

**ZHIYONG JASON REN, Ph.D.**

Professor, Department of Civil and Environmental Engineering, Princeton University  
Associate Director for Research, Andlinger Center for Energy and the Environment  
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**Research Areas:** water sector decarbonization and digitalization, water energy nexus; sustainable water/wastewater infrastructure; resource recovery; environmental biotechnology; microbial & electrochemical processes; data science

**EDUCATION**

2008 Ph.D. in Environmental Engineering, The Pennsylvania State University, University Park, PA  
2003 M.S. in Environmental Science & Engineering, Tianjin University, Tianjin, China  
2000 B.S. in Environmental Engineering, Tianjin University of Urban Construction, Tianjin, China

**PROFESSIONAL APPOINTMENTS**

**Professor** **2018 – present**  
Department of Civil and Environmental Engineering & Andlinger Center for Energy and the Environment

- Perform fundamental and applied research on decarbonization and digitalization of water/wastewater systems to transform chemical and environmental processes to integrated carbon-efficient resource recovery systems.
- Educate and train students and research scholars to become leaders in engineering science and practice with interdisciplinary knowledge and skills.
- Provide professional service and foster collaborations at international, national, regional, university, school, center, and department levels.

**Acting Director** **2020- 2021**  
Andlinger Center for Energy and the Environment, Princeton University, NJ

- Oversee Andlinger Center operation
- Lead center faculty search, faculty tenure and promotion review, strategic planning, annual meeting, and other major activities
- Lead and oversee center public events, media releases, reports, meetings, and other activities

**Associate Director for Research** **2019 – present**  
Andlinger Center for Energy and the Environment, Princeton University, NJ

- Provide leadership and coordination for major interdisciplinary research initiatives and activities
- Organize and manage center research funding programs, distinguished postdoc, visiting fellow, and other programs

**Visiting Professor, US National Renewable Energy Laboratory** **2009 – 2012, 2015-present**

- Initiate and sustain research collaborations with NREL National Bioenergy Center and Basic Science Division in research areas of Material Science, Biomass Energy, and Microbiology

**Director, Water-Energy Nexus Interdisciplinary Research Theme (IRT)** **2017 – 2018**

**Associate Professor** **2013 –2018**  
Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder, CO

**Director, Center for Sustainable Infrastructure Systems,** **2012 – 2013**

**Assistant Professor** **2008– 2013**  
Department of Civil and Environmental Engineering, University of Colorado Denver, CO

**Graduate Research Assistant, The Pennsylvania State University** **2004 – 2008**

**Graduate Teaching Assistant, The Pennsylvania State University** **2007 – 2008**

**INDUSTRIAL EXPERIENCE**

**Chief Science Advisor, Emergy LLC.** **2016-2018**  
• Serve as a science advisor for the university spin-off company to develop and commercialize the new fungal biomanufacturing technology (licensed from Ren lab at CU)

**Chief Science Advisor, Hysummit Corporation** **2016-2018**

**Co-Founder and President, BioElectric, Inc.** **2013-2015**

**Environmental Engineer, North China Municipal Eng. Design and Research Institute/Spring Environmental.** **2003-2004**

**Engineering Intern, Veolia Environmental** **2001-2002**

**HONORS, AWARDS, DISTINCTIONS**

2021 Paul L. Busch Award, The Water Research Foundation

2021 Super Reviewer Award, *Environmental Science & Technology*

2021 First Place Prize, Intelligent Water Systems Challenge, The Water Research Foundation (w/Junjie Zhu, Clean Water Services)

2020 Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers

2020 ISMET 2020 Innovation Award (w/ Xi Chen)

2019 CAPEES Founder's Best Paper Award (w/ Lu Lu)

2019 Best Reviewer Award, *Environmental Science: Water Research Technology*

2019 Best Paper Award (co-author), *Environmental Science: Water Research Technology*

2018 Inaugural RIO Fellow, University of Colorado Boulder

2017 Nanova/CAPEES Frontier in Research Award

2017 The Michael Kavanaugh's Best Podium Award in AEESP2017

2017 Research Development Award, Department of Civil, Environmental, Architectural Engineering

2016- Steering committee for the National Testbed Network for Energy Positive Water Resource Recovery (interagency program by DOE-EPA-NSF-USDA)

2016 Top 3 Faculty in Research (weighted combination of publications, expenditures, and graduate students) among >260 tenured/tenure-track faculty in the College of Engineering and Applied Science

2016 Top 10 Hottest Articles in *Environmental Science: Water Research Technology* in 2015

2015 New Inventor of the Year Award, University of Colorado Technology Transfer Office

2015 Research Development Award, Department of Civil, Environmental and Architectural Engineering

2012 Excellence in Review Award, *Environmental Science & Technology (ES&T)*

2012 University Award for Excellence in Research and Creative Work

2012 Outstanding Faculty in Research Award, College of Engineering and Applied Science

2012 Chang Junior Faculty Achievement Award, College of Engineering and Applied Science

**BOOK AND BOOK CHAPTER**

Ren, Z.J. and Pagilla K.R., *Pathways to Water Sector Decarbonization, Carbon Capture and Utilization*, IWA Publishing, 2022.

Wang, H., Lu, L., Ren, Z.J., Chapter 23: Enhanced Bioremediation of Petroleum Hydrocarbons Using Microbial Electrochemical Technology, In: Tiquia-Arashiro S. and Pant, D., *Microbial Electrochemical*

*Technologies*, CRC Press, 2019, 343-359.

Ren, Z.J., 2013. Chapter 19: The Principle and Applications of Bioelectrochemical Systems, In: Gupta V.K., *Biofuel Technologies*, Springer, 2013, 501-527.

### **PEER REVIEWED JOURNAL PUBLICATIONS**

#### **Published:**

(H Index = 55, Citation = 10415, by December 25, 2021 via Google Scholar)

1. Zheng, S., Yang, M., Chen, X., White, C.E., Hu, L. and Ren, Z.J., 2022. Upscaling 3D Engineered Trees for Off-Grid Desalination. *Environmental Science & Technology*, 56, 2, 1289–1299.
2. Gu, J., Li, Z., Xie, G., Yang, Y., Liu, B., Ren, Z.J. and Xing, D., 2022. Electro-fermentation enhances H<sub>2</sub> and ethanol co-production by regulating electron transfer and substrate transmembrane transport. *Chemical Engineering Journal*, 429, p.132223.
3. Chen, X., He, S., Falinski, M., Wang, Y., Li, T., Zheng, S., Sun, D., Dai, J., Bian, Y., Zhu, Z., Jiang, J., Hu, L., Ren, Z. J., 2021. Sustainable Off-grid Desalination of Hypersaline Waters by Janus Wood Evaporator. *Energy & Environmental Science*, 14, 5347-5357. (*Front Cover, Top 10 Hot Article Collection*)
4. Zhu, J., Dressel, W., Pacion, K., and Ren, Z.J., 2021. ES&T in the 21st Century: A Data-Driven Analysis of Research Topics, Interconnections, And Trends in the Past 20 Years. *Environmental Science & Technology* 55, 6, p.3453–3464. (*Front Cover, Feature, Editors' Choice, Most Read Articles, Open Access*) - interactive website for more info: <https://starfriend10.github.io/EST/>
5. Jack, J., Zhu, W., Avalos, J.L., Gong, J., Ren, Z. J., 2021. Anode co-valorization for scalable and sustainable electrolysis. *Green Chemistry*, 23, 7917-7936.
6. Zhong, S., Zhang, K., Bagheri, M., Burken, J.G., Gu, A., Li, B., Ma, X., Marrone, B.L., Ren, Z.J., Schrier, J., Shi, W., Tan H., Wang, T., Wang, X., Wong, B., Xiao X., Yu, X., Zhu, J., and Zhang, H., 2021. Machine Learning: New Ideas and Tools in Environmental Science and Engineering. *Environmental Science & Technology*, 55, 19, 12741–12754. (*Front Cover, Feature*)
7. Zhu, X., Leininger, A., Jassby, D., Tsesmetzis, N. and Ren, Z.J., 2021. Will Membranes Break Barriers on Volatile Fatty Acid Recovery from Anaerobic Digestion?. *ACS ES&T Engineering*. 1, 1, p.141–153.
8. Zhu, X., Jack, J., Bian, Y., Chen, X., Tsesmetzis, N. and Ren, Z.J., 2021. Electrocatalytic Membranes for Tunable Syngas Production and High-Efficiency Delivery to Biocompatible Electrolytes. *ACS Sustainable Chemistry & Engineering*, 9(17), pp.6012-6022.
9. Leininger, A. and Ren, Z.J., 2021. Circular utilization of food waste to biochar enhances thermophilic co-digestion performance. *Bioresource Technology*, 332, p.125130.
10. Xu, E.G. and Ren, Z.J., 2021. Preventing masks from becoming the next plastic problem. *Frontiers of Environmental Science & Engineering*, 15(6).
11. Zhang, B., Shi, J., Diao, M., Myneni, S.C. and Ren, Z.J., 2021. Microbial Diversity and Biogeochemical Cycling of Nitrogen and Sulfur in the Source Region of the Lancang River on the Tibetan Plateau. *ACS ES&T Water*, 1(11), pp.2377-2389.
12. Chu, N., Hao, W., Wu, Q., Liang, Q., Jiang, Y., Liang, P., Ren, Z.J. and Zeng, R.J., 2021. Microbial Electrosynthesis for Producing Medium Chain Fatty Acids. *Engineering*. Doi: 10.1016/j.eng.2021.03.025

