郑冠宇

教授，博士生导师

从事专业：环境工程

主要研究领域：污泥处理，环境中抗生素抗性控制

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一、教育背景

2007-2011，香港浸会大学，生物学系，博士

2004-2007，南京农业大学，环境工程专业，硕士

2000-2004，南京农业大学，生物科学专业，学士

二、研究工作经历

2019.01-至今，南京农业大学，资源与环境科学学院，教授

2013.02-2018.12，南京农业大学，资源与环境科学学院，副教授

2011.11-2013.02，香港科技大学，土木与环境工程系，博士后

三、获奖情况

2019 年，江苏省“青蓝工程”优秀青年骨干教师

2016 年，教育部技术发明一等奖，第二完成人

2014 年，“简浩然环境微生物基金”优秀环境工程奖，第五完成人

2013 年，南京农业大学“钟山学者”学术新秀

四、教学情况

本科生课程：环境微生物学

研究生课程：环境微生物技术进展

五、学术兼职

江苏省有机固体废弃物资源化协同创新中心 PI

SCI 刊物 Environmental Technology（Taylor & Francis）编委

六、主持科研项目

1.国家自然科学基金面上项目“污泥生物沥浸—好氧堆肥过程中耐药基因的削减及其机制研究”（21976091），65 万，2020-2023；

2.国家重点研发项目“典型重金属污染农田的固载/去除-农田工程技术耦合与示范”（2017YFD0801000）(科研骨干)，124.5 万，2017-2020；

3.国家自然科学基金面上项目“污泥生物沥浸中多环芳烃的降解:生物成因次生矿物催化的类 Fenton 作用机制及其调控”（21477055），84 万，2015-2018；

4.国家自然科学基金青年基金项目“基于丝状真菌和嗜酸性硫杆菌配合作用的污泥生物沥浸法促进污泥脱水的研究”（21307059），26 万，2014-2016；

5.江苏省自然科学基金“污泥生物沥浸体系中丝状真菌促进重金属浸出和改善污泥脱水性能的机制研究”（BK20130667），20 万，2013-2016；

6.教育部博士学科点专项科研基金新教师类项目（20130097120008），4 万，2014-2016；

7.中央高校基本科研业务费（KJQN201435），10 万，2014-2016；

8.南京农业大学高层次引进人才启动经费，50 万，2013-2017.

七、代表性论文（*通讯作者）

1. Lu, Y., Xiao, Y., **Zheng, G.**,* Lu, J., Zhou, L., 2020. Conditioning with zero-valent iron or Fe2+ activated peroxydisulfate at an acidic initial sludge pH removed intracellular antibiotic resistance genes but increased extracellular antibiotic resistance genes in sewage sludge. Journal of Hazardous Materials, 386:121982.

2. Meng, X., Zhang, C., Zhuang, J., **Zheng, G.,*** Zhou, L., 2020. Assessment of schwertmannite, jarosite and goethite as adsorbents for efficient adsorption of phenanthrene in water and the regeneration of spent adsorbents by heterogeneous fenton-like reaction. Chemosphere, 244: 125523.

3. **Zheng, G.**, Lu, Y., Wang, D., Zhou, L.,* 2019. Importance of sludge conditioning in attenuating antibiotic resistance: Removal of antibiotic resistance genes by bioleaching and chemical conditioning with Fe[III]/CaO. Water Research, 152: 61-73.

4. Lu, Y., **Zheng, G.**,* Zhou, W., Wang, J., Zhou, L., 2019. Bioleaching conditioning increased the bioavailability of polycyclic aromatic hydrocarbons to promote their removal during co-composting of industrial and municipal sewage sludges. Science of the Total Environment, 665: 1073-1082.

5. Xiao, Y., Lu, Y., **Zheng, G.**,* Zhou, L., 2019. Impact of initial sludge pH on enhancing the dewaterability of waste activated sludge by zero-valent iron-activated peroxydisulphate, Environmental Technology, DOI:. 10.1080/095933302019.1707880.

