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SCHOOL OF ENVIRONMENT AND ENERGY

PEKING UNIVERSITY
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About

Located in Shenzhen, a global hub for innovation, Peking University Shenzhen Graduate School (Nanyan Campus) combines Peking University's academic excellence with cutting-edge research facilities. Our international campus fosters interdisciplinary collaboration, offering students access to world-class faculty, advanced laboratories, and partnerships with pioneering industries.

Welcome to the School of Environment and Energy (SEE) at Peking University

SEE, a global leader in environmental science and engineering. Our cutting-edge master's programs empower students to address pressing global challenges, such as climate change, pollution, and sustainable energy, through innovative research and interdisciplinary collaboration. SEE offers international students a dynamic academic environment, world-class faculty, and opportunities to contribute to ecological and technological advancements.

Our key disciplines include

- Atmospheric Environmental Science: Tackling air pollution and climate change through advanced modeling and observations.
- Ecological and Intelligent Water System: Innovating eco- and intelligent solutions for water security, water quality improvement and ecosystem health in urban and coastal areas.
- Pollution Reduction and Carbon Mitigation Technologies: Developing technologies to achieve carbon neutrality and reduce environmental impact.
- Smart Environment and Energy Big Data: Harnessing data analytics for sustainable environmental management.
- Mangrove Conservation and Ecological Restoration: Protecting coastal ecosystems and biodiversity through cutting-edge research.

Jinren Ni

Professor

Academician of the Chinese Academy of Sciences

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Education Background

BSc, Wuhan University, China

MSc & PhD, Tsinghua University, China

Research Interests

- Monitoring and big data platform of all material fluxes in water ecosystems
- Comprehensive basin management model with continuous improvement of the system “eco-efficiency”
- Dynamics, geomorphology, pollution source control technology and governance engineering of rivers.

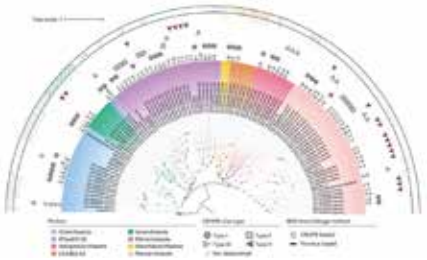
Representative Publications

1. Wu ZZ, Liu T, Chen Q, Chen TY, Hu JY, Sun LY, Wang BX, Li WP, Ni JR*. Unveiling the unknown viral world in groundwater. Nature Communications, 2024, 15, 6788.

2. Wu ZZ, Liu SF, Ni JR*. Metagenomic characterization of viruses and mobile genetic elements associated with the DPANN archaeal superphylum. Nature Microbiology. 2024, 9, 3362–3375.

3. Ma RQ, Yan MQ, Han P, Wang T, Li B, Zhou SG, Zheng T, Hu YD, Borthwick AGL, Zheng CM, Ni JR*. Deficiency and excess of groundwater iodine and their health associations. Nature Communications, 2022, 13, 7354.

4. Wang YC, Chen XB, Borthwick AGL, Li TH, Liu HH, Yang SF, Zheng CM, Xu JH, Ni JR*. Sustainability of global Golden Inland Waterways. Nature Communications, 2020, 11, 1553.



Huapeng Qin

Professor

Dean of SEE

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Education Background

BSc, Tsinghua University, China

PhD, Peking University, China

Research Interests

- Intelligent Water System
- Coastal Environment and Ecological management
- Stormwater Management and Sponge City Construction

Representative Publications

1. Cao, X.Y., Wang, B.Y., Yao, Y., Zhang, L., Xiang, Y.W., Mao, J.Q., Zhang, R.Q., Fu, G.T., Borthwick, A.G.L., Qin, H.P. (2025). U-RNN high-resolution spatiotemporal nowcasting of urban flooding. Journal of Hydrology, 659, 133117

2.Ding, W., Qin, H.P., Wang, F., Xia, C.X. (2024). Leaching sources and mechanisms of different nitrogen species from bioretention systems. Water Research 260,121911

3. Yu, S.Q., Qin, H.P., (2023). Modeling the effects of plant uptake dynamics on nitrogen removal of a bioretention system. Water Research. 247, 120763

4. Zhang L., Qin H.P., Mao J.Q., Cao X.Y., Fu G.T. (2023) High temporal resolution urban flood prediction using attention-based LSTM models. Journal of Hydrology. 620, 129499

