI- H_2SO_4 (B) PANI- H_2SO_4 -TKHP-100 and (C) PANI- H_2SO_4 -TKHP-50 composite.

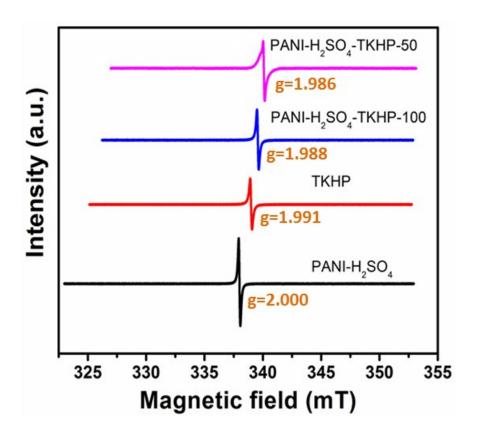


Figure S6. ESR spectra of PANI samples and TKHP sample.

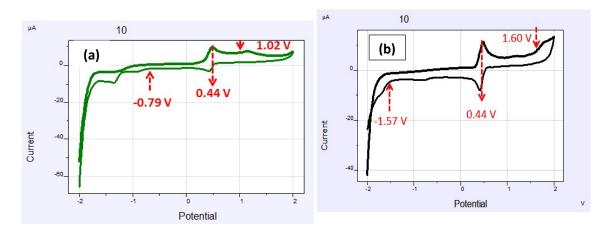


Fig. S7 CV of (a) TKHP (b) PANI-H₂SO₄ in 0.1 TBAPF₆ in ACN

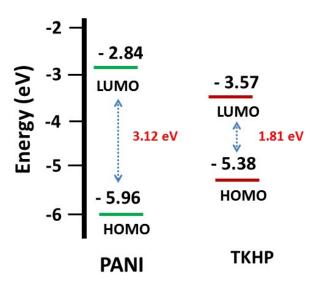


Fig. S8 Energy levels of PANI- H_2SO_4 and TKHP

 $\begin{table}{ll} \textbf{Table S1} & d-values for the system (a) conventional polyaniline salt, (b) PANI-H_2SO_4, (c) PANI-H_2SO_4-TKHP-50, (d) PANI-H_2SO_4-TKHP-100 and (e) TKHP obtained from XRD. \\ \end{table}$

a		5.58	4.40		3.55	3.29			
b			4.40		3.55				
c	11.77	5.24	4.37	3.91	3.52		3.15	3.06	3.00
d	11.79	5.23	4.37	3.90	3.47	3.30	3.14	3.06	3.01
e 9.07	7.91 5.46	5.24 5.00	4.82	4.64 4.46	4.21 4.04	3.87	3.77 3.57	3.43 3.38	3.30 3.15