13. Jack, J. and Ren, Z.J., 2021. Metal-insulator-semiconductor (MIS) photoelectrodes: distance improves performance. *National Science Review*. nwab089
14. Zhang, Q., Smith, K., Zhao, X., Jin, X., Wang, S., Shen, J. and Ren, Z.J., 2021. Greenhouse gas emissions associated with urban water infrastructure: What we have learnt from China's practice. *Wiley Interdisciplinary Reviews: Water*, 8(4), p.e1529.
15. Tang, J., Bian, Y., Jin, S., Sun, D. and Ren, Z.J., 2021. Cathode Material Development in the Past Decade for H<sub>2</sub> Production from Microbial Electrolysis Cells. *ACS Environmental Au*. 2, 1, 20–29.
16. Zhou, S., Liao, Z., Zhang, B., Hou, R., Wang, Y., Zhou, S., Zhang, Y., Ren, Z.J. and Yuan, Y., 2021. Photochemical Behavior of Microbial Extracellular Polymeric Substances in the Aquatic Environment. *Environmental Science & Technology*, 55(22), pp.15090-15099.
17. Sun, D., Bian, Y., Liu, P., Wang, H., Xu, T., Zhang, X., Liang, P., Ren, Z.J., Chen, X. and Huang, X., 2021. Electricity Enhances Biological Fe (III) Reduction and Phosphorus Recovery from FeP Complex: Proof of Concept and Kinetic Analysis. *ACS ES&T Engineering*. 1, 3, p. 523–532. **(Front Cover)**
18. Yu, L., He, D., Zhang, E., He, Q., Li, J., Ren, Z.J. and Zhou, S., 2021. Electricity from anaerobic methane oxidation by a single methanogenic archaeon *Methanosarcina barkeri*. *Chemical Engineering Journal*, 405, p.126691.
19. Song, P., Xiao, Y., Ren, Z.J., Brooks, J.P., Lu, L., Zhou, B., Zhou, Y., Freguia, S., Liu, Z., Zhang, N. and Li, Y., 2021. Electrochemical biofilm control by reconstructing microbial community in agricultural water distribution systems. *Journal of Hazardous Materials*, 403, p.123616.
20. Huang, S., Shen, M., Ren, Z.J., Wu, H., Yang, H., Si, B., Lin, J. and Liu, Z., 2021. Long-term in situ bioelectrochemical monitoring of biohythane process: Metabolic interactions and microbial evolution. *Bioresour Technol*, 332, p.125119.
21. Chen, X., Lobo, F. L., Bian, Y., Lu, L., Chen, X., Tucker, M. P., Wang, Y., & Ren, Z. J. (2020). Electrical decoupling of microbial electrochemical reactions enables spontaneous H<sub>2</sub> evolution. *Energy & Environmental Science*, 13(2), 495-502. **(Front Cover Article, Top 10 Hot Article, ISMET 2020 Innovation Award)**
22. Bian, Y., Chen, X., & Ren, Z. J. (2020). pH dependence of phosphorus speciation and transport in flow-electrode capacitive deionization. *Environmental Science & Technology*, 54(14), 9116-9123.
23. Wang, H., Lu, L., Chen, H., McKenna, A. M., Lu, J., Jin, S., Zuo, Y., Rosario-Ortiz, F.L., & Ren, Z. J. (2020). Molecular Transformation of Crude Oil Contaminated Soil after Bioelectrochemical Degradation Revealed by FT-ICR Mass Spectrometry. *Environmental Science & Technology*, 54(4), 2500-2509.
24. Chen, X., Zhu, X., He, S., Hu, L., & Ren, Z. J. (2020). Advanced Nanowood Materials for the Water–Energy Nexus. *Advanced Materials*, 2001240.
25. Lu, L., Li, Z., Chen, X., Wang, H., Dai, S., Pan, X., Ren, Z.J., & Gu, J. (2020). Spontaneous Solar Syngas Production from CO<sub>2</sub> Driven by Energetically Favorable Wastewater Microbial Anodes. *Joule*, 4(10), 2149-2161.
26. Jack, J., Lo, J., Donohue, B., Maness, P. C., & Ren, Z. J. (2020). High rate CO<sub>2</sub> valorization to organics via CO mediated silica nanoparticle enhanced fermentation. *Applied Energy*, 279, 115725.
27. Zhang, B., Jiang, Y., Zuo, K., He, C., Dai, Y., & Ren, Z. J. (2020). Microbial vanadate and nitrate reductions coupled with anaerobic methane oxidation in groundwater. *Journal of hazardous materials*, 382, 121228.

28. Lo, J., Humphreys, J. R., Jack, J., Urban, C., Magnusson, L., Xiong, W., Gu, Y., Ren, Z.J., & Maness, P. C. (2020). The Metabolism of *Clostridium ljungdahlii* in Phosphotransacetylase Negative Strains and Development of an Ethanogenic Strain. *Frontiers in bioengineering and biotechnology*, 8.
29. Yu, L., He, D., Zhang, E., He, Q., Li, J., Ren, Z. J., & Zhou, S. (2020). Electricity from anaerobic methane oxidation by a single methanogenic archaeon *Methanosarcina barkeri*. *Chemical Engineering Journal*, 405, 126691.
30. Bhatt, A. H., Ren, Z. J., & Tao, L. (2020). Value Proposition of Untapped Wet Wastes: Carboxylic Acid Production through Anaerobic Digestion. *iScience*, 101221.
31. Wang, H., Cui, Y., Lu, L., Jin, S., Zuo, Y., Ge, Z., & Ren, Z. J. (2020). Moisture retention extended enhanced bioelectrochemical remediation of unsaturated soil. *Science of The Total Environment*, 138169.
32. Zhang, W., Chen, X., Zhang, G., Li, J., Ji, Q., Hu, C., Ren, Z. J., & Qu, J. (2020). A salt-rejecting anisotropic structure for efficient solar desalination via heat–mass flux decoupling. *Journal of Materials Chemistry A*, 8(24), 12089-12096.
33. Iddya, A., Hou, D., Khor, C. M., Ren, Z., Tester, J., Posmanik, R., Gross, A., & Jassby, D. (2020). Efficient ammonia recovery from wastewater using electrically conducting gas stripping membranes. *Environmental Science: Nano*. 7, 1759-1771.
34. Liang, P., Ren, Z. J., & Huang, X. (2020). Capacitive deionization and electrosorption: from desalination to ion management. *Environmental Science: Water Research & Technology*, 6(2), 241-242.
35. Park, E., Jack, J., Hu, Y., Wan, S., Huang, S., Jin, Y., Maness, P.C., Yazdi, S., Ren, Z., & Zhang, W. (2020). Covalent organic framework-supported platinum nanoparticles as efficient electrocatalysts for water reduction. *Nanoscale*, 12(4), 2596-2602.
36. Jack, J., Park, E., Maness, P. C., Huang, S., Zhang, W., & Ren, Z. J. (2020). Selective ligand modification of cobalt porphyrins for carbon dioxide electrolysis: Generation of a renewable H<sub>2</sub>/CO feedstock for downstream catalytic hydrogenation. *Inorganica Chimica Acta*, 119594.
37. Jin, K. S., Fallgren, P. H., Santiago, N. A., Ren, Z. J., Li, Y., & Jin, S. (2020). Monitoring in situ microbial activities in wet or clayey soils by a novel microbial-electrochemical technology. *Environmental Technology & Innovation*, 100695.
38. Song, P., Xiao, Y., Ren, Z.J., Brooks, J.P., Lu, L., Zhou, B., Zhou, Y., Freguia, S., Liu, Z., Zhang, N. & Li, Y. (2020). Electrochemical biofilm control by reconstructing microbial community in agricultural water distribution systems. *Journal of Hazardous Materials*, 403, 123616.
39. Dudley, H. J., Ren, Z. J., & Bortz, D. M. (2020). Competitive exclusion in a DAE model for microbial electrolysis cells. *Mathematical Biosciences and Engineering: MBE*, 17(5), 6217-6239.
40. Hou, D., Li, T., Chen, X., He, S., Dai, J., Mofid, S., Hou, D., Iddya, A., Jassby, D., Yang, R., Hu, L., Ren, ZJ. Hydrophobic Nanostructured Wood Membrane for Thermally Efficient Distillation, *Science Advances*, 2019, 5(8), eaaw3203.
41. Hou, D., Jassby, D., Nerenberg, R., Ren, ZJ. Hydrophobic Gas Transfer Membranes for Wastewater Treatment and Resource Recovery, *Environmental Science & Technology*, 2019, 53 (20), 11618-11635.
42. Lu, L., Vakki, W., Aguiar, J.A., Xiao, C., Hurst, K., Fairchild, M., Chen, X., Yang, F., Gu, J., Ren, ZJ. Unbiased solar H<sub>2</sub> production with current density up to 23 mA/cm<sup>2</sup> by swiss-cheese black Si coupled with wastewater bioanode, *Energy & Environmental Science*, 2019, 12, 1088-1099.

43. Wang, H., Lu, L., Chen, X., Bian, Y., Ren, ZJ. Geochemical and microbial characterizations of flowback and produced water in three shale oil and gas plays in the central and western United States, *Water Research*, 2019, 164, 114942.
44. Chen, X., Katahira, R., Ge, Z., Lu, L., Hou, D., Peterson, D., Tucker, M., Chen, X., Ren, ZJ. Microbial electrochemical treatment of biorefinery black liquor and resource recovery. *Green Chemistry*, 2019, 21, 1258-1266. **(Front Cover Article)**
45. Lu, L., Lobo, FL., Xing, D., Ren, ZJ. Active harvesting enhances energy recovery and function of electroactive microbiomes in microbial fuel cells, *Applied Energy*, 2019, 247, 492-502.
46. He, S., Chen, C., Kuang, Y., Mi, R., Liu, Y., Pei, Y., Kong, W., Gan, W., Xie, H., Hitz, E. and Jia, C., Chen, X., Gong, A., Liao, J., Li, J., Ren, ZJ., Yang, B., Das, S., Hu, L. Nature-inspired salt resistant bimodal porous solar evaporator for efficient and stable water desalination. *Energy & Environmental Science*, 2019, 12(5), 1558-1567.
47. Bian, Y., Chen, X., Lu, L., Liang, P., Ren, ZJ. Concurrent nitrogen and phosphorus recovery using flow-electrode capacitive deionization, *ACS Sustainable Chemistry & Engineering*, 2019, 78, 7844-7850.
48. Bian, Y., Ge, Z., Albano, C., Lobo, F. L., & Ren, ZJ. Oily bilge water treatment using DC/AC powered electrocoagulation. *Environmental Science: Water Research & Technology*, 5(10), 1654-1660.
49. Wang, H., Lu, L., Mao, D., Huang, Z., Cui, Y., Jin, S., Zuo, Y. and Ren, Z.J., Dominance of electroactive microbiomes in bioelectrochemical remediation of hydrocarbon-contaminated soils with different textures. *Chemosphere*, 2019, 235, 776-784.
50. Mei, X., Wang, H., Hou, D., Lobo, F. L., Xing, D., Ren, Z. J. Shipboard bilge water treatment by electrocoagulation powered by microbial fuel cells. *Frontiers of Environmental Science & Engineering*, 2019, 13(4), 53.
51. Jack, J., Huggins, TM., Huang, Y., Fang, Y., Ren, ZJ. Production of magnetic biochar from waste-derived fungal biomass for phosphorus removal and recovery, *Journal of Cleaner Production*, 2019, 224, 100-106.
52. Jack, J., Lo, J., Maness, PC., Ren, ZJ. Directing *Clostridium ljungdahlii* fermentation products via hydrogen to carbon monoxide ratio in syngas. *Biomass and Bioenergy*, 2019, 124, 95-101.
53. Ren, ZJ. Editorial Perspectives: the value proposition of resource recovery, *Environmental Science: Water Research & Technology*, 2019, 5, 196-197.
54. Jiang, Y., May, D.H., Lu, L., Liang, P., Huang, X., Ren, ZJ. Carbon Dioxide and Organic Waste Valorization by Microbial Electrosynthesis and Electro-fermentation, *Water Research*, 2019, 149, 42-55.
55. Pan, Y.R., Wang, X., Ren, Z.J., Hu, C., Liu, J. and Butler, D., Characterization of implementation limits and identification of optimization strategies for sustainable water resource recovery through life cycle impact analysis. *Environment international*, 2019, 133, 105266.
56. Shang, H., Zhu, X., Shen, M., Luo, J., Zhou, S., Li, L., Shi, Q., Zhou, D., Zhang, S., Chen, J. and Ren, Z.J., Decarbonylation reaction of saturated and oxidized tar from pyrolysis of low aromaticity biomass boost reduction of hexavalent chromium. *Chemical Engineering Journal*, 2019, 360, 1042-1050.
57. Hutfles, J., Lumley, C., Chen, X., Ren, Z.J. Pellegrino, J., Graphene-integrated polymeric membrane as a flexible, multifunctional electrode. *Chemical Engineering Science*, 2019, 209, 115221.