Nan Xu

Professor

Vice Dean of SEE

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Education Background

BSc, Dalian University of Technology, China

PhD, Peking University, China

PostDoc, University of Oxford, UK

Research Interests

- Target and Non-target Screening of Emerging Contaminants (ECs) in Aquatic Environment
- Ecological Risk Assessment of ECs to Aquatic Organisms
- Enhanced Removal of ECs Based on Novel Functional Materials

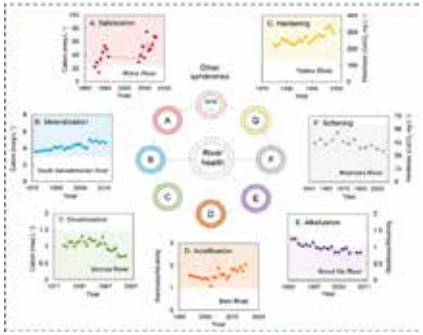
Representative Publications

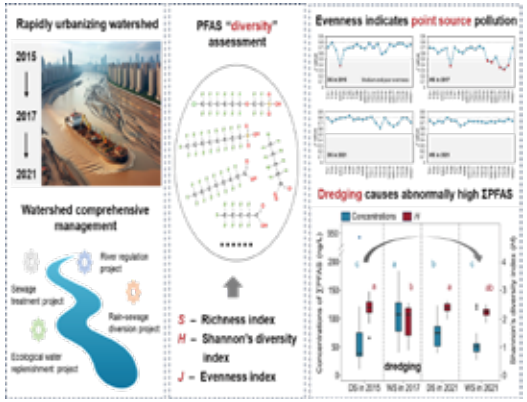
1. Xu N#*, Pan ZL#, Guo WJ, Li SY, Li DB, Dong YR, Sun WL. Impacts of rapidly urbanizing watershed comprehensive management on per- and polyfluoroalkyl substances pollution: based on PFAS "diversity" assessment. Water Research, 2024, 261, 122010.

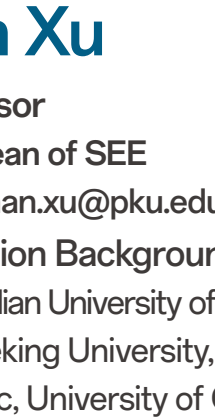
2. Gao DX, Lu YR, Chen YP, Bao MY, Xu N*. Novel CoFe2Px derived from CoFe2O4 for efficient peroxymonosulfate activation: switching the reaction route and suppressing metal leaching. Applied Catalysis B: Environmental, 2022, 309, 121234.

3. Wu J#, Xu N#, Wang YC, Zhang W, Borthwick AGL, Ni JR*. Global syndromes induced by changes in solutes of the world's large rivers. Nature Communications, 2021, 12, 5940.

4. Li J, Gao Y, Xu N*, Li B, An R, Sun WL, Borthwick AGL, Ni JR*. Perfluoroalkyl substances in the Yangtze River: changing exposure and its implications after operation of the Three Gorges Dam. Water Research, 2020, 182, 115933.







Guoyu Qiu

Professor

Email: qiugy@pkusz.edu.cn

Education Background

BSc, Inner Mongolia Forestry College, China

MSc, Chinese Academy of Sciences, China

PostDoc, Tottori University, Japan

Research Interests

- New Energy Information Engineering
- Urban Water Resources and Water Environment
- Geohydrology

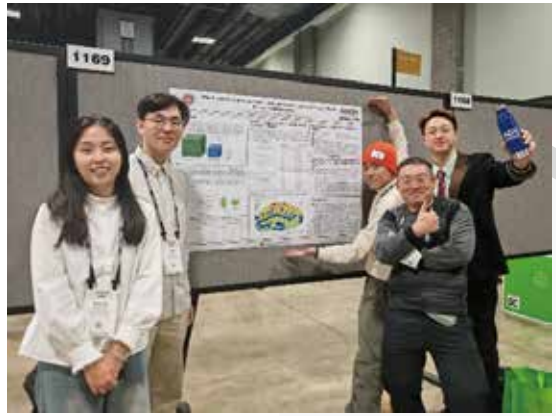
Representative Publications

1. Zhang, C., Li, W., Cui, J., Wang, P., Tian, X., Dai, Y., Gao, Y., & Qiu, G.* (2024). The windbreak effects of organic fence made from branches of Salix psammophila in Hobq Desert. Land Degradation & Development, 35, 3653-3662.

