

肖雷雷，男，1985年生，山东昌邑市人，九三学社社员，理学博士，中国科学院烟台海岸带研究所副研究员。兼任聊城大学地理与环境学院硕士研究生导师，研究方向为海岸带生态系统碳收支关键过程及碳汇评估。荣获“海洋工程科学技术奖”一等奖。

**教育经历：**

2006.09-2010.07 中国农业大学 食品质量与安全 理学学士

2010.09-2015.06 南京师范大学 生态学 理学博士

**工作经历：**

2015.06-2022.09 中国科学院烟台海岸带研究所，助理研究员

2022.09-至今 中国科学院烟台海岸带研究所，副研究员

**学术兼职：**

2022.4-至今 国际期刊 Environmental Chemistry Letters (associate editor)

2022.3-至今 国际期刊 Annals of Microbiology (editor)

2022.4-2024.3 国际期刊 Journal of Applied Microbiology (editor)

**招生专业：**

自然地理学

**科研项目：**

国家自然科学基金山东省联合基金项目：黄河口盐沼湿地固碳关键过程、调控机理及增汇潜力研究（U2106209），263万元，2022.01-2025.12，课题负责人

国家自然科学基金面上项目：电微生物-生物炭促进土壤乙酸裂解产甲烷的胞外电子传递机制（42077025），57万元，2021.01-2024.12，主持

中国科学院青年创新促进会人才项目：滨海湿地甲烷产生过程及生态环境影响（2021213），80万元，2021.01-2024.12，主持

国家自然科学基金青年科学基金项目：氮沉降对黄河三角洲滨海湿地甲烷产生途径的影响（41703075），25万元，2017.01-2020.12, 主持

山东省自然科学基金青年基金项目：CO2浓度升高对黄河三角洲甲烷产生的影响研究，传递机，11万元，2016-2019，主持

国家自然科学基金委员会面上项目: 生物炭和天然有机质协同介导电子传递对稻田甲烷产生的影响研究(42277236), 53万元，2023.01- 202612, 在研, 参与

国家自然科学基金委员会面上项目： 海岸带典型生境甲烷杆菌的种间直接电子传递机制(42273082)，58万元，2023.01-202612, 58万元, 在研, 参与

国家自然科学基金委员会地区科学基金项目： 马尾松外生菌根真菌对菌根际细菌群落及其功能多样性的调控机制（32260031），33万元，2023.01-202612，33万元, 在研, 参与

**科研奖励：**

导电矿物对环渤海河流及湿地甲烷产生的影响及机制，海洋工程科学技术奖一等奖，中国海洋工程咨询协会，2020，第2完成人 (省部级)

**国际合作：**

Carlos M. Duarte King Abdullah University of Science and Technology (KAUST) 欧洲科学院士； Andrew Tanentzap Cambridge University/Trent University （Canada Research Chair in Climate Change and Northern Ecosystems）；Isaac Santos University of Gothenburg （Editor-in-Chief Global Biogeochemical Cycles）；Robert Spencer Florida State University

**代表论著：**

Zhou LF, Zhang LR, Dang R, Han GX, Liu J, Zhou M, **Xiao L\*.** Microbiota-induced asymmetry in coastal methane emission potential under experimental precipitation gradients. Environ Tes 2025, 266(1), 120601.

Xiao K, Wu YC, Pan F, Huang, YR, Peng, HB, Lu, MQ, Zhang, Y, Li, HL, Zheng, Y, Zheng, CM, Liu, Y, Chen, NW, **Xiao, LL**, Han, GX, Li, YS, Xin, P, Li, RL, Xu, BC, Wang, FM, Tamborski, JJ, Wilson, AM, Alongi DM, Santos IR. Widespread crab burrows enhance greenhouse gas emissions from coastal blue carbon ecosystems. Commun Earth Environ 2024, 5:437.

Xiao Y, Zhou M, Liu X, Zhang X, **Xiao L**, Liu J, Cruse RM. Pore connectivity and anisotropy affect carbon mineralization via extracellular enzymes in > 2 mm aggregates under conservation tillage of mollisols. Soil Till Res 2024, 244:106253.

Zhang LR, Han GX, Zhou LF, Li XG, Wang XJ, Zhang XS, **Xiao LL\***. Moderate increase of precipitation stimulates CO2 production by regulating soil organic carbon in a saltmarsh. Front. Microbiol. 2024, 15:1328965.

Fu C, Li Y, Zeng L, Tu C, Wang X, Ma H, **Xiao L**, Christie P, Luo Y. Climate and mineral accretion as drivers of mineral-associated and particulate organic matter accumulation in tidal wetland soils. Glob Chang Biol. 2024, 30(1):e17070.

