Supplementary Data

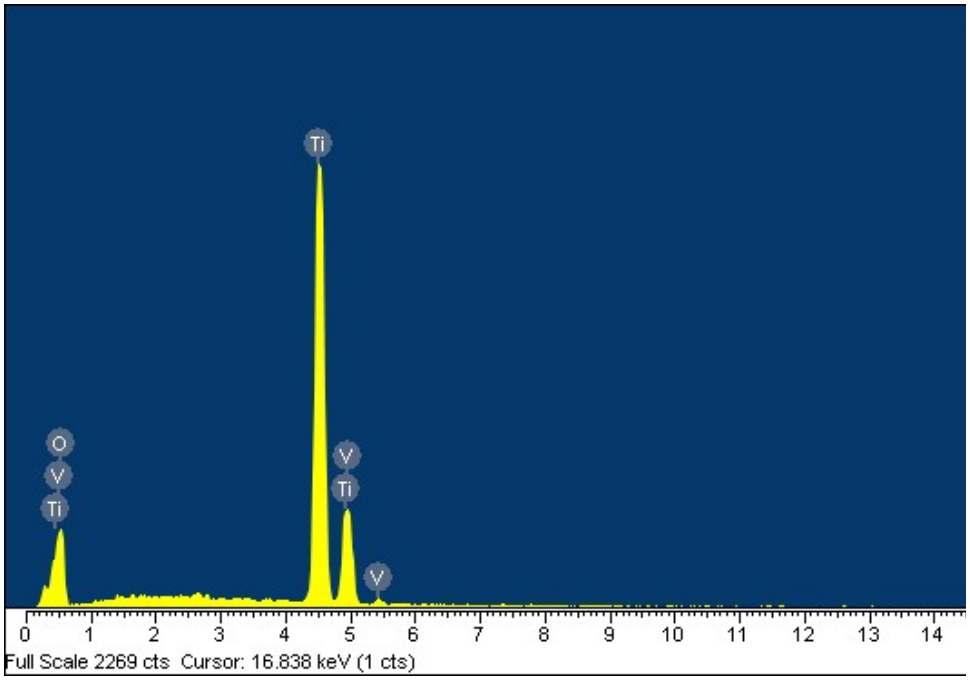


Figure S0. EDX spectrum of TiO_2-VO_x

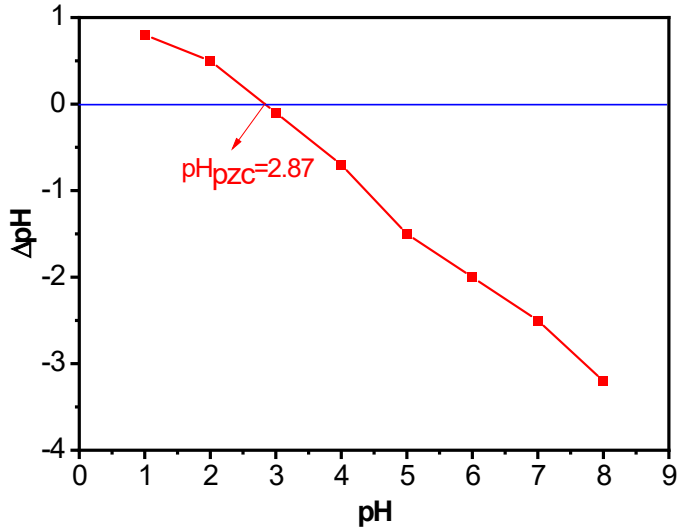
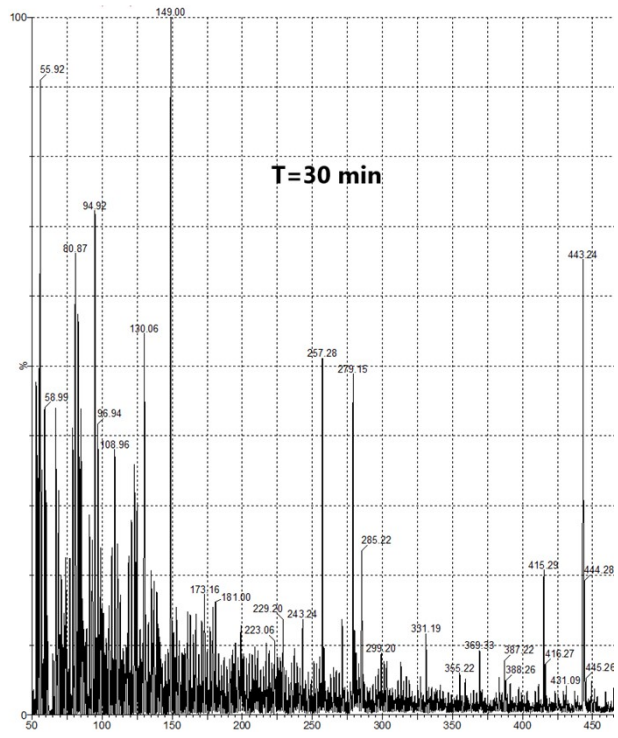