2. Mao, P., Jiang, B., Shi, Z., He, Y., Shen, T., & Qiu, G.*(2023). Effects of UAV flight height on biomass estimation of desert shrub communities. Ecological Indicators, 154, 110698.

3. Qiu, G.*, Yan, C., & Liu, Y. (2023). Urban evapotranspiration and its effects on water budget and energy balance: Review and perspectives. Earth-Science Reviews, 246, 104577.

4. Wang, B., Yan, C., Shi, Z., Jinshan, D., Zhang, T., Qin, L., & Qiu, G.* (2023). Seasonal variation in water uptake patterns of two greening species and their responses to rainfall events in a subtropical megacity of China. Journal of Hydrology, 618, 129262.



Haodong Ji

Assistant Professor

Dean Assistant of SEE

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Education Background

BSc, Nanjing Tech University, China

MSc, Auburn University, US

PhD, Auburn University, US

Research Interests

- Environmental Hazardous Contaminant Removal
- Environmental Quantum Chemistry & Environmental Engineering Modeling
- Natural Degradation and Remediation of Petroleum Hydrocarbons in Marine Environments
- Synthesis and Application of Environmental Functional Materials

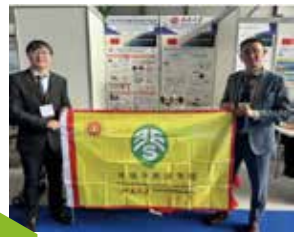
Representative Publications

1. Mingyan Lan, Yuhang Li, Chongchen Wang, Xinjie Li, Jiazhen Cao, Linghui Meng, Shuai Gao, Yuhui Ma, **Haodong Ji***, Mingyang Xing. Multi-channel electron transfer induced by polyvanadate in metal-organic framework for boosted peroxymonosulfate activation. Nature Communications 2024, 15 (1), 7208.

2. Bing Li, Degui Gao, **Haodong Ji*.** Environmental quantum chemistry for the phosphorus cycle. Trends in Chemistry 2025, 7(2):62-65.

3. Ligang Xu[1], **Haodong Ji**[1], Wei Qiu, Xin Wang, Yan Liu, Yuanhao Li, Jing Li, Xin Zhang, Daiquan Zhang, Jiexue Wang, Ye Tao, Meicheng Li, Runfeng Chen. Enhanced Resonance for Facilitated Modulation of Large‐Area Perovskite Films with Stable Photovoltaics. Advanced Materials 2023, 35 (47), 2301752.

4. **Haodong Ji**, Penghui Du, Dongye Zhao, Si Li, Fengbin Sun, Evert C Duin, Wen Liu*. 2D/1D graphitic carbon nitride/titanate nanotubes heterostructure for efficient photocatalysis of sulfamethazine under solar light. Applied Catalysis B: Environmental 2020, 263, 118357.



Peng Zhou

Assistant Professor

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Education Background

BSc, Wuhan University of Technology, China

MSc, Wuhan University of Technology, China

PhD, Chinese Academy of Sciences, China

PostDoc. Peking University, China

PostDoc. University of Michigan (Ann Arbor) , US

Research Interests

- Photocatalytic water splitting for hydrogen production
- Photocatalytic organic synthesis and reaction mechanism
- Photocatalytic high-value conversion of biomass
- Photocatalytic plastic recycling and utilization
- Design and development of photocatalytic device

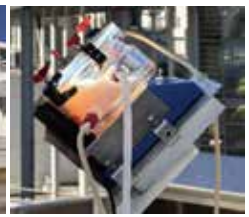
Representative Publications

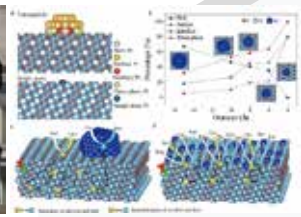
1. Peng Zhou, Ishtiaque Ahmed Navid, Yongjin Ma, Yixin Xiao, Ping Wang, Zhengwei Ye, Baowen Zhou, Kai Sun, Zetian Mi*. Solar-to-hydrogen efficiency of more than 9% in photocatalytic water splitting. Nature, 2023, 613: 66-70.