58. Lu, L., Gu, J. and Ren, Z.J., Comment on “Unbiased solar H<sub>2</sub> production with current density up to 23 mA cm<sup>-2</sup> by Swiss-cheese black Si coupled with wastewater bioanode” *Energy & Environmental Science*, 2019, 12(11), 3412-3414.
59. Dudley, H. J., Lu, L., Ren, Z. J., Bortz, D. M. Sensitivity and Bifurcation Analysis of a Differential-Algebraic Equation Model for a Microbial Electrolysis Cell. *SIAM Journal on Applied Dynamical Systems*, 2019, 18(2), 709-728.
60. Dudley, HJ., Ren, ZJ., Bortz, DM. Competitive Exclusion in a DAE Model for Microbial Electrolysis Cells, 2019, *arXiv*:1906.02086.
61. Ren, Z.J. The Rewards and Challenges of Interdisciplinary Collaborations, *iScience*, 2019, 20, 575–578.
62. Lu, L., Guest, J., Peters, CA., Zhu, X., Rau, G.H., Ren, ZJ. Wastewater treatment for carbon capture and utilization, *Nature Sustainability*, 2018, 1, 750-758.
63. Rau, GH., Willauer, H., Ren, ZJ. The global potential for converting renewable electricity to negative-CO<sub>2</sub>-emissions hydrogen, *Nature Climate Change*, 2018, 8, 621–625.
64. Li, T., Wang, X., Zhou, QX., Liao, C., Zhou, L., Wan, L., An, J., Du, Q., Li, N., Ren, ZY. Swift Acid Rain Sensing By Synergistic Rhizospheric Bioelectrochemical Responses. *ACS Sensors*, 2018, 3 (7), 1424-1430. (*ACS Editor’s Choice Article*)
65. Hou, D., Iddya, A., Chen, X., Wang, M., Zhang, W., Ding, Y., Jassby, D., Ren ZJ. Nickel Based Membrane Electrodes Enable High Rate Electrochemical Ammonia Recovery, *Environmental Science & Technology*, 2018, 52 (15), 8930-8938.
66. Zhang, B., Qiu, R., Lu, L., Chen, X., He, C., Lu, J., Ren, ZJ. Autotrophic Vanadium (V) Bio-reduction in Groundwater by Elemental Sulfur and Zerovalent Iron. *Environmental Science & Technology*, 2018, 52 (13), 7434-7442.
67. Hao, S., Zhu, X., Liu, Y., Qian, F., Fang, Z., Shi, Q., Zhang, S., Chen, J., Ren, ZJ. Production Temperature Effects on the Structure of Hydrochar-derived Dissolved Organic Matter and Associated Toxicity. *Environmental Science & Technology*, 2018, 52 (13), 7486–7495.
68. Fang, Y., Zhou, W., Tang, C., Huang, Y., Johnson, DM., Ren, ZJ., Ma, W. Brønsted Catalyzed Hydrolysis of Microcystin-LR by Siderite. *Environmental Science & Technology*, 2018, 52 (11), 6426–6437.
69. Qian F., Zhu X., Liu Y., Shi Q., Wu L., Zhang S., Chen J., Ren ZJ. Influences of Temperature and Metal on Subcritical Hydrothermal Liquefaction of Hyperaccumulator: Implications for the Recycling of Hazardous Hyperaccumulators. *Environmental Science & Technology*, 2018, 52 (4), 2225–2234.
70. Jiang, Y., Lu, Lu., Wang, H., Shen, R., Ge, Z., Hou, D., Chen, X., Liang, P., Huang, X., Ren, ZJ. Electrochemical control of redox potential arrests methanogenesis and regulates products in mixed culture electro-fermentation, *ACS Sustainable Chemistry & Engineering*, 2018, 6 (7), 8650–8658.
71. Liu, Y., Zhu, X., Wei, X., Zhang, S., Chen, J., Ren, ZJ. CO<sub>2</sub> activation promotes available carbonate and phosphorus of antibiotic mycelial fermentation residue-derived biochar support for increased lead immobilization, *Chemical Engineering Journal*, 2018, 334, 1101-1107.
72. Singer, S., Magnusson, L., Hou, D., Lo, J., Maness, P.C. and Ren, Z.J., Anaerobic membrane gas extraction facilitates thermophilic hydrogen production from *Clostridium thermocellum*. *Environmental Science: Water Research & Technology*, 2018. 4(11), 1771-1782. (*Front Cover Article*)

73. Ge, Z., Chen, X., Huang, X., Ren, ZJ. Capacitive deionization for nutrient recovery from wastewater with disinfection capability, *Environmental Science: Water Research & Technology*, 2018, 4 (1), 33-39.
74. Shen, R., Jiang, Y., Ge, Z., Lu, J., Zhang, Y., Liu, Z., Ren, ZJ. Microbial electrolysis treatment of post-hydrothermal liquefaction wastewater with hydrogen generation, *Applied Energy*, 2018, 212, 509-515.
75. Jiang, Y., Liang, P., Huang, X., Ren, ZJ. A novel microbial fuel cell sensor with a gas diffusion biocathode sensing element for water and air quality monitoring, *Chemosphere*, 2018, 203, 21-25.
76. Zhu, X., Liu, Y., Qian, F., Shang, H., Wei, X., Zhang, S., Chen, JM., Ren, ZJ. Carbon Transmission of CO<sub>2</sub> Activated Nano-MgO Carbon Composites Enhances Phosphate Immobilization, *Journal of Materials Chemistry A*, 2018, 6 (8), 3705-3713.
77. Sun, D., Gao, Y., Hou, D., Zuo, K., Chen, X., Liang, P., Zhang, X., Ren, ZJ., Huang, X. Energy-neutral sustainable nutrient recovery incorporated with the wastewater purification process in an enlarged microbial nutrient recovery cell, *Journal of Power Sources*, 2018, 384, 160-164.
78. Shrestha, N., Chilkoor, G., Wilder, J., Ren, ZJ., Gadhamshetty, V. Comparative performances of microbial capacitive deionization cell and microbial fuel cell fed with produced water from the Bakken shale, *Bioelectrochemistry*, 2018, 121, 56-64.
79. Gao, Y., Sun, D., Wang, H., Lu, L., Ma, H., Wang, L., Ren, ZJ., Liang, P., Zhang, X., Chen, X. and Huang, X., 2018. Urine-powered synergy of nutrient recovery and urine purification in a microbial electrochemical system. *Environmental Science: Water Research & Technology*, 2018, 4(10), 1427-1438.
80. Fang, Y., Zhou, A., Yang, W., Araya, T., Huang, Y., Zhao, P., Johnson, D., Wang, J., Ren, ZJ. Complex Formation via Hydrogen bonding between Rhodamine B and Montmorillonite in Aqueous Solution, *Scientific reports*, 2018, 8 (1), 229.
81. Dudley, HJ., Lu, L., Ren, ZJ., Bortz, DM. Sensitivity and Bifurcation Analysis of a DAE Model for a Microbial Electrolysis Cell, 2018, *arXiv*:1802.06326.
82. Ren, ZJ. Microbial Fuel Cells: Running on Gas, *Nature Energy*, 2017, 2, 17093.
83. Mihelcic, JR., Ren, ZJ., Cornejo, PK., Fisher A., Simon, AJ., Snyder, SW., Zhang, Q., Rosso, D., Huggins, TM., Cooper, W., Moeller, J., Rose, B., Schottel, BL., Turgeon, J. et al. Accelerating Innovation that Enhances Resource Recovery in the Wastewater Sector: Advancing a National Testbed Network, *Environmental Science & Technology*, 2017, 51 (14), 7749–7758. [*Invited Feature Article; Most Read Articles in ES&T*]
84. Lu, L., Williams, N., Turner, JA., Maness, PC., Gu, J., Ren, ZJ. Microbial Photoelectrosynthesis for Self-sustaining Hydrogen Generation, *Environmental Science & Technology*, 2017, 51 (22), 13494–13501.
85. Chen, X., Gao, X., Hou, D., Ma, H., Lu, L., Sun, D., Zhang, X., Liang, P., Huang, X., Ren, ZJ. Microbial Electrochemical Acceleration of Ureolysis for Nutrient Recovery from Source-separated Urine and Wastewater Treatment, *Environmental Science & Technology Letters*, 2017, 4 (7), 305–310 [*Most Read Articles in ES&TL*]
86. Zhu, X., Liu, Y., Qian, F., Lei, Z., Zhang, Z., Zhang, S., Chen, J., Ren, ZJ. Demethanation Trend of Hydrochar Induced by Organic Solvent Washing and its Influence on Hydrochar Activation *Environmental Science & Technology*, 2017, 51 (18), 10756–10764.
87. Hou, D., Lu, L., Sun, D., Ge, Z., Huang, X., Cath, TY., Ren, ZJ. Microbial Electrochemical Nutrient Recovery in Anaerobic Osmotic Membrane Bioreactors, *Water Research*, 2017, 114, 181-188.



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### **MAGAZINE ARTICLES**

Ren, ZJ., Xing, D. A Tale of Two Labs – Our Academic Journeys in China and in the USA. (Journal blog) *NatureJobs*. 2016, 2, 12.

Ren, ZJ., 2012. Bug Power: Microbial Fuel Cell Technology for Sustainable Water Infrastructure. For *RUMBLES* - Official Bi-Monthly Magazine of the Rocky Mountain Section of the AWWA and the Rocky Mountain Water Environment Association, July, 2012.

### **PEER REVIEWED CONFERENCE PROCEEDINGS**

1. Lu, L., Gu, J., Chen, X., Ren, ZJ. Microbial photoelectrochemical reactors for high rate wastewater treatment and energy recovery, WEFTEC 2019, Chicago, Sept. 23-26, 2019.
2. Huang, Z., Lu, L., Ren, ZJ. Using Wastewater Treatment for Direct CO<sub>2</sub> Capture and Utilization, Water Environment Federation Annual Technical Exhibition and Conference, Sept. 30- Oct. 4, Chicago, IL, 2017.
3. Forrestal, C., Haeger, A., Ren, ZJ. Microbial Capacitive Desalination for Integrated Organic and Salt Removal and Energy Production from Shale Gas Wastewater, Water Environment Federation WEFTEC Conference, Chicago, IL, September 26-30, 2015

4. Lu, L., Huang, Z., Fallgren, P., Jin, S., Zuo, Y., Ren, ZJ. Bioelectrochemically Enhanced Remediation of Hydrocarbon-contaminated soil: From Bench to Pilot-scale. 2015 International Bioremediation Symposium Battelle Conference, Miami, FL, May 18-21, 2015.
5. Park, J., and Ren, ZJ. Efficient Energy Harvester for Microbial Fuel Cells using DC/DC Converters. IEEE Energy Conversion Congress and Exposition, Phoenix, AZ, September 17-22, 2011.
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7. Ren, ZJ., and Regan, JM. Cellulose-derived electricity production in microbial fuel cells by a defined binary culture and a natural inoculum. Water Environment Federation (WEFTEC) 80th Annual Exhibition & Conference, San Diego, Oct. 13-17, 2007.