Figure S1. Isoelectric point (pH_{pzc}) of TiO_2-VO_x/PANi-PPy composite

Table S1. Comparison of photocatalysts for PMS activation and RhB removal

Photocatalyst	Synthesis	Conditions	Remark	Reference

	method			
TiO_2-V_2O_5/PANi-PPy	Electrospinning, vapor-phase polymerization	Catalyst: 0.5 g/L; PMS: 0.65 mM; RhB: 20 mg/L; 25 ^oC; pH 7; Light: LED L4X 40W	97.03 % of RhB in 120 min Key ROS: $^1O_2$	This work
$CaFe_2O_4$	Sol-gel	Catalyst: 1 g/L; PMS: 0.65 mM; RhB: 10 mg/L; pH 4.8; 25 ^oC; Light: xenon 500 W with a 420 nm cut-off filter	99.2 % of RhB in 120 min Key ROS: h^+ and $O_2^{\bullet-}$	[1]
$BiVO_4$	Hydrothermal	Catalyst: 0.5 g/L; PMS: 1.0 mM; RhB: 10 mg/L; pH 3; 25 ^oC; Light: metal halogen 400 W with a 415 nm cut-off filter	90.9% of RhB removal in 60 min Key ROS: $SO_4^{\bullet-}$, $HO^{\bullet}$, and $O_2^{\bullet-}$.	[2]
cPVC/Bi_2O_3	Solvothermal	Catalyst: 0.4 g/L; PMS: 0.3 g/L; RhB: 10 mg/L; pH 5.18; 23 ^oC; Light: Osram Ultra-Vitalux 300 W	98% of RhB in 40 min Key ROS: $SO_4^{\bullet-}$ and $HO^{\bullet}$	[3]
$CoFe_2O_4$@g-C_3N_4	Sol-gel, urea thermal polymerization	Catalyst: 0.4 g/L; PMS: 0.09 g/L; RhB: 10 mg/L pH: 9; Light source: Vonfram halogen 500 W	96% of RhB in 30 min Key ROS: $SO_4^{\bullet-}$, $HO^{\bullet}$, and $O_2^{\bullet-}$	[4]
α-S	Wet chemical	Catalyst: 0.5 g/L; PMS: 0.4 g/L; RhB: 10 mg/L pH 7; 40 ^oC; Light: 150 W Philips	100% of RhB in 50 min Key ROS: $SO_4^{\bullet-}$ and $HO^{\bullet}$	[5]
$BiFeO_3$ microsphere	Hydrothermal	Catalyst: 1 g/L; PMS: 5 mM; RhB: 5 mg/L; 25 ^oC; Light: xenon 500 W with a 420 nm cut-off filter	63% of RhB in 40 min Key ROS: $HO^{\bullet}$, $SO_4^{\bullet-}$, and $O_2^{\bullet-}$	[6]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149.00
55.92
94.92
80.87
130.06
257.28
279.15
58.99
96.94
108.96
285.22
415.29
444.28
173.16
181.00
229.20
243.24
223.06
391.19
299.20
369.33
387.22
416.27
355.22
388.26
431.09
%

