

XIAO SU

ASSOCIATE PROFESSOR IN CHEMICAL AND BIOMOLECULAR ENGINEERING
HELEN CORLEY PETIT SCHOLAR
UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

PROFESSIONAL APPOINTMENTS

Associate Professor *August 2024 – Current*
University of Illinois, Urbana-Champaign
Department of Chemical and Biomolecular Engineering
Department of Chemistry, Affiliate
Department of Civil and Environmental Engineering, Affiliate
Beckman Institute for Advanced Science and Technology, Affiliate

Assistant Professor *January 2019 – July 2024*
University of Illinois, Urbana-Champaign

Postdoctoral Research Associate *2017–2018*
Massachusetts Institute of Technology, Department of Chemical Engineering

EDUCATION

PhD in Chemical Engineering *2011–2017*
Massachusetts Institute of Technology

Advisors: Prof. T. Alan Hatton, Department of Chemical Engineering
Prof. Timothy F. Jamison, Department of Chemistry

Thesis: *Organometallic Redox-Interfaces for Selective Electrochemical Separations*

Bachelor of Applied Science, Chemical Engineering *2006–2011*
University of Waterloo

Honors, Co-operative Program. Graduated with Distinction and Dean's Honors List

ACADEMIC AWARDS AND HONOURS

DOE Electronics Scrap Recycling Advancement Prize (E-SCRAP) *2025*
DOE Early Career Award *2024*
ACS Analytical Division Satinder Ahuja Young Investigator Award in Separation Science *2024*
UofI Campus Distinguished Promotion Award *2024*
Dean's Award for Innovation Impact *2024*
AIChE Separations Division FRI/John G. Kunes Award *2023*
ACS Unilever Award for Outstanding Young Investigator in Colloid & Surface Chemistry *2023*
NAE & Humboldt Foundation Frontiers of Engineering Symposium *2023*
School of Chemical Sciences (SCS) Faculty Teaching Award *2023*
Merck Innovation Award *2022*
List of Teachers Ranked as Excellent *Fall 2022, 2023, 2024, Spring 2025*
ISE Elsevier Green Electrochemistry Prize *2021*
ACS Colloid & Surface Chemistry Victor K. LaMer Award *2020*
RCSA Scialog Fellow *2020–2023*
NSF CAREER Award *2019*
List of Teachers Ranked as Excellent *Fall 2019, Fall 2022, Fall 2023, Fall 2024*
Whakapukahatanga Taiao Research Fellow, U. of Auckland Environmental Engineering *2018*
Illinois Water Resources Center (IWRC) Fellow *2019*
Massachusetts Clean Energy Center Catalyst Award *2016–2017*
ACS Langmuir Student Oral Presentation Award *2016*
MIT Veraqua Prize Winner *2016*

MIT Water Innovation Prize	2016
NSERC Doctoral Graduate Fellowship	2012–2014
MIT ChemE Robert T. Haslam Fellowship	2011–2012
Julie-Payette NSERC Research Scholarship	2011
Sandford Fleming Foundation Award for Academic Excellence	2011
Albert Sherwood Barber Award	2011
NSERC Andre Hamer Postgraduate Prize	2011
Faculty of Engineering Dean’s Honor List	Every Academic Term
Keith-Carr Memorial Award	2009, 2010
NSERC Undergraduate Research Award (USRA)	2008

JOURNAL PUBLICATIONS

*Denotes corresponding author.