### **PATENTS and LICENSES**

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2. Zheng, S., Chen, X., Ren, Z. J. Modular 3D Evaporators for Water, Organics, and Mineral Recovery, Provisional Patent Filing, 2021, E2021AMG12282981.
3. Huggins, M., Ren, Z., Biffinger, J., Love, C. Filamentous Organism-Derived Carbon-Based Materials, and Methods of Making and Using Same, US patent, 10,829,420, 2020 (license agreement with Emergy LLC.)
4. Ren, Z., Lu, L. Carbon Dioxide Capture and Storage Electrolytic Methods, US provisional patent, 10,718,055, 2020 (license agreement with Hysummit Corporation)
5. Jin, S., Fallgren, P., Ren, Z. Bioelectrochemical Devices for Enhanced In Situ Bioremediation, US full patent, 10,406,572., 2019 (license agreement with Chevron Energy Company)
6. Huggins, M., Ren, Z., Whiteley, J., Lee, S., Fungal biomass as a template for the synthesis of carbon-based materials, US provisional patent, 62/365,536, 2016 (license agreement with Emergy LLC.)
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8. Ren, Z., Forrestal, C., and Xu, P, Modular Bioelectrochemical System and Method, US/EP/CN/WO full patent, PCT/US2012/055562, 2012 (license agreement with Bioelectric Inc.)

### **INVITED LECTURES/SEMINARS/WORKSHOPS/PRESENTATIONS**

1. Nanowood Materials For Sustainable Desalination And Resource Recovery, *International Water Association 17th Leading Edge Conference*, Reno, NV, March 28<sup>th</sup>, 2022
2. Microbial and electrochemical pathways for wastewater decarbonization and valorization, *Johns Hopkins University*, March 15<sup>th</sup>, 2022
3. Nanowood materials for sustainable desalination and resource recovery, *American Chemical Society Spring 2022 conference*, San Diego, March 23<sup>th</sup>, 2022
4. Electrified Resource Recovery from Wastewater, *American Chemical Society Spring 2022 conference*, San Diego, March 21<sup>st</sup>, 2022

5. Nanowood materials for sustainable desalination and resource recovery, Distinguished International Lectureship on Separation and Purification Technology (iSPT 2022), ELSEVIER Global STM Journals, January 26<sup>th</sup>, 2022
6. Microbial and electrochemical pathways for wastewater decarbonization and valorization, University of California Berkeley, December 3<sup>rd</sup>, 2021
7. Data-Driven Monitoring and Assessment for Wastewater Greenhouse Gas Emissions and Decarbonization, WEFTEC 2021 Online Conference, November 19<sup>th</sup>, 2021
8. The potential and niche applications of hybrid microbial electrolysis, 2021 NA-ISMET Conference, November 18<sup>th</sup>, 2021
9. Pathways to Water Sector Decarbonization, Carbon Capture and Utilization, WEFTEC 2021, Chicago, October 16- 20, 2021
10. Wastewater decarbonization using microbial and electrochemical technologies, University of California Riverside, May 14<sup>th</sup>, 2021
11. ES&T in the 21st century: A data-driven analysis of research topics, interconnections, and trends in the past 20 years, The inaugural ES&T global webinar (online), March 25<sup>th</sup>, 2021
12. Microbial and Electrochemical Pathways for Waste Resource Recovery, University of Nebraska Lincoln, February 26<sup>th</sup>, 2021
13. Microbial and Electrochemical Pathways for Waste Resource Recovery, Arizona State University, February 16<sup>th</sup>, 2021
14. Novel Electroactive Membranes for Resource Recovery, The 8<sup>th</sup> International Symposium on water Environment Systems, Tohoku University (online), November 8<sup>th</sup>, 2020
15. Water Resource Recovery and Decarbonization, Engage 2020 Conference (online), Princeton University, November 5<sup>th</sup>, 2020
16. Material Innovations for a Circular Infrastructure Economy, NSF Convergence Accelerator Symposium (online), University of Maryland, September 30<sup>th</sup>, 2020
17. Develop a Data Research Platform for Water Infrastructure, IEEE Smart City Symposium (online), September 28<sup>th</sup>, 2020
18. A sustainable vision for Rikers Island Wastewater Treatment Facility, Climate Week NYC 2020 Conference (online), September 25<sup>th</sup>, 2020.
19. Using Low-Cost Renewable Energy for Waste Resource Recovery, MIT A+B 2020 Conference, MIT (Online), August 13-14<sup>th</sup>, 2020
20. Carbon valorization for waste management, Urban Sustainability Transitions in India and the World Conference, Princeton University, NJ, March 27-28<sup>th</sup>, 2020.
21. Microbial & Electrochemical Pathways for Wastewater Resource Recovery, Montclair State University, Montclair, NJ, January 28<sup>th</sup>, 2020.
22. Resource Recovery for a Circular Water Economy, Global Water Security Symposium, Newcastle University, Newcastle, UK, January 23-24<sup>th</sup>, 2020.
23. Using Low-Cost Renewable Energy for Waste Valorisation, North East Centre for Energy Materials, Newcastle University, Newcastle, UK, January 22<sup>nd</sup>, 2020.
24. The Challenges and Opportunities in Water Resource Recovery, US-China Environment and Sustainability Forum, University of Michigan, Ann Arbor, MI, October 1-2<sup>nd</sup>, 2019.



25. Wastewater Treatment for Energy Positive Carbon Valorization, *The 10th National Conference on Environmental Chemistry*, Tianjin, China, August 15-19<sup>th</sup>, 2019.
26. Microbial & Electrochemical Pathways for Wastewater Resource Recovery, *Advancing A Circular Water Economy Workshop*, University of Minnesota, Minneapolis, June 17-18<sup>th</sup>, 2019.
27. Microbial Electrochemistry for Wastewater Carbon Valorization, *The 2<sup>nd</sup> International Symposium on Biomass/Wastes Energy and Environment*, Tianjin University, Tianjin, China, May 23-26<sup>th</sup>, 2019.
28. Electrochemical Nutrient Recovery from Waste Streams, *4th International conference on capacitive deionization and electrosorption*, Tsinghua University, Beijing, China, May 20-23<sup>th</sup>, 2019.
29. Smart Water-Energy Infrastructure, *Princeton Smart Cities Initiative*, Princeton University, May 6<sup>th</sup>, 2019.
30. Microbial Ecological Interactions in Bioelectrochemical Remediation of Hydrocarbon-contaminated Soil, *ACS 2019 Spring National Meeting*, Orlando, March 31- April 4, 2019.
31. Wastewater Treatment for Carbon & Nutrient Valorization, *ACS 2019 Spring National Meeting*, Orlando, March 31- April 4, 2019.
32. Microbial & Electrochemical Conversion Pathways for Waste Valorization, *University of South Florida*, April 3, 2019.
33. CO<sub>2</sub> Valorization Using Microbial Electrochemistry, *Princeton Catalysis Initiative*, Princeton University, January 16, 2019.
34. Ren, ZJ., Chen, X., Bian, Y. Electrochemical Nutrient Recovery from Wastewater *International Water Association Urban Water Summit*, Harbin, China, November 26-28, 2018.
35. Water-Energy-Carbon Nexus and Opportunities for Water Resource Recovery, *Center for Policy Research on Energy and the Environment*, Princeton University, NJ, September 24<sup>th</sup>, 2018.
36. Ren, ZJ. When Microbiology Meets Electrochemistry, Energy and the Environment Find Synergy, *Tsinghua University*, Beijing, May 31<sup>th</sup>, 2018.
37. Ren, ZJ. Wastewater Treatment for Energy Positive Carbon and Nutrient Valorization, *The 2018 International Water Association Leading-edge Technologies Conference*, Nanjing, China, May 27-31<sup>th</sup>, 2018.
38. Ren, ZJ. Wastewater Treatment for Energy Positive Carbon Valorization, *International Conference in Environmental Pollution and Health*, Nankai University, Tianjin, May 18-20<sup>th</sup>, 2018.
39. Ren, ZJ. When Microbiology Meets Electrochemistry, Energy and the Environment Find Synergy, *China Petroleum University*, Beijing, May 18<sup>th</sup>, 2018.
40. Ren, ZJ., When Microbiology Meets Electrochemistry, Energy-guzzling Treatment Becomes History, *University of Minnesota*, Minneapolis, MN, March 30<sup>th</sup>, 2018.
41. Ren, ZJ., Conductive wood membrane electrode for energy recovery from wastewater treatment, *255th ACS National Meeting*, Division of Cellulose and Renewable Materials, New Orleans, LA, March 18-22, 2018.
42. Ren, ZJ., Electrochemical Resource Recovery in Anaerobic Bioreactors, *The 15th IWA International Conference on Anaerobic Digestion*, Beijing, China, Oct. 17-20, 2017.
43. Ren, ZJ., High Rate Hydrogen Production Using Microbial Photo-Electrosynthesis Systems, *The 9<sup>th</sup> National Conference in Environmental Chemistry*, Hangzhou, China, Oct. 20-22, 2017.

44. Ren, ZJ., Bioelectrochemically Enhanced Remediation of Petroleum-contaminated Soil, *Society for Industrial Microbiology and Biotechnology Annual Meeting and Exhibition*, Denver, CO, Jul. 30 - Aug 03, 2017.
45. Ren, ZJ., Microbial Electrochemical Platform for Energy and Water Sustainability, *University of Illinois at Urbana-Champaign*, IL, May 1, 2017.
46. Ren, ZJ., Conductive Biomass Carbon Materials for Microbial Electrochemical Applications, *University of New Mexico*, NM, April 19, 2017.
47. Ren, ZJ., When Microbiology Meets Electrochemistry, Energy and the Environment Find Synergy, *Princeton University*, NJ, April 7<sup>th</sup>, 2017.
48. Ren, ZJ. Microbial Photoelectrochemical Energy Recovery from Wastewater. 2017 KAUST Research Conference, *King Abdullah University of Science and Technology*, Saudi Arabia, Mar. 27-29, 2017.
49. Ren, ZJ. Energy and Resource Recovery from Wastewater, *Water Environment Federation Water Innovation Summit*, San Francisco, CA, Mar. 15-16, 2017.
50. Ren, ZJ., Lu, L. Can wastewater become a carbon sink for CO<sub>2</sub> capture and utilization? *International Water Association Urban Water Summit*, Beijing, China, Nov. 2-3, 2016.
51. Ren, ZJ. Rewiring Anaerobic Digestion Workshop, *Advanced Research Projects Agency - Energy*, Arlington, VA, Oct. 26-28, 2016
52. Ren, ZJ., Ge, Z., Third International Symposium on Utilization of Wetland Resources and Environmental Restoration, *University of Florida*, FL, Jan. 21-25, 2016.
53. Ren, ZJ., Energy-positive Water Resource Recovery Facilities in the United States, *Tsinghua University*, Beijing, China, July 18, 2016.
54. Ren, ZJ., Biofabrication of Fungal Carbon Materials for Energy Storage and Wastewater Treatment, *Fudan University*, Shanghai, China, July 12, 2016
55. Ren, ZJ., The Structure of a National Test Bed Network for Energy Positive Water Resource Recovery Facilities, *NSF-DOE-EPA-USDA Joint Workshop*, Denver, June 20-22, 2016
56. Ren, ZJ., Developing Metrics for a National Test Bed Network for Energy Positive Water Resource Recovery Facilities, *NSF-DOE-EPA-USDA Joint Workshop*, Arlington, VA, May 17-19, 2016
57. Ren, ZJ., Microbial Electrochemical Platform for Energy and Water Sustainability, *National Renewable Energy Laboratory*, Golden, CO, April 20, 2016
58. Ren, ZJ., When Microbiology Meets Electrochemistry, Energy-guzzling Treatment Becomes History, *Colorado School of Mines*, Golden, CO, April 15, 2016
59. Ren, ZJ., Microbial Electrochemical Desalination for Produced Water Treatment and Reuse, *Southwest Energy*, Houston, TX, March 31, 2016
60. Lu, L., Ren, ZJ., Can wastewater become a carbon sink for CO<sub>2</sub> capture and utilization. *2nd International Conference in State Key Laboratory of Pollution Control*, Beijing, China, Nov. 2-3, 2015
61. Lu, L., Ren, ZJ. Water and Energy Sustainability Achieved by Microbial Electrochemistry. *Tsinghua University*, Beijing, China, Nov. 1, 2015.
62. Ren, ZJ., Microbial Electrochemical Technology Platform for Water and Energy Sustainability, *Swiss Federal Institute of Aquatic Science and Technology (EAWAG)*, Zurich, Switzerland, October 21, 2015.

