

陈柯老师简介

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研究方向：植物修复、土壤修复

学者简介：2012年获中国地质大学（武汉）环境科学与工程专业博士学位。2012-2014年在中国科学院武汉植物园进行博士后研究。先后在德国赫姆霍兹国家研究会莱比锡环境中心（UFZ）、斯洛文尼亚新戈里察大学环境科学学院（University of Nova Gorica）及意大利国际高等研究院（SISSA）进行访问研究。2014年至今在中南民族大学资源与环境学院从事重金属污染土壤的植物修复相关研究。迄今为止已在*Journal of Hazards Materials*、*Chemosphere*、*Ecotoxicology and Environmental Safety*、*Environmental and Experimental Botany*、*Geomicrobiology Journal*、*Photosynthesis Research*等杂志发表SCI论文30余篇，其中第一及通讯作者17篇。

本人长期以分析化学、土壤学、微生物学和植物学为基础，应用微生物及植物修复有机物及重金属污染的土壤，探讨污染物在土壤及植物中的动态迁移过程和降解机制，开发污染土壤的生物修复技术并将其应用于工程实践。欢迎对本研究

领域有强烈兴趣的学生加入课题组开展相关科研活动。

主讲课程：

（本科生课程）环境影响评价

（研究生课程）水环境化学

教学及科研项目：

教学项目：

1. 2019中南民族大学教学研究项目（思政专项）：思政教育在《环境影响评价》课程中的实践路径探究（JYX19092），2万。
2. 2018校级实验室开放与技改项目：多层根箱研究植物修复镉污染土壤中的根-土界面生物地球化学行为（KF2018002），1万。
3. 2017校级教学改革研究项目：加强实践教学与工程实际对接，培养环境工程专业应用型人才(JYX17047)；0.8万。
4. 中南民族大学2016-2017-2学期课程教学改革项目，0.1万。

科研项目

1. 中南民族大学，中央高校基本科研业务费专项资金项目-重点项目，CZZ19006，激素处理调控植物地上部Cd富集的机制研究，2019-01至2020-12，8万，在研，主持；
2. 企业委托项目，HZY18030，赤壁市土地清查项目，2018-10至2020-09，40万，在研，主持；
3. 中南民族大学，中央高校基本科研业务费专项资金项目-一般项目，CZY18041，植物修复过程根际微域的生物地球化学行为研究，2018-01至2018-12，6万，结题，主持；
4. 国家自然科学基金委员会，青年基金项目，41503067，NO在高羊茅植物修复镉污染土壤中的作用及其调控机制，2016-01至2018-12，22万，结题，主持；
5. 科技部，国家科技支撑计划项目，2015BAB01B00，菱锰矿高效综合利用及污染治理关键技术及示范，2014-01至2017-12，1777万，结题，参与；
6. 国家自然科学基金委员会，国际合作重大项目，40920134003，大港油田特殊地质环境下的地微生物生命形式及地质学意义，2013-01至2016-12，150万，结题，参与；
7. 国家自然科学基金委员会，杰出青年科学基金项目，40925010，污染物环境生物地球化学行为及地微生物学响应，2010-1至2013-12，200万，结题，参与；

教学及科研论文：

2020年：

1. Hong Niu[#], YiFei Leng[#], Xuecheng Li, Qian Yu, Hang Wu, Junchao Gong, HaoLin Li, **Ke Chen***, Behaviors of cadmium in rhizosphere soils and its interaction with microbiome communities in phytoremediation, *Chemosphere*, 2020.
2. Huihui Zhu, Honglian Ai, Zhengrong Hu, Jie Sun, **Ke Chen***, **Liang Chen***, Comparative transcriptome combined with metabolome analyses revealed key factors involved in nitric oxide (NO)-regulated cadmium stress adaptation in tall fescue, *BMC Genomics*, 2020, 21, 601
3. Yiguang Qian, Liwen Cao, Qiang Zhang, Maurice Ameer, **Ke Chen*** and **Liang Chen***, SMRT and Illumina RNA sequencing reveal novel insights into the heat stress response and crosstalk with leaf senescence in tall fescue, *BMC Plant Biology*, 2020, 20, 36

6.

4. Huihui Zhu[#], Liang Chen[#], Wei Xing, Shangmin Ran, Zhihui Wei, Maurice Ameer, Misganaw Wassie, Hong Niu, Diyong Tang, Jie Sun, Dongyun Du, Jun Yao, Haobo Hou, **Ke Chen***, Jie Sun*. Phytohormones-induced senescence efficiently promotes the transport of cadmium from roots into shoots of plants: A novel strategy for strengthening of phytoremediation, *Journal of Hazardous Materials*, 2020, 388: 122080.