Liu J, Yu J, Tan Y, Dang R, Zhou M, Hernández M, Lichtfouse E, **Xiao L\***. Biomethane is produced by acetate cleavage, not direct interspecies electron transfer: genome-centric view and carbon isotope. Bioresour Technol. 2023, 387:129589.

Yu J, Liu J, Senthil Kumar P, Wei Y, Zhou M, Vo DN, **Xiao L\*.** Promotion of methane production by magnetite via increasing acetogenesis revealed by metagenome-assembled genomes. Bioresour Technol. 2022, 345:126521.

Tan J, Luo M\*, Tan F., Lichtfouse E., Zhang C., Chen X., Huang J., Tan Y., **Xiao L\*.** Iron reduction controls carbon mineralization in aquaculture shrimp pond sediments in subtropical estuaries. JGR Biogeosciences 2022, 127:e2022JG007081.

Hao Q, Wang O, Jiao W-Y, **Xiao L**, Zhang Y, Li W-J, Liu F. Methylobacter couples methane oxidation and N2O production in hypoxic wetland soil. Soil Bio Biochem 2022, 175, 108863.

Tan J, Lichtfouse E, Luo M, Liu Y, Tan F, Zhang C, Chen X, Huang J, **Xiao L\*.** Aquaculture drastically increases methane production by favoring acetoclastic rather than hydrogenotrophic methanogenesis in shrimp pond sediments. Aquaculture 2023, 563:738999.

Li YW, Ma YH, Lichtfouse E, Song J, Gong, R, Zhang, JH, Wang, S, **Xiao L\***. *In situ* electrochemical synthesis of graphene-poly(arginine) composite for p-nitrophenol monitoring. J. Hazard. Mater. 2022, 421:126718.

**Xiao** **L,** Liu, FH, P. Senthil Kumar P, Wei YW, Liu J\*, Han DF, Shan SJ, Wang, XY, Dang, R, Yu JF. Rapid removal of chloramphenicol via the synergy of Geobacter and metal oxide nanoparticles. Chemosphere 2022, 286:131943.

**Xiao L\***, Liu J, Senthil Kumar, P, Zhou M, Yu JF, Lichtfouse E. Enhanced methane production by granular activated carbon: A review, Fuel, 2022, 320:123903.

**Xiao** **L\***, Lichtfouse, E, Kumar S. Advantage of conductive materials on interspecies electron transfer-independent acetoclastic methanogenesis: A critical review. Fuel, 2021, 306:121577.

Liu J, Liu F, Yu J\*, Wang Q, Li Z, Liu K, Xu C, Yu H, **Xiao L\***, Proteomics reveal biomethane production process induced by carbon nanotube. Environ. Res. 2021, 200:111417.

**Xiao L**, Li J, Lichtfouse E, Li, Z, Wang Q, Liu F\*, Augmentation of chloramphenicol degradation by Geobacter-based biocatalysis and electric field. J. Hazard. Mater. 2021, 410:124977.

**Xiao L**\*, Lichtfouse E\*, Kumar S, Wang Q, Liu F. Biochar promotes methane production during anaerobic digestion of organic waste. Environ. Chem. Lett. 2021, 19:3557–3564.

**Xiao L**, Wang Y, Lichtfouse E, Li Z, Kumar S\*, Liu J, Feng D.\*, Yang Q, Liu, F. Effect of antibiotics on the microbial efficiency of anaerobic digestion of wastewater: a review. Front. Microbiol. 2021, 11:611613.

Zhang YC, Liu FH,\* Hao QQ, **Xiao LL**\*. Target-oriented recruitment of Clostridium to promote biohydrogen production by nano-ferrihydrite. Fuel, 2020, 276:118049.

**Xiao L**, Zheng S, Lichtfouse E, Luo M, Tan Y, Liu, F. Carbon nanotubes accelerate acetoclastic methanogenesis: From pure cultures to anaerobic soils. Soil Biology and Biochemistry 2020, 150:107938.

Hao Q, Liu F, Zhang Y, Wang O, **Xiao L**\* Methylobacter accounts for strong aerobic methane oxidation in the yellow river delta with characteristics of a methane sink during the dry season. Science of The Total Environment, 2020, 704:135383.

**Xiao L**, Wei W, Luo M, Xu H, Feng D, Yu J, Huang J, Liu F. A potential contribution of a fe(III)-rich red clay horizon to methane release: Biogenetic magnetite-mediated methanogenesis. Catena 2019, 181:104081.

**Xiao L**, Liu F, Lichtfouse E, Zhang P, Feng D, Li F. Methane production by acetate dismutation stimulated by shewanella oneidensis and carbon materials: An alternative to classical CO2 reduction. Chemical Engineering Journal 2020, 389:124469.

**Xiao L**, Liu F, Xu H, Feng D, Liu J, Han G. Biochar promotes methane production at high acetate concentrations in anaerobic soils. Environ Chem Lett 2019, 17:347–1352.

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