6. Lu, Y., Zhang, C., **Zheng, G.**,* Zhou, L., 2019. Improving the compression dewatering of sewage sludge through bioacidification conditioning driven by Acidithiobacillus ferrooxidans: dewatering rate vs. dewatering extent. Environmental Technology, 40(24): 3176-3189.

7. Jin, D., Liu, L., **Zheng, G.**, Liang, J., Zhou, L., 2019. A rapid method to quantify the biomass of viable Acidithiobacillus ferrooxidans in iron-based bioleaching matrix of sewage sludge. Biochemical Engineering Journal, 152: 10736.

8. Wang, N., Fang, D., **Zheng, G.**, Liang, J., Zhou, L., 2019. A novel approach

coupling ferrous iron biooxidation and ferric iron chemo-reduction to promote biomineralization in simulated acidic mine drainage. RSC Advances, 9: 5083-5090.

9. Zhou, W., Lu, Y., Jiang, S., Xiao, Y., **Zheng, G.,*** Zhou, L., 2018. Impact of sludge conditioning treatment on the bioavailability of pyrene in sewage sludge. Ecotoxicology and Environmental Safety, 163: 196-204.

10. Yan, S., Meng, X., **Zheng, G.,*** Zhou, L., 2017. Assessment of catalytic activities of selected iron hydroxysulphates biosynthesized using *Acidithiobacillus ferrooxidans* for the degradation of phenol in heterogeneous Fenton-like reactions. Separation and Purification Technology, 185: 83-93**.**

11. Meng, X., Yan, S., Wu, W., **Zheng, G.,*** Zhou, L., 2017. Heterogeneous Fenton-like degradation of phenanthrene catalyzed by schwertmannite biosynthesized using *Acidithiobacillus ferrooxidans.* RSC Advances, 7: 21638-21648.

12. Lu, Y., **Zheng, G.,*** Wu, W., Cui, C., Zhou, L., 2017. Significances of deflocculated sludge flocs as well as extracellular polymeric substances in influencing the compression dewatering of chemically acidified sludge. Separation and Purification Technology, 176: 243-251.

13. **Zheng, G.**, Wang, Z., Wang, D., Zhou, L., 2016. Enhancement of Sludge Dewaterability by Sequential Inoculation of Filamentous Fungus *Mucor circinelloides* ZG-3 and *Acidithiobacillus ferrooxidans* LX5. Chemical Engineering Journal, 284, 216-223.

14. Hu, W., **Zheng**, **G.,** Fang, D., Cui, C., Liang, J., Zhou, L., 2015. Bioleached sludge composting drastically reducing ammonia volatilization as well as decreasing bulking agent dosage and improving compost quality: A case study. Waste Management, 44**,** 55-62.

15. **Zheng, G.**, Huo, M., Zhou, L., 2015. Extracellular Polymeric Substances Level Decides the Sludge Dewaterability in Bioleaching Process. Journal of Environmental Engineering-ASCE, DOI: 10.1061/(ASCE)EE.1943-7870.0001008.

16. Wang, Z., **Zheng, G.,*** Zhou, L., 2015. Degradation of Slime Extracellular Polymeric Substances and Inhibited Sludge Flocs Destruction Contribute to Sludge Dewaterability Enhancement during Fungal Treatment of Sludge Using Filamentous

Fungus *Mucor* sp. GY-1. Bioresource Technology, 192, 514-521.

17. Zhang, Z., Lo, M.C.I., **Zheng, G.,** Woon, K.S., Rao, P., 2015. Effect of autotrophic denitrification on nitrate migration in sulfide-rich marine sediments. Journal of Soils and Sediments, 15(4): 1019-1028.

18. Zhang, Z., **Zheng, G.,** Lo, M.C.I., 2015. Enhancement of nitrate-induced bioremediation in marine sediments contaminated with petroleum hydrocarbons by using microemulsions. Environmental Science and Pollution Research, 22, 8296-8306.