94. S.-W. Tsai, A. Zagalskaya, Y. Li, C.-Y. Chen, M. F. C. Andrade, R. Candeago, J. F. Browning, R. Hillman, R. D. Cusick, T. A. Pham, **X. Su**, “Controlling solvation of conducting redox polymers for selective electrochemical separation of nitrate from wastewater streams,” *Nature Communications*, **2025**, *Accepted*.
93. N. Kim, J. Elbert, C. Wu, **X. Su***, “Redox-active crown ether copolymer for selective lithium recovery from spent lithium-ion battery,” *ACS Energy Letters*, **2025**, 10, 9, 4655–4664.
92. H. Kim, W. Oh, A. L. Bond, J. Elbert, C. H. Chung, Z. Garinchuluun, A. H. Park, R. Farinato, D. R. Nagaraj, **X. Su***, “Tailoring multi-component selectivity in redox-copolymers for the electrochemical separation of platinum group metals from complex feedstocks,” *Environmental Science & Technology*, **2025**, 59, 31, 16786–16798. ([link](#))
91. B. Ghosh, H. Vapnik, H. Kim, Y. Kim, R. Birawat, Y. Lu*, **X. Su***, H. Yang*, “Electrochemical Separation and Clean Energy Applications of Rare Earth Elements,” *Chemical Reviews*, **2025**, Early View. ([link](#))
90. D. Gokhale, P. Jain, **X. Su***, “Uncovering the thermodynamics of photoelectrochemical separations: viability for low-solar-efficiency materials,” *Nature Communications*, **2025**, 16, 7284. ([link](#))
89. A. Faniyan, N. Kim, E. Harbut, J. Elbert, J. Li, R. Merrill, C. Kim, **X. Su***, “Investigating the role of membrane arrangements in nanofiltration-based redox-electrodialysis for whey protein valorization,” *ACS Sustainable Chemistry & Engineering*, **2025**, 13, 28, 10978–10992. ([link](#))
88. J. Jeon, Y. Kappenberg, A. Gautam, C. Y. Chen, J. Elbert, A. V. Mironenko, F. Galetto*, **X. Su***, “Planar Chiral Metallopolymers for Electrochemically-mediated Enantioselective Separations,” *Journal of the American Chemical Society*, **2025**, 147, 21, 17800–17889. ([link](#))
87. K. Cho, W. Oh, M. Fournier, **X. Su***, “Coupling interfacial redox-reactions with in-situ proton generation for the photoelectrochemical separation of rare-earth elements,” *Advanced Functional Materials*, **2025**, 2502529, Early View. ([link](#))
86. A. R. Santiago, A. Dutta, J. C. Wu, S. Yin, Y. W. Lee, C. H. Hou, D. Shukla*, **X. Su***, “Investigating the Structure-Function Relationships of Fluorinated Interfaces for PFAS Capture and Electrochemically-Mediated Release,” *Advanced Functional Materials*, **2025**, 2502317. Early View. ([link](#))
85. N. Kim, K. Knust*, **X. Su***, “Multiplexed and Membraneless Redox-Mediated Electrochemical Separations through Bipolar Electrochemistry,” *ChemSusChem*, **2025**, 18 (13), e202500497 ([link](#))
84. H. Jeong, I. I. Suni, R. Chen, M. Miletic, **X. Su**, E. G. Seebauer*, “Reactions of Fluid and Lattice Oxygen Mediated by Interstitial Atoms at the TiO₂ (110)-Water Interface,” *Physical Chemistry Chemical Physics*, **2025**, 27, 9522–9536. ([link](#))