63. Ren, ZJ., Microbial Capacitive Deionization for Natural Gas Produced Water Treatment and Energy Production, *Southwest Energy Company*, Houston, August 10-11, 2015
64. Ren, ZJ., Sustainable Oil/Gas Wastewater Management by Microbial Electrochemical Technology, *Oklahoma Independent Petroleum Association (OIPA) Conference*, Dallas, TX, June 27-29, 2015.
65. Ren, ZJ., Microbial Capacitive Desalination for Sustainable Oil/Gas Wastewater Management, *Cardinal River Energy Company*, Oklahoma City, OK, June 29, 2015.
66. Ren, ZJ., Group Rapporteur for *NSF-DOE-EPA Energy-positive Wastewater Treatment Workshop*, Arlington, VA, April 28-30, 2015
67. Ren, ZJ., Microbial Capacitive Desalination for Produced Water Treatment and Energy Production, *Marcellus Shale Water Management Conference*, Pittsburgh, PA, March 24-25, 2015
68. Ren, ZJ., Microbial Electrochemical Technology (MxCs): Challenge and Opportunities, *US Department of Energy*, Washington D.C. March 17-18, 2015
69. Ren, ZJ., Bioelectrochemical Systems for Decentralized Water and Resource Recovery, IWA Science Summit for Urban Water and Chinese Academy of Engineering Conference, *Harbin Institute of Technology*, China, July 13-17, 2014
70. Ren, ZJ., Understanding the niche applications of microbial electrochemical technology, *Tsinghua University*, China, July 7-8, 2014
71. Ren, ZJ., Wang, H., Metal and Resource Recovery from Wastewater Using Bioelectrochemical Systems. 2nd Waterloo Conference on Sustainable technologies to treat organic wastes and wastewaters: the recovery of value-added products. *University of Waterloo*, Canada, February 19, 2014
72. Ren, ZJ. Microbial Electrochemical Systems for Water and Energy Sustainability. *University of Colorado Boulder Department of Mechanical Engineering*, January 26, Boulder, 2014
73. Ren, ZJ. Electrode Array for Corrosion Detection and Electrochemistry in Microbial Electrochemical Systems. *Biocorrosion Summit, The University of Oklahoma*, January 20-21, Norman, 2014
74. Ren, ZJ. Waste to Value – How Environmental Engineering Is Reinventing Itself. *Denver Café Sci*, Denver, January 13, 2014.
75. Ren, ZJ. Bio-Electrochemical (BEC) Systems for Enhanced Petroleum Hydrocarbon Remediation and Energy Production. *Chevron Energy Technology Company*, San Ramon, October 29, 2013
76. Ren, ZJ. Microbial Electrolysis Cells (MECs) for High Yield H<sub>2</sub> Production from Biodegradable Materials. *US Department of Energy – National Renewable Energy Laboratory*, September 24-25, CO, 2013
77. Ren, ZJ. Studies on Corrosion and Fouling Detection and Prevention Using Micro Electrode Arrays, *US National Institute of Standards and Technology*, July 23-24, CO, 2013
78. Ren, ZJ. Energy and Resource Recovery from Oil Mill Waste Using Microbial Electrochemical Systems. 2013 Annual Convention of *International Oil Mill Superintendents Association (IOMSA)*. Denver, CO, June 14-19, 2013
79. Ren, ZJ. Microbial Electrochemical System as a Platform for Class Teaching in Environmental Biotechnology and Sustainability. *American Society for Microbiology Conference for Undergraduate Educators (ASMCUE)*, Denver, CO, May 16-19, 2013
80. Ren, ZJ. Microbial Electrochemical Systems for Water and Energy Sustainability. *Stanford University*, CA, March 15, 2013

81. Ren, ZJ. Microbial Electrochemical Systems for Water and Energy Sustainability. University of Maryland, MD, February 15, 2013
82. Ren, ZJ. Microbial Electrochemical Systems for Water and Energy Sustainability. Virginia Tech, VA, January 19, 2013
83. Ren, ZJ., and Perlow, J., Bioelectric System Based Toilets for Integrated Energy and Fertilizer Recovery from Human Waste, Gates Foundation Reinvent the Toilet Fair, Seattle, August 13-17, 2012
84. Ren, ZJ. When Microbial Ecology Meets Electrochemistry: Bioelectrochemical Systems For Environmental Remediation And Biochemical Production, Lanzhou University, Gansu, China, July 16, 2012
85. Ren, ZJ. Bioelectrochemical Systems in Naval Applications, Naval Research Laboratory, Washington, DC, June 4, 2012
86. Ren, ZJ. Bioelectrochemical Systems for Simultaneous Wastewater Treatment, Energy Production, and Desalination. Rice University, TX, March 19, 2012
87. Ren, ZJ. Bioenergy Production and Desalination Using Microbial Electrochemical Systems. University of California, Riverside, CA, February 22, 2012
88. Ren, ZJ. The complementary functions in bioelectrochemical systems. Nankai University, Tianjin, China, November 14, 2011
89. Luo, H., Xu, P., Forrestal., C, and Ren, ZJ. Bioelectrochemical Systems for Simultaneous Wastewater Treatment, Energy Production, and Desalination. The 7<sup>th</sup> International Conference on Environmental Anaerobic Technologies and Bioenergy, Tianjin, China, November 12-13, 2011
90. Ren, ZJ. Bioelectrochemical Systems for Simultaneous Wastewater Treatment, Energy Production, and Desalination. Colorado School of Mines, Golden, CO October 28, 2011
91. Ren, ZJ. Standards in Characterizing Microbial Desalination Cells. US Army Microbial Fuel Cell Standard Development Symposium, Penn State University, State College, PA September 14-15, 2011
92. Ren, ZJ. Enhanced Biodegradation of Hydrocarbon-Contaminated Sediments Using A Modified Microbial Fuel Cell. Chevron Energy Company, San Ramon, CA, August 29, 2011
93. Ren, ZJ. Bioenergy Production and Desalination Using Microbial Electrochemical Systems. Department of Integrated Biology, UC Denver, March 18, 2011
94. Ren, ZJ., Development of Bioelectrochemical Systems for Biofuel Production and Desalination. University of Wyoming, WY, January 24, 2011
95. Ren, ZJ., Bioenergy Production and Desalination Using Microbial Fuel Cell Technologies. University of Hong Kong, HK, December 15, 2010
96. Ren, ZJ., Low Carbon Bioenergy Production In Bioelectrochemical Systems. Pathways Toward Low Carbon Cities Workshop, NSF-USA and NSFC-China, Hong Kong, December 13-14, 2010
97. Ren, ZJ. Microbial Fuel Cells and Their Potential for Bioenergy Production. 2009 Colorado Renewable Energy Conference, Golden, CO, August 28–30, 2009
98. Ren, ZJ., Microbial Fuel Cells – From Waste to Power in One Step. Department of Biology, University of Colorado, February 6, 2009

**CONFERENCE PRESENTATIONS** (Competitive Peer Reviewed Abstracts, *first author is the presenter*)

1. Zhu, J., Lu, T., Menniti, A., Schauer, P., VanNote, J., Ren, Z. J. Utilizing Soft Sensor System for Process Control and Optimization, WEFTEC 2021 Conference, Chicago, IL, October 16-21<sup>st</sup>, 2021
2. Chen, X., Lobo, F. L., Ren, Z. J. Electrical decoupling of microbial electrochemical reactions enables spontaneous H<sub>2</sub> evolution, ISMET 2020 virtual conference, October 7-9<sup>th</sup>, 2020.
3. Jack, J., Lo, J., Maness, PC., Ren, ZJ. Hybrid bioelectrochemical CO<sub>2</sub> reduction, ISMET 2020 virtual conference, October 7-9<sup>th</sup>, 2020.
4. Jack, J., Lo, J., Maness, PC., Ren, ZJ. High rate CO<sub>2</sub> valorization to organics via CO mediated silica nanoparticle enhanced fermentation, ACS Fall National Meeting, August 16–20<sup>th</sup>, 2020.
5. Lu, L., Chen, X., Jack, J., Ren, ZJ. Novel electroactive membranes for resource recovery, Univ. of Michigan Borchardt Conference on Water & Wastewater, Ann Arbor, MI, February 25-26, 2020.
6. Iddya, A., Hou, D., Ren, Z., Tester, J., Jassby, D., & Gross, A. Highly efficient ammonia recovery from wastewater using electrically conducting gas-stripping membranes, ACS Fall Meeting, San Diego, CA, August 25-29<sup>th</sup>, 2019.
7. Lu, L., Gu, J., Ren, ZJ., Microbial photoelectrochemical reactors for high rate wastewater treatment and energy recovery, International Water Association Anaerobic Digestion Conference AD16, Delft, The Netherlands, June 23-27<sup>th</sup>, 2019.
8. Bassett, H., Ren, ZJ., Artificial Photosynthesis using *E.coli* for isopropanol production, 2019 AEESP Research and Education Conference, May 14-16<sup>th</sup>, 2019.
9. Lu, L., Gu, J., Ren, ZJ., Microbial Photoelectrochemical H<sub>2</sub> Production from Wastewater, International Water Association Urban Water Summit, Harbin, China, November 26-28, 2018.
10. Lobo, F., Lu, L., Ren, ZJ. Active Energy Harvesting Leads to Distinct Microbial Community Structure and High Performance in Microbial Fuel Cells, 4<sup>th</sup> International Society of Microbial Electrochemical Technology Conference, Oct. 2-6, Lisbon, Portugal, 2017.
11. Lu, L., Jin, S., Zuo, Y., Ren, ZJ. Metagenomic Insights and System Scale up For Bioelectrochemical Petroleum Hydrocarbon Remediation, 4<sup>th</sup> International Society of Microbial Electrochemical Technology Conference, Oct. 2-6, Lisbon, Portugal, 2017.
12. Huang, Z., Lu, L., Ren, ZJ. Using Wastewater Treatment for Direct CO<sub>2</sub> Capture and Utilization, Water Environment Federation Annual Technical Exhibition and Conference, Sept. 30- Oct. 4, Chicago, IL, 2017.
13. Ren, ZJ., Hou, D., Chen, X. Electrochemical Nutrient Recovery In Anaerobic Membrane Bioreactors, 2nd International Resource Recovery Conference, Aug. 5-9, New York City, NY, 2017.
14. Ren, ZJ., Lu, L., Huang, Z. Using Wastewater Treatment For Direct CO<sub>2</sub> Capture And Utilization, 2nd International Resource Recovery Conference, Aug. 5-9, New York City, NY, 2017.
15. Ren, ZJ., Lu, L., Gu, J. Self-sustaining Microbial Photoelectrosynthesis for Hydrogen Generation from Wastewater, AEESP Research and Education Conference, Ann Arbor, MI, June 20-22, 2017.
16. Hou, D., Jassby, D., Ren, ZJ. Electrically Conductive Membranes for Energy and Resource Recovery in Membrane Electrochemical Bioreactors, AEESP Research and Education Conference, Ann Arbor, MI, June 20-22, 2017.
17. Hou, D., Chen, X., Ren, ZJ. Microbial Electrochemical Nutrient and Energy Recovery in Anaerobic Osmotic Membrane Bioreactors, AEESP Research and Education Conference, Ann Arbor, MI, June 20-22, 2017.