5. Jing Zhang, Yiguang Qian, Zhongbing Chen, Maurice Ameer, Hong Niu, Dongyun Du, Jun Yao, **Ke Chen***, Liang Chen*, Jie Sun*, Lead-induced oxidative stress triggers root cell wall remodeling and increases lead absorption through esterification of cell wall polysaccharide, *Journal of Hazardous Materials*, 2020, 385: 121524.

6. Hong Niu[#], Yifei Leng[#], Shangmin Ran, Maurice Ameer, Dongyun Du, Jie Sun, **Ke Chen***, Song Hong*, Toxicity of soil labile aluminum fractions and aluminum species in soil water extracts on the rhizosphere bacterial community of tall fescue, *Ecotoxicology and Environmental Safety*, 2020, 187: 109828.

2018年:

7. Meiyu Huang[#], Honglian Ai[#], Xiaoxiang Xu[#], **Ke Chen***, Hong Niu, Huihui Zhu, Jie Sun, Dongyun Du, Liang Chen, Nitric oxide alleviates toxicity of hexavalent chromium on tall fescue and improves performance of photosystem II, *Ecotoxicology and Environmental Safety*, 2018, 164:32-40.

8. Fangman Chen[#], Honglian Ai, [#] Mengting Wei, Chunliu Qin, Yang Feng, Shangming Ran, Zhihui Wei, Hong Niu, Qing Zhu, Huihui Zhu, Liang Chen, Jie Sun, Haobo Hou, **Ke Chen***, Hengpeng Ye*, Distribution and phytotoxicity of soil labile aluminum fractions and aluminum species in soil water extracts and their effects on tall fescue, *Ecotoxicology and Environmental Safety*, 2018, 163: 180-187.

9. Huihui Zhu[#], Honglian Ai[#], Liwen Cao, Ran Sui, Hengpeng Ye, Dongyun Du, Jie Sun, Jun Yao, **Ke Chen***, Liang Chen*, Transcriptome analysis providing novel insights for Cd-resistant tall fescue responses to Cd Stress, *Ecotoxicology and Environmental Safety*, 2018, 160: 349-356.

10. **Ke Chen**, Mohammad Russel*, Changrui Liu, Jun Yao, Lifan Liu, Md. Mahub Alam, Sangil Kim, Simple heat profiles and biogeochemical patterns for analysis the influence on soil microbial community of plastic-greenhouse and open field condition, *Emirates Journal of Food and Agriculture*, 2018, 29 (12): 960-970.

2017年:

11. Meiyu Huang, Huihui Zhu, Diyong Tang, Xiaole Han, Liang Chen, Dongyun Du, Jun Yao, **Ke Chen***, Jie Sun*, Toxic effects of cadmium on tall fescue and different responses of the photosynthetic activities in the photosystem electron donor and acceptor sides, *Scientific Reports*, 2017, 7, 14387.

12. **K. Chen**, Minna Zhang, Huihui Zhu, Meiyu Huang, Qing Zhu, Diyong Tang, Xiaole Han, Jinlin Li, Jie Sun*, Jinmin Fu*, Ascorbic acid alleviates damage from heat stress in the photosystem II of tall fescue in both the photochemical and thermal phases, *Frontiers in Plant Science*, 2017, 8, 1373.

13. Yaqi Zhuo, Shou Qiu, Erick Amombo, Qing Zhu, Diyong Tang, Meiyu Huang, Xiaole Han, Liang Chen, Sha Wang, **K. Chen***, Jie Sun*, Nitric oxide alleviates cadmium toxicity in tall fescue photosystem II on the electron donor side, *Environmental and Experimental Botany*, 2017, 137, 110-118.

2013年以前:

14. **Ke Chen**, Liang Chen, Jibiao Fan, and Jinmin Fu, Alleviation of heat damage to photosystem II by nitric oxide in tall fescue. *Photosynthesis Research*, 2013. 116: 21-31.

15. **Ke Chen**, Zhuangjun Zhao, Xiaoyan Sun, Liang Chen, Qinguo Xu and Jinmin Fu, High correlation between thermotolerance and activities of photosystem II in tall fescue. *Photosynthesis Research*, 2014, 122: 305-314.