2. Hao Tan, Peng Zhou, Meixian Liu, Qinghua Zhang, Fuyang Liu, Hongyu Guo, Yin Zhou, Yan Chen, Lingyou Zeng, Lin Gu, Zhanfeng Zheng, Meiping Tong, Shaojun Guo*. Photocatalysis of water into hydrogen peroxide over an atomic Ga-N5 site. Nature Synthesis, 2023, 2: 557-563.

3. Peng Zhou, Mingchuan Luo and Shaojun Guo*, Optimizing the semiconductor-metal-single-atom interaction for efficient photocatalytic reactivity. Nature Reviews Chemistry, 2022, 6, 823-838.

4. Peng Zhou, Hui Chen, Yuguang Chao, Qinghua Zhang, Weiyu Zhang, Fan Lv, Lin Gu, Qiang Zhao, Ning Wang, Jinshu Wang, Shaojun Guo*. Single-atom Pt-I3 sites on all-inorganic Cs2SnI6 perovskite for efficient photocatalytic hydrogen production. Nature Communications, 2021, 12: 4412.





Ruili Li

Researcher

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Education Background

PhD, Nankai University, China

Joint PhD Program, the University of Tokyo, Japan

PostDoc, Peking University, China

Research Interests

- Global Change and Urban Mangroves
- AI Mangrove Technology
- Smart Costal Ecology
- Mangrove Monitoring and Restoration

Representative Publications

1. Xu TY, Li RL*, Wang WQ, Tang LL. Subtropical mangroves poleward shift to the Yangtze Estuary under different carbon emission scenarios. Journal of Hydrology, 637, 131356, 2024.
2. Zhu Y, Li R*, Yan S, Chen X, Cen S, Xie S*. Habitat- and lifestyle-dependent structural and functional characteristics of viruses in mangrove wetlands of different functional zonings. Environmental Research, 252, 119070, 2024.
3. Tang LL, Li RL*, Wang WQ, Li B. The probabilistic site-specific species pool and dark diversity in the terrestrialized urban mangroves. Ecological Indicators, 148, 110134, 2023.
4. Chai MW, Li RL*, Shen XX, Yu LY, Han J. Multiple heavy metals affect root response, iron plaque formation, and metal bioaccumulation of Kandelia obovata. Scientific reports, 12, 14389, 2022.

Xiaofeng Huang

Professor

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Education Background

BSc, Jilin University, China

MSc, Peking University, China

PhD, Hong Kong University of Science and Technology

Research Interests

- Chemical and Optical Properties of Atmospheric PM2.5
- Formation Mechanisms of Organic Aerosols
- Climate Effects of Black Carbon Aerosols
- Isotopic Analysis of Carbonaceous Aerosols

Representative Publications

1. Huang, X.-F., Peng, Y., Wei, J., Peng, J.-F., Lin, X.-Y., Tang, M.-X., Cheng, Y., Men, Z., Fang, T., Zhang, J., He, L.-Y., Cao, L.-M., Liu, C., Zhang, C., Mao, H., Seinfeld, J.-H., Wang., Y. Microphysical complexity of black carbon particles restricts their warming potential. One Earth, 7, 136-145, 2024.
2. Peng, X., Xie, T.T., Tang, M.X., Cheng, Y., Peng, Y., Wei, F.H., Cao, L.M., Yu, K.Y., Du, K., He, L.Y., Huang, X.F. Critical Role of Secondary Organic Aerosol in Urban Atmospheric Visibility Improvement Identified by Machine Learning. Environmental Science & Technology Letters, 10, 976–982, 2023.
3. Tang, M.X., Huang, X.F., Yao, P.T., Wang, R.H., Li, Z.J., Liang, C.X., Peng, X., Cao, L.M., Du, K., Yu, K., Guo, S. How much urban air quality is affected by local emissions: A unique case study from a megacity in the Pearl River Delta, China. Atmospheric Environment, 299, 119666, 2023.
4. Niu, Y.B., Zhu, B., He, L.Y., Wang, Z., Lin, X.Y., Tang, M.X., Huang, X.F. Fast nocturnal heterogeneous chemistry in a coastal background atmosphere and its implications for daytime photochemistry. Journal of Geophysical Research: Atmospheres, 127, e2022JD036716, 2022.