18. Ge, Z., Albano, C., Chen, X., Ren, ZJ. Integrated carbon, nutrients, and salt removal using capacitive deionization powered by microbial fuel cells, AEESP Research and Education Conference, Ann Arbor, MI, June 20-22, 2017.
19. Lu, L., Jin, S., Zuo, Y., Ren, ZJ. Effects of Soil Texture on Soil Bioelectrochemical Remediation and Associated Geophysical Monitoring, 4th International Symposium on Bioremediation and Sustainable Environmental Technologies, Miami, FL, May 22-25, 2017.
20. Lu, L., Jin, S., Zuo, Y., Ren, ZJ. Enhanced Remediation of Crude Oil-Contaminated Soil by Bioelectrochemical Systems, 4th International Symposium on Bioremediation and Sustainable Environmental Technologies, Miami, FL, May 22-25, 2017.
21. Ge, Z., Ren, ZJ. Capacitive nutrient removal and recovery from anaerobic membrane bioreactor effluent, 253rd ACS National Meeting, San Francisco, CA April 2-6, 2017.
22. Ren, ZJ., Lu, L. Active H<sub>2</sub> Harvesting Prevents Methanogenesis in Microbial Electrolysis Cells, International Society of Microbial Electrochemical Technology North America Conference, Stanford, CA, Oct. 5-7, 2016.
23. Lobo, F., Wang, X., Ren, ZJ. Real-time Electrical Control for Bioelectrochemical Systems, International Society of Microbial Electrochemical Technology North America Conference, Stanford, CA, Oct. 5-7, 2016.
24. Huggins, MT., Daniel, R., Ren, ZJ. Biomass Derived Carbon Materials for Wastewater and Energy Applications, International Society of Microbial Electrochemical Technology North America Conference, Stanford, CA, Oct. 5-7, 2016.
25. Dankovich, L., Forrestal, C., Ren, ZJ. Conductive Membranes for Scalable Microbial Fuel Cell Air Cathode, International Society of Microbial Electrochemical Technology North America Conference, Stanford, CA, Oct. 5-7, 2016.
26. Ge, Z., Albano, C., Ren, ZJ., Microbial Capacitive Deionization for Oil and Gas Produced Water Treatment and Reuse, NSF SBIR-STTR Conference, Atlanta, GA, Jun. 6-8, 2016.
27. Ren, ZJ., Lu, L., Huang, Z. Synergizing waste management for power and wastewater facilities via low-energy electrolytic carbonation, ACS 251th National Meeting, San Diego, CA, March 13-17, 2016.
28. Hou, D., Lu, L., Ren, ZJ. Osmotic membrane electrochemical bioreactor for wastewater treatment and power production, ACS 251th National Meeting, San Diego, CA, March 13-17, 2016.
29. Hou, D., Lu, L., Ren, ZJ. Electrically conductive membrane for energy and resource recovery in membrane electrochemical bioreactors, ACS 251th National Meeting, San Diego, CA, March 13-17, 2016.
30. Forrestal, C., Ren, ZJ. International Symposium on Capacitive Deionization and Electrosorption Technolgis, Saarbrücken, Germany, Oct. 26-29, 2015
31. Forrestal, C., Haeger, A., Ren, ZJ. Microbial Capacitive Desalination for Integrated Organic and Salt Removal and Energy Production from Shale Gas Wastewater, Water Environment Federation WEFTEC Conference, Chicago, IL, September 26-30, 2015.
32. Lu, L., Huang, Z., Ren, ZJ. Bioelectrochemically enhanced remediation of hydrocarbon in soil and groundwater. The 5th International Meeting on Microbial Electrochemistry and Technologies (ISMET), Tempe, AZ, October 1-4, 2015.
33. Lu, L., Jin, S., Zuo, Y., Ren, ZJ. Microbial Electrolytic Carbon Capture and Energy Production for Wastewater Treatment, The 5th International Meeting on Microbial Electrochemistry and Technologies (ISMET), Tempe, AZ, October 1-4, 2015.

34. Ren, ZJ., Lu, L., Huang, Z. Can wastewater become a carbon sink for CO<sub>2</sub> capture and utilization, Association of Environmental Engineering and Science Professors (AEESP) conference, New Haven, CT, June 14-16, 2015.
35. Ren, ZJ., Lu, L., Huang, Z. Bioelectrochemically enhanced remediation of hydrocarbon in soil and groundwater. Association of Environmental Engineering and Science Professors (AEESP) conference, New Haven, CT, June 14-16, 2015.
36. Lu, L., Huang, Z., Fallgren, P., Jin, S., Zuo, Y., Ren, ZJ. Bioelectrochemically Enhanced Remediation of Hydrocarbon-contaminated soil: From Bench to Pilot-scale. 2015 International Bioremediation Symposium Battelle Conference, Miami, FL, May 18-21, 2015.
37. Ren, ZJ. Microbial Electrochemical Technology Platform for Energy-positive Wastewater Treatment, NSF I/UCRC MAST Center Spring Conference, Boulder, CO, April 26-28, 2015.
38. Forrestal, C., Haeger, A., Ren, ZJ. Microbial capacitive desalination for organic and salt removal and energy production from unconventional natural gas produced water. ACS 249th National Meeting, Denver, CO, March 23-25, 2015.
39. Lu, L., Zeng, C., Yin, X., Wang, L., Ren, ZJ. Bioelectrochemical oxidation of graphite drives graphene oxide production and electrosynthesis. ACS 249th National Meeting, Denver, CO, March 23-25, 2015.
40. *Forrestal, C.*, Haeger, A., Ren, ZJ. Produced water treatment capability of lab and pilot scale microbial capacitive desalination systems. 2014 NA-ISMET Conference, Penn State University, PA, May 13-15, 2014.
41. Haeger, A., *Forrestal, C.*, Ren, ZJ. High performance of spirally-wound microbial fuel cell design and its analysis using interdisciplinary methods. 2014 NA-ISMET Conference, Penn State University, PA, May 13-15, 2014.
42. *Huggins, M.*, Wang, H., Ren, ZJ. Biochar as a sustainable electrode material for electricity production in microbial fuel cells. 2014 NA-ISMET Conference, Penn State University, PA, May 13-15, 2014.
43. L Lu, T Huggins, S Jin, Y Zuo, ZJ Ren Bioelectrochemically enhanced remediation of petroleum hydrocarbons in the subsurface matrix. 2014 NA-ISMET Conference, Penn State University, PA, May 13-15, 2014.
44. *Wang, H.*, Luo, H., S Jin, Ren, ZJ. Bioelectrochemical platform for sustainable environmental remediation and energy generation. 2014 NA-ISMET Conference, Penn State University, PA, May 13-15, 2014.
45. Zhang, C., Revil, A., Ren, Z., Karaoulis, M., Mendonca, A. Self-potential and Complex Conductivity Monitoring of In Situ Hydrocarbon Remediation in Microbial Fuel Cell. AGU Fall Meeting, Dec. 17-21, 2013.
46. *Huggins, M.*, Ren, ZJ. Throw Away Electrodes for Microbial Fuel Cells (MFCs) – Reinventing the electrode in the world of abundance. 2013 North American Biochar Symposium, University of Massachusetts, Amherst, October 13-16, 2013
47. *Forrestal, C.*, Xu, P., and Ren, ZJ. Microbial Capacitive Desalination Cell for Efficient Organic and Salt Removal from Produced Water. 2013 AEESP 50th Anniversary Conference, Golden, CO, July 14 - 16, 2013.
48. *Wang, H.*, Xu, P., and Ren, ZJ. Transformation and Removal of Trace Organic Compounds in Microbial Fuel Cells. 2013 AEESP 50th Anniversary Conference, Golden, CO, July 14 - 16, 2013.
49. Li, K., Wang, X., and Ren, ZJ. Life Cycle Assessment of Microbial Fuel Cell Systems. 2013 AEESP 50th Anniversary Conference, Golden, CO, July 14 - 16, 2013.

50. Lu, L., Jin, S., and Ren, ZJ. Bioelectrochemically Enhanced Remediation of Petroleum Hydrocarbons in the Subsurface Matrix. The *2nd International Bioremediation and Sustainable Environmental Technologies Symposium*, Jacksonville, FL, June 10-13, 2013.
51. Huggins, M., Biffinger, J., and Ren, ZJ. Conductive Antimicrobial Oxygen Reduction Catalysts for Biofouling Control, 2013 113<sup>th</sup> General Meeting, American Society for Microbiology, Denver, CO, May 18-21, 2013
52. Huggins, M., Wang, H., Fallgren, P., and Ren, ZJ. Biochar as a sustainable and high-performing electrode material for bioelectrochemical systems. 10th Annual RMSAWWA/RMWEA Student Conference, Colorado School of Mines, CO, May 14<sup>th</sup>, 2013
53. Forrestal, C., Xu, P., and Ren, ZJ. Microbial Capacitive Desalination Cell for Efficient Organic and Salt Removal from Produced Water. 10th Annual RMSAWWA/RMWEA Student Conference, Colorado School of Mines, CO, May 14<sup>th</sup>, 2013
54. Wang, H., Xu, P., and Ren, ZJ. Transformation and Removal of Trace Organic Compounds in Microbial Fuel Cells. 10th Annual RMSAWWA/RMWEA Student Conference, Colorado School of Mines, CO, May 14<sup>th</sup>, 2013
55. Forrestal, C., Luo, H., Xu, P., and Ren, Z, Understanding and Solving the Key Challenges in Microbial Desalination Systems. NA-ISMET meeting, Cornell University, October 8-10, 2012
56. Wang, H., Park, J., and Ren, Z, Maximizing Microbial Fuel Cell Energy Output by Active Harvesting. NA-ISMET meeting, Cornell University, October 8-10, 2012
57. Ren, ZJ., Xu, P., Luo, H., and Forrestal, C. Simultaneous Water Desalination, Energy Production, And Wastewater Treatment In Microbial Desalination Cells. 27<sup>th</sup> Annual WateReuse Symposium, Hollywood, FL, September 9-12, 2012.
58. Ren, ZJ., Xu, P., Luo, H., and Forrestal, C. Simultaneous Water Desalination, Energy Production, and Wastewater Treatment In Microbial Desalination Cells. The 8th International Conference on Sustainable Water Environment, Guilin, China, July 17-19, 2012.
59. Fallgren, P., Ren, V., Jin, S., Zeng, C., and Ren, ZJ., Feasibility of Microbial Production of Natural Gas from Low-rank Non-Producing Coals. 2<sup>nd</sup> Biogenic Coal Bed Natural Gas Conference. University of Wyoming, Wyoming, June 20-21, 2012.
60. Fallgren, P., Colberg, P., Ren, V., Jin, S., Zeng, C., and Ren, ZJ., Biogenic Natural Gas Production from Coals of Different Ranks. 2<sup>nd</sup> Biogenic Coal Bed Natural Gas Conference. University of Wyoming, Wyoming, June 20-21, 2012.
61. Luo, H., Forrestal, C., Xu, P., and Ren, Z Complementary functions within microbial fuel cells: energy production and desalination. 242nd ACS National Meeting, Denver CO, August 28 - September 1, 2011
62. Zinner, D., and Ren, ZJ. Scale-up microbial fuel cell for direct conversion of food waste to electricity. 242nd ACS National Meeting, Denver CO, August 28 - September 1, 2011
63. Forrestal, C., Xu, P., and Ren, Z Capacitive Deionization in Combination with Microbial Fuel Cell for Desalination. 242nd ACS National Meeting, Denver CO, August 28 - September 1, 2011
64. Wang, H., Wu, Z., Jenkins, P., and Ren, ZJ. Exploring new electrode materials for sustainable electricity production in microbial fuel cells. 242nd ACS National Meeting, Denver CO, August 28 - September 1, 2011
65. Wang, W., Wang, H., Jenkins, P., and Ren, ZJ. Corrosion mechanism of carbon steel in seawater contaminated biodiesel. 242nd ACS National Meeting, Denver CO, August 28 - September 1, 2011