16. **K. Chen**[#], Qing Zhu[#], Y.G. Qian, Y. Song, J. Yao and M.F. Choi, Microcalorimetric investigation of the effect of non-ionic surfactant on biodegradation of pyrene by PAH-degrading bacteria *Burkholderia cepacia*. *Ecotoxicology and Environmental Safety*, 2013. 98: 361–367.
17. **Ke Chen**, Jun Yao, Shihua Qi, Shixue Zheng, Yi Luo, Gyula Zaray, Fei Wang, Russel Mohammad, and Martin M.F. Choi, *Characterization of Depth-Related Microbial Community Activities in Freshwater Sediment by Combined Method*. *Geomicrobiology Journal*, 2011, 28: 328-334.
18. **Ke Chen**, Malev C., Raspor L., Yao J., Trebše P., Fabbretti E. “Effects of Imidacloprid on F11 cellular model”. The 11th European Meeting on Environmental Chemistry – EMEC11, Portorož, Slovenia, 8-11 December 2010.
19. Zheng, S.X., Hu, J.L., **Ke Chen**, J. Yao, Z.N. Yu, and X.G. Lin, *Soil microbial activity measured by microcalorimetry in response to long-term fertilization regimes and available phosphorous on heat evolution*. *Soil Biology & Biochemistry*, 2009. 41: 2094-2099.
20. Chen, Y.J., J. Yao, **Ke Chen**, F. Wang, Y. Zhou, H.L. Chen, N. Gai, B. Ceccanti, P. Trebse, G. Zaray, M.M.F. Choi, and M.H. Wong, *Microcalorimetric investigation of the toxic action of pyrene on the growth of PAH-degrading bacteria *Acinetobacter junii**. *Journal of Environmental Science and Health Part A-Toxic/Hazardous Substances & Environmental Engineering*, 2010. 45: 668-673.
21. Wang, F., J. Yao, H.L. Chen, **Ke Chen**, P. Trebse, and G. Zaray, *Comparative toxicity of chlorpyrifos and its oxon derivative to soil microbial activity by combined methods*. *Chemosphere*, 2010. 78: 319-326.
22. Wang, F., J. Yao, Y. Si, H.L. Chen, M. Russel, **Ke Chen**, Y.G. Qian, G. Zaray, and E. Bramanti, *Short-time effect of heavy metals upon microbial community activity*. *Journal of Hazardous Materials*, 2010. 173: 510-516.
23. Chen, H.L., J. Yao, F. Wang, Y. Zhou, **Ke Chen**, R.S. Zhuang, M.M.F. Choi, and G. Zaray, *Toxicity of three phenolic compounds and their mixtures on the gram-positive bacteria *Bacillus subtilis* in the aquatic environment*. *Science of The Total Environment*, 2010. 408(5): p. 1043-1049.
24. Chen, H.L., J. Yao, F. Wang, Y. Zhou, **Ke Chen**, R.S. Zhuang, and G. Zaray, *Investigation of the Acute Toxic Effect of Chlorpyrifos on *Pseudomonas putida* in a Sterilized Soil Environment Monitored by Microcalorimetry*. *Archives of Environmental Contamination and Toxicology*, 2010. 58(3): p. 587-593.
25. Wang, F., J. Yao, M. Russel, H.L. Chen, **Ke Chen**, Y. Zhou, B. Ceccanti, G. Zaray, and M.M.F. Choi, *Development and analytical application of a glucose biosensor based on glucose oxidase/O-(2-hydroxyl)propyl-3-trimethylammonium chitosan chloride nanoparticle-immobilized onion inner epidermis*. *Biosensors & Bioelectronics*, 2010. 25(10): p. 2238-2243.

专著:

崔龙哲, 李社锋, 王文坦, 王松波, 宋自新, 吴俊峰, 朱文渊, 张胜花, 邵雁, 吴来燕, 黄凰, 陈柯, 肖国俊, 马海清, 刘更生, 刘瑾, 2016, 污染土壤修复技术与应用, 化学工业出版社。

专利:

1. 陈柯, 祝慧慧, 孙杰, 牛宏, 一种提高植物对重金属吸收转运能力的复合药剂及其制备方法和应用 (专利号: ZL201810489905.8)。
2. 汤迪勇, 孙杰, 雷炜东, 张硕文, 刘玉婷, 陈柯, 一种利用花生壳制备电化学电容器用极板碳材料的方法 (专利号: ZL201711488765.4)。
3. 汤迪勇, 孙杰, 杨葆坤, 雷炜东, 田文龙, 陈柯, 一种利用水葫芦制备多孔碳材料的方法及应用 (专利号: ZL201711488754.6)。
4. 陈柯, 杨成军, 孙杰, 牛宏, 一种利用高羊茅猎狗五号修复锰矿地区重金属污染偏碱性土壤的方法 (申请号: 201810652734.6)。

获奖情况:

2019年度全国高校环境类专业优秀毕业设计（论文）奖指导老师；

2019湖北省第十二届“挑战杯”二等奖指导老师；

2018省级大学生创新创业项目优秀指导教师；

2017省级大学生创新创业项目优秀指导教师。

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