Lingyan He

Professor

Email: hely@pkusz.edu.cn

Education Background

BSc, Heilongjiang University, China

PhD, Peking University, China

Research Interests

- Physical and chemical properties of atmospheric aerosols and VOCs
- Emission characteristics of atmospheric pollution sources
- Development and application of new environmental monitoring technologies

Representative Publications

1. Li, Z.-J., He, L.-Y., Ma, H.-N., Peng, X., Tang, M.-X., Du, K., Huang, X.-F., Sources of atmospheric oxygenated volatile organic compounds in different air masses in Shenzhen, China. Environmental Pollution, 340, 122871, 2024.
2. Lin, X.Y., He, L.Y., Xia, S.Y., Luo, Y., Han, H.X. Evaluation of key factors influencing urban ozone pollution in the Pearl River Delta and its atmospheric implications. Atmospheric Environment, 305, 119807, 2023.
3. Peng, X., Huang, X.F., Wei, F.H., Yan, R,H., Tang, M.X., He, L.Y. Identifying the key drivers in retrieving blue sky during rapid urbanization in Shenzhen, China. Journal of Cleaner Production, 356, 131829, 2022.
4. Huang, X.F., Cao, L.M., Tian, X.D., Zhu, Q., Saikawa, E., Lin, L.L., Cheng, Y., He, L.Y., Hu, M., Zhang, Y.H., Lu, K.D., Liu, Y.H., Daellenbach, K., Slowik, J.G., Tang, Q., Zou, Q.L., Sun, X., Xu, B.Y., Jiang, L., Shen, Y.M., Ng, N.L., Prévôt A.S.H. Critical Role of Simultaneous Reduction of Atmospheric Odd Oxygen for Winter Haze Mitigation. Environmental Science & Technology, 55 (17), 11557-11567, 2021.

Xiaoming Ma

Professor

Email: xmma@pku.edu.cn

Education Background

MSc, Peking University

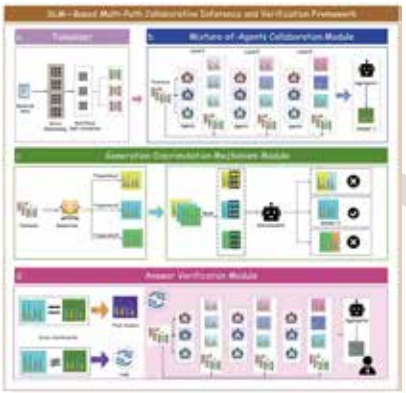
PhD, Peking University

Research Interests

- Environmental and Energy Big Data
- Environmental Social and Governance
- AI Analysis in Environmental Finance
- Enviromental Energy Systems Analysis

Representative Publications

1. Liang, C.X., Ma, X.M. and Liao, X.W.* (2024) Unveiling Investor Motivation and Trust in Impact Investing: Evidence from Global Green Bond Issuances. Journal of Business Ethics
2. Tong, Y.D., Liao, X.W.,He, Y.Y. et al. (2024) Mitigating greenhouse gas emissions from municipal wastewater treatment in China. Environmental Science and Ecotechnology. 20: 10034.
3. Bai, B., Xiong, S.Q., Ma,X.M. and Liao, X.W. (2024) Assessment of floating solar photovoltaic potential in China, Renewable Energy. 220:119572
4. Lu,R.Y.,Li X.,Chen R.H.,Lei A.M.,Ma X.M.,An alternative reinforcement learning(ARL)control strategy for data center air-cooled HVAC systems.[J]Energy,2024,11(308).1-13 .



Qiyong Xu

Associate Professor ,Vice Dean of SEE

Licensed Professional Engineer (PE), USA

Associate Editor of Waste Management

Email: qiyongxu@pkusz.edu.cn

Education Background

MSc, Sichuan University, China

PhD, University of Florida, USA

Research Interests

- Solid Waste Management and Resource Recovery Technology
- Biomass Energy
- Food Waste Treatment
- Landfill

Representative Publications

1. Wang, Q., Wang, T., Naureen, L., Huang, K., Wang, X., Lei, R., Bai, X., and Xu, Q.*. Carbon dots/TiO2 enhanced visible light-assisted photocatalytic of leachate: Simultaneous effects and Mechanism insights. Water Research. 2023, 245: 120659.

2. Chen, Q., Wang, Q., Zhang, C., Zhang, J., Dong, Z., and Xu, Q.*. Aging simulation of thin-film plastics in different environments to examine the formation of microplastic. Water Research. 2021, 202: 117462.