66. Park, J., Ren, ZJ. Efficient Energy Harvester for Microbial Fuel Cells using DC/DC Converters
67. IEEE Energy Conversion Congress and Exposition, Phoenix, AL, September 17-22, 2011.
68. Ren, ZJ., Luo, H., Forrestal, C., and Xu, P. Simultaneous water desalination, energy production, and wastewater treatment in bioelectrochemical systems. AEESP 2011 Conference, Tampa, FL, July 10-12, 2011
69. Morris, J., Jin, S., Fallgren, P., Ren, ZJ., and Cui, K. Enhanced Biodegradation of Hydrocarbon-Contaminated Sediments Using A Modified Microbial Fuel Cell. Battelle International Symposium on Bioremediation and Sustainable Environmental Technologies, Reno, NV June 27-31, 2011
70. Luo, H., Forrestal, C., Jenkins, PE., and Ren, ZJ. Improved Performance of Bioelectrochemical Systems by Integrating Energy Production with Water Desalination. 3rd International Microbial Fuel Cell Conference, Wetsus, The Netherlands, June 6-8, 2011
71. Xu, P., Luo, H., Forrestal, C., and Ren, ZJ. Self-Sustained Desalination in Combination with Wastewater Treatment - Hybrid Microbial Desalination System. 15th Annual Water Reuse & Desalination Research Conference, Las Vegas, NV, May 16-17, 2011.
72. Zinner, D., Ramaswami, A., and Ren, ZJ. Scale-Up Microbial Fuel Cell for Direct Conversion of Food Waste to Electricity, RMSAWWA 8th Annual Student Research Conference, University of New Mexico, NM, May 17, 2011
73. Luo, H., Xu, P., Jenkins, PE., and Ren, ZJ. Simultaneous energy production and desalination in microbial electrochemical systems. 241th American Chemical Society (ACS) National Meeting, Anaheim, CA, March 27-31, 2011
74. Rhodes, E., Ren, ZJ., and Mays, D. Zinc Leaching from Tire Crumb Rubber. American Geophysical Union (AGU) 2010 Fall Meeting, San Francisco, CA, December 13-17, 2010
75. Luo, H., Jenkins, PE., and Ren, ZJ. Concurrent desalination and H<sub>2</sub> generation using an integrated bioelectric system. 1st North America BioElectric Systems Meeting, UMass, October 11-13, 2010
76. Regan, JM., Ren, ZJ., Yan, H., Jung, S., Ramasami, R., and Mench, MM. Prospects for Engineering BES Biofilm Ecology and Performance. 1st North America BioElectric Systems Meeting, UMass, October 11-13, 2010
77. Regan, JM., Ren, ZJ., Yan, H., Jung, S., Ramasami, R., and Mench, MM. MFC Operational Effects on Anode Biofilm Microbial Ecology and Electrochemical Performance. 3rd World Congress of Industrial Biotechnology, Dalian, China, July 25-27, 2010
78. Rhodes, E., Ren, ZJ., and Mays, D. Tire Crumb Rubber in Stormwater Filtration. AWWA/WEF Rocky Mountain Student Conference, Boulder, CO, May 18-20, 2010
79. Rhodes, E., Ren, ZJ., and Mays, D. Tire Crumb Rubber in Stormwater Filtration. UCDenver Research and Creative Activities Symposium, AMC, CO, April 30, 2010 (Student Research Award)
80. Wang, H., Wu, Z., Jenkins, P., Plaseied, A., Simpson, L., Engtrakul, C. and Ren, ZJ. Carbon Nanofiber Modified Air Cathodes for Improving Electricity Production in Microbial Fuel Cells. 239th American Chemical Society (ACS) National Meeting, San Francisco, CA, March 21-25, 2010
81. Regan JM., Ren, ZJ., Carpenter W., Ramasamy, RP., and Mench MM.. External Resistance Effects on Anode Biofilm Architecture and Performance. 2nd International Microbial Fuel Cell Conference; Gwangju, Korea, June 10 - 12, 2009
82. Huang, YH., and Ren, ZJ. Electricity Generation and Treatment of High Strength Animal Liquid Waste Using Microbial Fuel Cells. Association of Environmental Engineering and Science Professors Association (AEESP) Education and Research Conference, Univ of Iowa, IA, Jul. 26-28, 2009.

83. Ren, ZJ., Cloud-Owen, SS., Carpenter W., Ramasamy, RP., Mench MM., and Regan JM. Biofilm Architecture Evolution in Microbial Fuel Cells - The Effects of External Resistance and Operation Duration, American Society of Microbiology (ASM) 109th General Meeting, Philadelphia, PA, May 17-21, 2009.
84. Kronoveter, KM., Ramaswami A., and Ren, Z. Quantitation of Energy Recovery Potential from Food Wastes Using Microbial Fuel Cells and Biochemical Methane Potential Assays. 2nd International Microbial Fuel Cell Conference; Gwangju, Korea, June 10 - 12, 2009
85. Kronoveter, KM, Ren, Z, Song, J., Colberg, PC., Mehraban T., Arens, S., Olsen, H., and Roginske, M. Electrically Induced TCE and Nitrate Reduction ZVI Rejuvenation; World Environmental and Water Resources Congress, Kansas City, MO, May 17-21, 2009.
86. Ren, ZJ., and Regan, JM. Electricity production and microbial biofilm characterization in cellulose fed microbial fuel cells. International Water Association (IWA) biofilm technologies conference, Singapore, Jan. 8-10, 2008. Conference proceedings on CD-ROM.
87. Ren, ZJ., Mao, X., Shi, J., Huang, TJ., Mench, MM., and Regan, JM. Correlation of biological constraints and electricity production using a micro-microbial fuel cell (MMFC). Microbial Fuel Cells First International Symposium, University Park, PA, May 27-29, 2008.
88. Ren, ZJ., Terrill, JB., and Regan, JM. Electricity from cellulose-fed microbial fuel cells: comparing a co-culture of *Clostridium cellolyticum*-*Geobacter sulfurreducens* with an undefined mixed culture, 2008 Joint Meeting of The Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies, Houston, TX, Oct 5-9, 2008
89. Ren, ZJ., Direct Electricity Production from Cellulose in Microbial Fuel Cells, 2008, CU/NREL Energy Initiative Annual Research Symposium, Boulder, CO, Nov. 17th, 2008.
90. Terrill, JB., Ren, ZJ., and Regan, JM. The effects of settling on cellulose degrading microbial fuel cells. The American Society of Agricultural and Biological Engineers, 2008 Annual International Meeting, Providence, RI, Jun 29 - Jul 2, 2008
91. Ramasamy, RP., Ren Z., Cloud-Owen, SS., Mench MM., and Regan JM. Effect of biofilm properties on the electrochemical performance of microbial fuel cells. 213th meeting of the Electrochemical Society, Phoenix, AZ, May 18-22, 2008
92. Ren, ZJ., and Regan, JM. Cellulose-derived electricity production in microbial fuel cells by a defined binary culture and a natural inoculum. Water Environment Federation (WEFTEC) 80th Annual Exhibition & Conference, San Diego, Oct. 13-17, 2007. Conference proceedings on CD-ROM.
93. Ren, ZJ., and Regan, JM. Renewable electricity production from cellulose in microbial fuel cells. Association of Environmental Engineering and Science Professors Association (AEESP) Education and Research Conference, Virginia Tech, VA, Jul. 28-Aug. 1, 2007.
94. Ren, ZJ., Ward, TW., and Regan, JM. A plate assay for isolating microorganisms capable of anaerobic extracellular electron transfer. American Society of Microbiology (ASM) 107th General Meeting, Toronto, Canada, May 21-25, 2007.
95. Ramasamy, RP., Ren Z., Mench MM., and Regan JM. Electrochemical impedance spectroscopy studies on microbial fuel cells. American Chemical Society (ACS) 234th National Meeting & Exposition Boston, MA, Aug. 19-23, 2007
96. Regan JM., Ramasamy, RP., Ren Z., and Mench MM. Microbial fuel cells for wastewater treatment. 212th meeting of the Electrochemical Society, Washington D.C., Oct. 7-12, 2007.

## **TECHNICAL/RESEARCH REPORTS**

1. Ren, ZJ. Self-sustaining microbial photoelectrosynthesis for energy and fuel production, for National Science Foundation, August, 2019
2. Ren, ZJ. Integrated Microbial Desalination System for Navy Wastewater Management, for Office of Naval Research, August, 2019
3. Ren, ZJ. Systematical Modeling and Control of Microbial Electrochemical Activities towards Efficient Electrical Energy Harvesting, for National Science Foundation, September, 2019
4. Ren, ZJ. Systematical Modeling and Control of Microbial Electrochemical Activities towards Efficient Electrical Energy Harvesting, for National Science Foundation, September, 2018
5. Ren, ZJ. Integrated Microbial Desalination System for Navy Wastewater Management, for Office of Naval Research, August, 2018
6. Ren, ZJ. Self-sustaining microbial photoelectrosynthesis for energy and fuel production, for National Science Foundation, August, 2018
7. Ren, ZJ. Systematical Modeling and Control of Microbial Electrochemical Activities towards Efficient Electrical Energy Harvesting, for National Science Foundation, September, 2017
8. Ren, ZJ. Integrated Microbial Desalination System for Navy Wastewater Management, for Office of Naval Research, August, 2017
9. Ren, ZJ. Microbial Energy Systems for Sustainable Oil/Gas Hydraulic Fracturing Wastewater Management, for National Science Foundation, August, 2017
10. Ren, ZJ. Workshop for Developing an Energy Positive Water Resource Recovery Facility Test Bed Network, June, 2017
11. Ren, ZJ. Systematical Modeling and Control of Microbial Electrochemical Activities towards Efficient Electrical Energy Harvesting, for National Science Foundation, December, 2016
12. Ren, ZJ. Integrated Microbial Desalination System for Navy Wastewater Management, for Office of Naval Research, August, 2016
13. Ren, ZJ. Microbial Energy Systems for Sustainable Oil/Gas Hydraulic Fracturing Wastewater Management, for National Science Foundation, December, 2016
14. Ren, ZJ. Integrated Microbial Desalination System for Navy Wastewater Management, for Office of Naval Research, August, 2016
15. Ren, ZJ. One-pot Synthesis of fungal biomass for electrochemical applications. Office of Naval Research, 2016
16. Ren, ZJ. Understanding the Niche of Bioelectrochemical Systems for Water and Energy Sustainability, for National Science Foundation, 2016
17. Ren, ZJ. Bioelectrochemical systems for in situ hydrocarbon remediation in soil and groundwater, Chevron Energy Company, 2016
18. Ren, ZJ. Microbial Energy Systems for Sustainable Oil/Gas Hydraulic Fracturing Wastewater Management, for National Science Foundation, December, 2015
19. Ren, ZJ. One-pot Synthesis of fungal biomass for electrochemical applications. Office of Naval Research, 2015

