



Boosting sulfate radical assisted photocatalytic advanced oxidative degradation of tetracycline via few-layered CoZn@MOF/GO nanosheets

K. Divyarani^a, S. Sreenivasa^{a,b,*}, Tadimety Madhu Chakrapani Rao^c, Walid Nabgan^d, Fahad A. Alharthi^e, Byong-Hun Jeon^{f,**}, L. Parashuram^{g,**}

^a Department of Studies and Research in Chemistry, Tumkur University, Tumakuru 572101, India

^b National Assessment and Accreditation Council, Autonomous Institution Affiliated to UGC, MHRD, GOI, Bangalore 560072, India

^c Tadimety Aromatics Pvt. Ltd., Hirehally Industrial Area, Tumkur 572168, India

^d Departament d'Enginyeria Química, Universitat Rovira i Virgili, Av Països Catalans 26, 43007 Tarragona, Spain

^e Department of Chemistry, College of Science, King Saud University, Riyadh 11451, Saudi Arabia

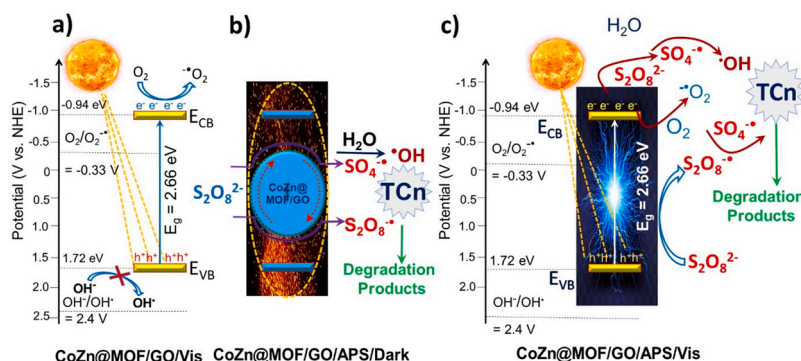
^f Department of Earth Resources and Environmental Engineering, Hanyang University, 2226 Wangsimni-ro, Seongdong-gu, Seoul 04763, South Korea

^g Department of Chemistry, Nitte Meenakshi Institute of Technology, Yelahanka, Bangalore, 560064 India

HIGHLIGHTS

- Tailor made CoZn@MOF/GO/APS/Vis system for advanced oxidation of tetracycline.
- Multi-dimensional synergy between catalysis, photocatalysis and advanced oxidation.
- Scavenger, ESR and Mott-Schottky methods were used to unfold synergism.
- Mass spectral analysis for systematic identification of reaction pathway.
- High surface area, good recovery and reuse of catalyst for five consecutive cycles.

GRAPHICAL ABSTRACT



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ABSTRACT

A facile and robust protocol for the synthesis of CoZn@MOF/GO photocatalyst via hydrothermal route has been presented, and the method has resulted in the formation of CoZn@MOF/GO few-layer nanosheets. The as-prepared catalyst has shown improved degradation of tetracycline hydrochloride. A detailed investigation of the effect of various parameters such as pH, concentration, and catalyst load was carried out to ascertain the optimum reaction condition required for the maximum degradation of tetracycline. Also, presence of GO has improved the visible light assimilation, band gap restructuring and consequent photocatalysis. Radical scavenger and electron resonance studies revealed that presence of light, persulfate and oxygen were pivotal for the enhanced photocatalysis of TCn at CoZn@MOF/GO and to accomplish complete degradation of TCn. The

* Corresponding authors at: Department of Studies and Research in Chemistry, Tumkur University, Tumakuru 572101, India.

** Corresponding authors.

E-mail addresses: drsreenivasa@yahoo.co.in (S. Sreenivasa), bhjeon@hanyang.ac.kr (B.-H. Jeon), ramacademy1990@gmail.com (L. Parashuram).