3. Ko, J., Xu, Q*., and Jang, Y.C. Emissions and control of hydrogen sulfide at landfills: a review. Critical Reviews in Environmental Science and Technology. 2015, 45: 2043-2083.

4. Shao, M., Zhang, C., Chen, Q., Wu, H., Dong, Z., Bai, X., Wang, N., and Xu, Q.*. Hydrothermal-enhanced pyrolysis for efficient NOX reduction and biochar valorization from food waste digestate. Waste Management. 2024, 183: 112-122.

Maurycy Daroch

Associate Professor

Email: m.daroch@pkusz.edu.cn

Education Background

BSc & MSc, Lodz University of Technology, Poland

PhD, University of Liverpool, UK

PostDoc, Peking University Shenzhen Graduate School

Research Interests

- Alternative carbon fixation pathways in photosynthetic microorganisms
- Biodiversity, taxogenomics and biotechnology of thermophilic Cyanobacteria
- Ploidy control and adaptive laboratory evolution in phototrophic microorganisms
- Carbon valorization and biorefining

Representative Publications

1. Daroch, M., You, D., Rasul, F., Liu, X., Jiang, Y. (2025). C1 photochemotrophy-rethinking one-carbon metabolism in phototrophs. Trends in Biotechnology.

2. Rasul, F., You, D., Jiang, Y., Liu, X., Daroch, M. (2024). Thermophilic cyanobacteria—exciting, yet challenging biotechnological chassis. Applied Microbiology and Biotechnology, 108(1), 270.

3. Klepacz-Smolka A, Shah MR., Jiang Y, Zhong Y, Chen P, Pietrzyk D, Szelag R, Ledakowicz S, Daroch M* (2024) Microalgae are not an umbrella solution for power industry waste abatement but could play a role in their valorization. Critical Reviews in Biotechnology, 44(7), 1296-1324.

4. Tang, J., Jiang, Y., Hu, Z., Zhou, H., You, D., & Daroch, M. (2024). Genomic and phenotypic characterization of Thermosynechococcus-like strains reveals eight species within the genus Thermosynechococcus and a novel genus Parathermosynechococcus gen. nov. Molecular Phylogenetics and Evolution, 197, 108094.

Ke Yu

Assistant Professor

Email: yuke.sz@pku.edu.cn

Education Background

BSc, Wuhan University, China
MSc, Chinese Academy of Sciences, China
PhD, University of Hong Kong
PostDoc, University of California, Berkeley, University of Hong Kong

Research Interests

- AI-Based Multi-Omics Software, Algorithms, and Analytical Pipelines
- Multi-Omics Data Analysis and Targeted Microbial Enrichment Cultivation Technologies
- Extremophilic Microbiome Applications

Representative Publications

1.Z Qiu#, K Yu#* et al. BASALT refines binning from metagenomic data and increases resolution of genome-resolved metagenomic analysis. Nature Communications, 2024, 15: 2179.

2.R Keren#, J Lawrence#, L Zhou*, K Yu* et al.. Increased replication rates of dissimilatory nitrogen-reducing bacteria leads to decreased anammox reactor performance. Microbiome, 2020, 8:6.

3.K Yu*#, S Yi#, T Zhang* et al. An integrated meta-omics approach reveals substrates involved in synergistic interactions in a bisphenol A (BPA)- degrading microbial community. Microbiome, 2019, 7: 16.

4.C Deng#, T Chen#, K Yu* et al. A mixed blessing of influent leachate microbes in downstream biotreatment systems of a full-scale landfill leachate treatment plant. Water Research, 2024, 253: 121310.

Cutting-Edge Research Laboratories

SEE is equipped with advanced laboratories that support groundbreaking research in environmental science and engineering.

Student Activities

At SEE, students engage in a variety of academic and cultural activities that enrich their graduate experience. From research symposiums to environmental advocacy events, our community is dedicated to fostering leadership and global awareness.








Program Portfolio

Ongoing Program (SEED)

Sustainable Environment and Energy Development

Duration: 2 Years (Full-Time)

Program Core Modules

- Sustainable Energy
- Sustainable Environment
- Sustainable Management

Current Programs

Program Duration: 2-3 Years (Full-Time)

Tuition Fee: 33,000 RMB/Year

Scholarships

SEE offers merit-based scholarships for international students, including full-tuition waivers and on-campus housing for top-ranked applicants.