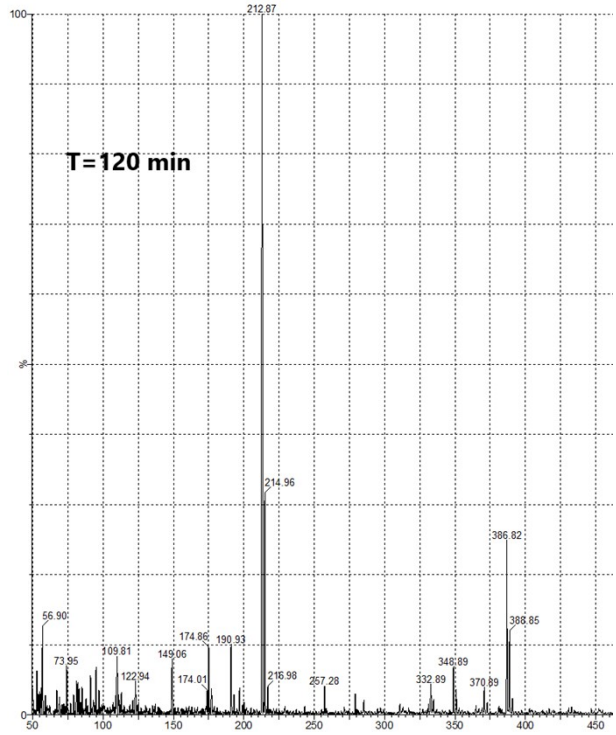
T=120 min
212.87
214.96
386.82
388.85
56.90
73.95
109.81
122.94
149.06
174.01
174.86
190.93
216.98
257.28
332.89
348.89
370.89
%

Figure S2. MS spectra of RhB solutions degraded by TiO_2-VO_x/PANi-PPy/PMS/Vis system.

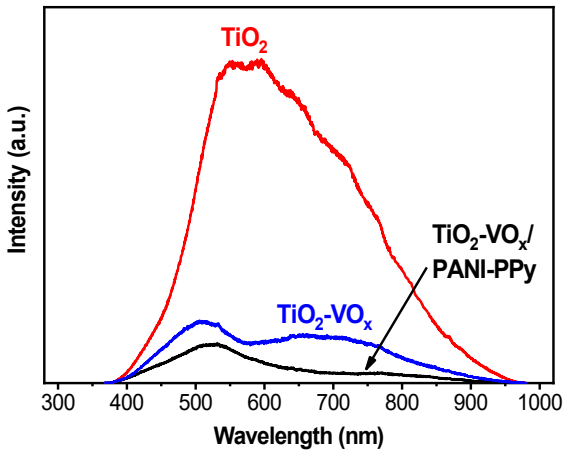

Figure S3. PL spectra of TiO_2 (red), TiO_2-VO_x (blue), and TiO_2-VO_x-PANi-PPy (black).

References

[1] S. Guo, Z. Yang, H. Zhang, W. Yang, J. Li, K. Zhou, Enhanced photocatalytic degradation of organic contaminants over CaFe2O4 under visible LED light irradiation mediated by peroxymonosulfate, Journal of Materials Science & Technology, 62 (2021) 34-43.

[2] Y. Liu, H. Guo, Y. Zhang, W. Tang, X. Cheng, H. Liu, Activation of peroxymonosulfate by BiVO 4 under visible light for degradation of Rhodamine B, Chemical Physics Letters, 653 (2016) 101-107.

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