20. Ren, ZJ. Understanding the Niche of Bioelectrochemical Systems for Water and Energy Sustainability, for National Science Foundation, 2015
21. Ren, ZJ. Bioelectrochemical systems for in situ hydrocarbon remediation in soil and groundwater, Chevron Energy Company, 2015
22. Ren, ZJ. Integrated Microbial Desalination System for Navy Wastewater Management, For Office of Naval Research, August, 2014
23. Ren, ZJ. Microbial Energy Systems for Sustainable Oil/Gas Hydraulic Fracturing Wastewater Management, for National Science Foundation, December, 2014
24. Ren, ZJ. Integrating Capacitive Deionization with Carbon Adsorption for Point-of-Use Water Treatment and Energy Production, for Amway Corporation, September, 2014
25. Ren, ZJ. Understanding the Niche of Bioelectrochemical Systems for Water and Energy Sustainability, for National Science Foundation, August, 2013
26. Ren, ZJ. Bioelectrochemically Enhanced Remediation of Petroleum Hydrocarbons in the Subsurface Matrix, for Chevron Energy Company. December, 2013
27. Ren, ZJ. Thwarting Cathode Biofouling For Microbial Fuel Cells Using Conductive Antimicrobial Oxygen Reduction Catalysts, for Office Of Naval Research, June, 2013
28. Ren, ZJ. Direct Electricity from Fecal Sludge In Bioelectric Systems, for Bill & Melinda Gates Foundation, December, 2013
29. Ren, ZJ. Understanding the Niche of Bioelectrochemical Systems for Water and Energy Sustainability, for National Science Foundation, August, 2013
30. Ren, ZJ. Thwarting Cathode Biofouling For Microbial Fuel Cells Using Conductive Antimicrobial Oxygen Reduction Catalysts, for Office Of Naval Research, June, 2013
31. Ren, ZJ. The Potential of Microbial Fuel Cells in Bioenergy Recovery and Green House Gas Mitigation, Final Report, US Environment Protection Agency, 2011
32. Ren, ZJ. Low-energy Desalination and Electricity Generation in Bioelectrochemical Systems, Final Report, Office of Naval Research, 2011
33. Mays, D.C., Ren, Z. Rhodes, E.P. Trash to treasure: Using crumb rubber from recycled tires for storm water pollution control, Final Evaluation Report, Advanced Technology Fund Research Grant, Colorado Department of Public Health and Environment, 2010
34. Ren, Z. The Potential of Microbial Fuel Cells in Bioenergy Recovery and Green House Gas Mitigation, Research Progress Report, EPA, 2010
35. Ren, Z. Low-energy Desalination and Electricity Generation in Bioelectrochemical Systems, Research Progress Report, Office of Naval Research, 2010
36. Ren, Z., and Luo, H., Microbial electrochemical cell for simultaneous water desalination, energy production, and wastewater treatment. Pathways Toward Low Carbon Cities Workshop, NSF-USA and NSFC-China, Hong Kong, December 13-14, 2010
37. Ren, Z. The Potential of Microbial Fuel Cells in Bioenergy Recovery and Green House Gas Mitigation, Research Progress Report, EPA, 2009
38. Ren, Z. Low-energy Desalination and Electricity Generation in Bioelectrochemical Systems, Research Progress Report, ONR, 2009
39. Kronoveter KM. and Ren, Z.; Electrically Induced Reduction (EIR) of Trichloroethene (TCE) and Zero Valent Iron (ZVI) Rejuvenation; Research project report, MWH America, 2009

40. Gee, J.A., D.C. Mays, Z. Ren, and E.M. Rhodes (2009), Using crumb rubber from recycled tires for storm water pollution control: Regulation summary and market report, Colorado Department of Public Health and Environment (CDPHE), 2009

### **SELECTED MEDIA REPORTS ON GROUP RESEARCH**

2019

- [Newscientist: A super-thin slice of wood can be used to turn saltwater drinkable](#)  
[Nanowerk News: 'Wood' you like some fresh water?](#)  
[Princeton: New wood membrane provides sustainable alternative for water filtration](#)  
[NSF News: 4 Awesome Discoveries You Probably Didn't Hear About This Week](#)  
[Princeton: Sunlight pulls hydrogen from wastewater](#)  
[C&EN News: Turning organic waste into hydrogen](#)  
[Princeton – Nature Sustainability: Sewers could help clean the atmosphere](#)  
[Nature Sustainability Community: Can Wastewater Treatment Become Carbon Negative and Revenue Positive?](#)

2018

- [Ren to join andlinger center, examine water-energy nexus](#)

2016

- [Forbes - Engineers Convert Brewery Wastewater Into Energy Cells For Biobatteries](#)  
[Climate Central - Sewage Plants Overlooked Source of CO2](#)  
[Huffington Post - How Tapping The Power Of Beer Could Make A Better Smartphone Battery](#)  
[Fox News - Colorado engineers use beer waste water to fuel eco-friendly battery](#)  
[CU News - Turning brewery wastewater into battery power](#)  
[Colorado Engineer, Waste or Not](#)

2015

- [CBS News - Microbes could help clean up after fracking](#)  
[Chemistry World - Energy positive treatment for fracking water](#)  
[NSF News - CU-Boulder researchers use wastewater treatment to capture CO2, produce energy](#)  
[WE&T Magazine - Energy-positive Wastewater Treatment Arrives](#)  
[CCTV - Scientists suggest new ways to clean water, create energy](#)  
[Water Online - New Tech Offers Low-Energy Oil And Gas Wastewater Management](#)  
[Science Daily - Researchers use wastewater treatment to capture carbon dioxide, produce energy](#)  
[Science Daily - New technology could make treatment of oil and gas wastewater simpler, cheaper](#)  
[Civil Engineer Magazine \(ASCE\) - Microbial Capacitive Desalination System Generates Energy While Treating Fracking Wastewater](#)

[The Engineer - Wastewater treatment captures CO2 and produces energy](#)

2014

[Materials Today - Lightweight, conductive hollow fibers from nature as sustainable electrode materials for microbial energy harvesting](#)

[Biotechniques Commentary - Electric Bacteria](#)

[Renewable Energy FeaturedNews - Biochar As Electrodes](#)

2012

[NPR - Bill Gates Crowns Toilet Innovation At Sanitation Fair](#)

[Science Daily - New harvesting approach boosts energy output from bacteria](#)

[ABC-7News - Christmas Lights Powered By Poop](#)

2011

[Science Daily - Method developed to simultaneously desalinate water, produce hydrogen and treat wastewater](#)

[Scientific American - Technology developed to concurrently produce hydrogen and desalinate water](#)

[Water Desalination Report - Bug power desalts water, makes energy](#)

[ABC-7News - Zoo Hopes To Turn Poop Into Power](#)

**SERVICE TO THE PROFESSION AND COMMUNITY**

**National and International Committee**

Steering committee for developing a National Testbed Network for Energy Positive Water Resource Recovery (Non-partisan interagency program by DOE-EPA-NSF-USDA), 2016-

Board member and Treasurer, International Society of Microbial Electrochemical Technologies (ISMET), 2018-2021

Chairman (2015), President (2014), President-Elect (2013), Board of Directors (2012- ), and Newsletter Editor (2008-2012), Chinese-American Professors in Environmental Engineering and Science

Co-Chair (2016- ) and Member (2014- ), Education Committee, Association of Environmental Engineering and Science Professors (AEESP)

2013 Conference Organizing Committee, Association of Environmental Engineering and Science Professors (AEESP)

Student Service Committee (2009-2013), Association of Environmental Engineering and Science Professors (AEESP)

**Organizer of Symposiums, Conferences, and Workshops**

Chair, Workshop for Developing the Structure of the National Test Bed Network for Energy Positive Water Resource Recovery, Denver, CO June 22-23, 2016

Rapporteur, Workshop for Energy Positive Water Resource Recovery, Arlington, VA, May 21-22, 2015

Chair, Workshop on Environmental Education and Research in China, Association of Environmental Engineering and Science Professors (AEESP) Conference, New Haven, CT, June 16, 2015.

Chair, Workshop on Environmental Education and Research in China, Association of Environmental Engineering and Science Professors (AEESP) Conference, Golden, CO, July 13, 2013.

Session Chair of Sustainable Development and Education, Association of Environmental Engineering and Science Professors (AEESP) Conference, Golden, CO, July 13, 2013

Chair, Emerging Issues and Solutions for Sustainable Water and Wastewater Systems, 24<sup>th</sup> National Meeting, American Chemical Society (ACS), Denver, CO, August 28-September 1, 2011

### **Service to Local Community**

Denver Metro Wastewater Reclamation District Citizen Advisory Committee  
Asian American Advisory Committee for Colorado Congressman  
ASCE Student Chapter Faculty Mentor

### **Editorship**

Topic Editor – Environmental Science & Technology Letters (ES&TL), by ACS  
Associate Editor – Environmental Science: Water Research Technology, By Royal Society of Chemistry  
Editorial Advisory Board – Environmental Science & Technology (ES&T), by ACS  
Editorial Advisory Board – ES&T Letters, by ACS  
Editorial Advisory Board – ACS ES&T Engineering, by ACS  
Editorial Board – Chemical Engineering Journal, By Elsevier  
Editorial Board – Environmental Science & Ecotechnology, By Elsevier  
Editorial Board – Scientific Report, by Nature Publishing Group  
Special Issue Editor – Sustainability, 2014-2015  
Review Editor - Nanoenergy Technologies and Materials

### **Panelist/Reviewer Services**

Regular panelist for National Science Foundation, US Department of Energy, Environmental Protection Agency, US Department of Agriculture

Reviewer for U.S. Army Corps of Engineers, US-Israel Binational Agricultural Research & Development Fund (BARD), European Science Foundation, Polish Research Council, Danish Research Council, National Research Foundation of Singapore, The Research Grants Council of Hong Kong, National Research Council of South Africa, University of Wisconsin Foundation, University of Maryland Foundation, Gates Foundation Scholars, etc.

Regular reviewer for numerous journals; review an average ~100 manuscripts per year

### **Professional Affiliations**

American Society of Civil Engineers (ASCE)  
American Chemical Society (ACS)  
Association of Environmental Engineering and Science Professors (AEESP)  
International Society of Microbial Electrochemical Technologies (ISMET)  
International Water Association (IWA)  
Water Environment Federation (WEF)  
Royal Society of Chemistry (RSC)