19. Zhou, J.,[#] **Zheng, G.,**[#] Zhang, X., Zhou, L., 2014. Influences of extracellular polymeric substances on the dewaterability of sewage sludge during bioleaching. PLoS One, 9(7): e102688. ([#]equal contribution by authors).

20. Huo, M.,[#] **Zheng, G.,**[#] Zhou, L., 2014. Enhancement of the dewaterability of sludge during bioleaching mainly controlled by microbial quantity change and the decrease of slime extracellular polymeric substances content. Bioresource Technology, 168: 190-197. ([#]equal contribution by authors).

21. Song, Y., **Zheng, G.**, Huo, M., Zhao, B., Zhou, L., 2014. Extracellular polymeric substances and bound water drastically affect bioleached sludge dewaterability at low temperature. Environmental Technology, 35(20): 2538-2545.

22. Zhou, J., **Zheng, G.**, Zhou, L., Wong, J.W.C., 2013. Degradation of inhibitory substances in sludge by *Galactomyces* sp. Z3 and the role of its extracellular polymeric substances in improving bioleaching. Bioresource Technology, 132: 217-223.

23. Zhou, J., **Zheng, G.**, Zhou, L., Liu, F., Zheng, C., Cui, C., 2013. The role of *Galactomyces* sp. Z3 in improving pig slurry bioleaching. Environmental Technology, 34(1), 35-43, 2013.

24. **Zheng, G.**, Selvam, A., Wong, J.W.C., 2012. Enhanced solubilization and desorption of organochlorine pesticides (OCPs) from soil by oil-swollen micelles formed with a nonionic surfactant. Environmental Science & Technology, 46 (21): 12062-12068.

25. **Zheng, G.**, Selvam, A., Wong, J.W.C., 2012. Oil-in-water microemulsions

enhance the biodegradation of DDT by *Phanerochaete chrysosporium*. Bioresource Technology, 126: 397-403.

26. **Zheng, G.**, Zhou, L., 2011. Supplementation of inorganic phosphate enhancing the removal efficiency of tannery sludge-borne Cr through bioleaching. Water Research, 45: 5295-5301.

27. **Zheng, G.**, Selvam, A., Wong, J.W.C., 2011. Rapid degradation of lindane (γ-hexachlorocyclohexanes) at low temperature by *Sphingobium* strains. International Biodeterioration & Biodegradation, 65: 612-618.

28. **Zheng, G.,** Zhao, Z., Wong, J.W.C., 2011. Role of non-ionic surfactants and plant oils on the solubilization of organochlorine pesticides by oil-in-water microemulsions. Environmental Technology, 32(3): 269-279.

29. Wang, D., **Zheng, G.**, Zhou, L., 2011. Isolation and characterization of a nitrobenzene-degrading bacterium *Klebsiella ornithinolytica* NB1 from aerobic granular sludge. Bioresource Technology, 110: 91-96.

30. Wang, D., **Zheng, G.,** Wang, S., Zhang, D., Zhou, L., 2011. Biodegradation of aniline by *Candida tropicalis* AN1 isolated from aerobic granular sludge. Journal of Environmental Sciences, 23(12): 2063-2068.

31. Wang, S.,* **Zheng, G.**,* Zhou, L., 2010. Heterotrophic microorganism *Rhodotorula mucilaginosa* R30 improves tannery sludge bioleaching through elevating dissolved CO_2 and extracellular polymeric substances levels in bioleach solution as well as scavenging toxic DOM to *Acidithiobacillus* species. Water Research, 44: 5423-5431. (*equal contribution by authors).

32. **Zheng, G.**, Zhou, L., Wang, S., 2009. An acid-tolerant heterotrophic microorganism role in improving tannery sludge bioleaching conducted in successive multibatch reaction systems. Environmental Science & Technology, 43 (11): 4151-4156.

八、招生情况：

欢迎具有环境工程、环境科学或微生物学背景的考生报考硕士、博士研究生，每年招收硕士研究生 2-3 名、博士研究生 1-2 名。可提

供良好的科研环境、国际合作交流机会等帮助研究生成长。