Yirong Xu

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Interested Research Area: Computational biology, Wastewater Treatment, Membrane Fouling, Water and Sludge Reuse Engineering,

Education Background:

University of Chinese Academy of Sciences Sep. 2020 - Jun. 2023
Master of Science (M. Sc) in Environmental Science, GPA: 3.93/4.0
• Project Thesis: Study on sludge dewatering performance and influencing factors based on interfacial energy.
• Supervisor: Dr. Kang Xiao

Beijing Forestry University Sep. 2016 - Jun. 2020
Bachelor of Engineering (B. Eng) in Water Supply and Drainage Engineering, GPA: 89.02/100, Rank:1
- Project Theme: Engineering design for the treatment project of 30000 m^3/d domestic sewage in Luoyuan.
- Supervisor: Prof. Liqiu Zhang

Publications:

Journal Articles:

[1] **Yirong Xu**, Bingjun Han, Kang Xiao*, Jinlan Yu, Jianzhong Zheng, Shuai Liang, Xiaomao Wang, Guoren Xu, Xia Huang. Revisiting the surface energy parameters of standard test liquids with a corrected contact angle method over rough surfaces. *Langmuir*, 2022. (IF = 4.331)

[2] Hao Xu[1], **Yirong Xu[1]**, Kang Xiao*, Tingwei Gao, Ziwei Liu, Wenchao Xue, Chun-Hai Wei, Xia Huang. Interplay of organic components in membrane fouling evolution: Statistical evidence from multiple spectroscopic analyses. *Journal of Membrane Science*, 2022. (IF = 10.53)

[3] Yuan Zhou, Yongze Liu, Li Feng, **Yirong Xu**, Ziwen Du and Liqiu Zhang*. Biochar prepared from maise straw and molasses fermentation wastewater: application for soil improvement. *RSC Advances*, 2020. (IF = 4.036)

Book Chapter:

[1] Kang Xiao*, **Yirong Xu**, Xuyang Cao, Hao Xu, Yufang Li. Advanced characterisation of membrane surface fouling. In: Hui-Hsin Tseng, Woei Jye Lau, Mohammad A. Al-Ghouti, Liang An. *60 Years of the Loeb-Sourirajan Membrane: Principles, New Materials, Modelling, Characterization, and Applications*. Elsevier.

Patent:

[1] Kang Xiao, Jinlan Yu, **Yirong Xu**, Jihua Tan, Yang Zhang, Xia Huang. Method for real-time monitoring of membrane fouling potential. CN202111296331.0

Projects & Experience:

Innovative methods for diagnosis and control of key substances responsible for membrane fouling in advanced wastewater treatment process Apr. 2022 - Present
The Beijing Municipal Natural Science Foundation (No. JQ22027).
• Participate in the drafting of the fund application, including research literature, drawing up research general idea diagrams and flow charts, and designing experimental protocols.

Rapid sludge reduction and resource coupling utilisation technology. Jun. 2022 - Dec. 2022
National Key Research and Development Program of China (No. 2019YFC1906501).
• Characterise the properties of sludge dewatering, and analyse the influencing factors of sludge dewatering combined with surface energy.
• Analysing data of surface energy by MatLab code.

Early warning mechanism and efficacy of membrane fouling based on fluorescence fingerprint response of organic matter. Sep. 2021 - Feb. 2022
National Natural Science Foundation of China (No. 51778599)
• Design and run the membrane reactor
• Continuous monitoring of reactor indicators and spectroscopic signals for two months.
• Characterized sample by fluorescence spectroscopy.
• Analysing data of 3D-fluorescence spectra and UV-vis spectra by MatLab code.
• Model the spectral signals of fouling and membrane fouling trend to warn membrane fouling.

Reuse of the maize straw and molasse wastewater. Jan. 2019- May 2019
National Natural Science Foundation of China (No. 51578066).
• Sample preparation and firing of biochar
• Evaluate the potential of biochar as the soil amendment through pot experiments

Awards:

2020/2021/2022	UCAS Academic Scholarships
2020	Beijing Outstanding Graduates
2019	National Scholarship
2019	National University Student Water Supply and Drainage Technology Innovation Competition Individual and Group Prize
2019	First-class scholarship

Skills:

IT: MATLAB, SPSS, Origin, AutoCAD, 3dMax, ArcGIS Pro, R studio.
Languages: Passed CET-6
Statistics: t-test, t'-test, Mann-Whitney U-test, Pearson correlation, Rank Correlation, principal component analysis, redundancy analysis, regression analysis.
Research:
Membrane test: Design and operate the membrane reactors, proficient in the use of ultrafiltration cup devices.
Spectral characterization: 3D fluorescence spectroscopy and UV-Vis spectroscopy.
physical and chemical properties characterization: Contact Angle/Surface Tensiometer, TOC Tester, Atomic Force Microscope, Simultaneous Thermal Analysis (TG/DSC) Instrument.