83. J. Jeon, C. H. Chung, S. Roh, E. Bergman, M. Wang, **X. Su***, "Olefin-Assisted Electrochemical Recycling of Homogeneous Hydrosilylation Catalysts in Non-Polar Media," *JACS Au*, **2025**, 5, 3, 1221-1231. ([link](#))
82. H. Vapnik, H. E. Kim, Y. Kim, A. W. S. Ooi, H. B. Vibbert, A. H. A. Park, **X. Su***, "Selective electrochemical recovery of cerium over lanthanum from complex waste feedstocks by alternating current electro-precipitation," *Chemical Engineering Journal*, **2025**, 504, 158537. ([link](#))
81. J. C. Wu, **X. Su***, C. H. Hou*, "Photo-electrochemical decomplexation of cobalt complexes and enhanced cobalt recovery through electrified membranes," *Chemical Engineering Journal*, **2025**, 503, 158204. ([link](#))
80. Y. Li, A. Roman Santiago, K. Kim, J. Park, J. R. Hladik, **X. Su**, R. D. Cusick*, "Electrodepositing Polyvinyl Ferrocene Films to Enhance Oxyanion Recovery and Electrode Longevity," *ACS EST Engineering*, **2025**, 5, 4, 1023-1031. ([link](#))
79. G. Kim, H. Kim, M. Kim, N. Kim, B. Lee, S. Kim, **X. Su**, C. Kim*, "Scale-Up Strategies for Redox-Mediated Electrodialysis for Desalination: The Role of Electrode and Channel Stacks," *ChemSusChem*, **2025**. Early View. ([link](#))
78. D. Zhang, Y. Zi, J. Dai, L. Guo, D. Tang, **X. Su**, Z. Jiang, F. Chen*, "Simultaneous seawater desalination and electrical-power generation using low-temperature heat sources," *Chemical Engineering Journal*, **2025**, 513, 162649. ([link](#))
77. K. Cho, C. Chen, A. Aguda, M. J. Fournier, **X. Su***, "Toward sustainable electrochemically mediated separations driven by renewable energy," *Joule*, **2024**, 8, 12, 3259-3280. ([link](#))
76. J. Hong, **X. Su***, "Electrosynthesis of Unusual Nonfcc Palladium Hydride Nanoparticles," *Journal of the American Chemical Society*, **2024**, 146, 27, 18586-18591. ([link](#))
75. N. Kim, J. Elbert, **X. Su***, "Integrating redox-electrodialysis and electrosorption for the removal of ultra-short- to long-chain PFAS removal," *Nature Communications*, **2024**, 15, 8321. ([link](#))
74. S. Cotty, A. Faniyan, J. Elbert, **X. Su***. "Redox-Mediated Electrochemical Liquid-Liquid Extraction (ELLE) for the Continuous Molecularly-Selective Recovery of Critical Metals," *Nature Chemical Engineering*, **2024**, 1, 281-292. ([link](#)) [Front Cover]
73. C.H. Chung, S. Cotty, J. Jeon, J. Elbert, **X. Su***. "Auto-oxidation of redox electrodes for the selective recovery of platinum group metals," *Journal of Materials Chemistry A*, **2024**, 12, 15006-15018. ([link](#)) [Front Inside Cover]
72. N. Kim, V. S. Jeyaraj, J. Elbert, S. J. Seo, A. V. Mironenko, **X. Su***. "Redox-responsive halogen bonding as a highly selective interaction for electrochemical separations," *JACS Au*, **2024**, 4, 7, 2523-2538. ([link](#)) [Supplementary Cover]
71. R. Candea, H. Wang, M. T. Nguyen, M. Doucet, V. Glezakou, J. Browning, **X. Su***. "Unraveling the Role of Solvation and Ion Valency on Redox-Mediated Electrosorption through in situ Neutron Reflectometry and Ab initio Molecular Dynamics," *JACS Au*, **2024**, 4, 3, 919-929. ([link](#)) [Supplementary Cover]
70. N. Kim, A. Faniyan, **X. Su***. "Redox-Mediated Electrodialysis for Desalination, Environmental Remediation, and Resource Recovery," *ACS Energy Letters*, **2024**, 9, 8, 3887-3912. ([link](#))
69. W. Oh, N. Kim, **X. Su***, "Controlling Bicontinuous Polyelectrolyte Complexation for Membrane Selectivity: Redox-Mediated Electrochemical Separation of Volatile Fatty Acids," *Advanced Functional Materials*, **2024**, 35, 6, 2410511. ([link](#))
68. D. Rocker, K. Dietmann, L. Nagler, **X. Su**, P. Fraga-Garcia, S. P. Schwaminger, S. Berensmeier, "Design and Characterization of an Electrochemically-Modulated Membrane Chromatography Device," *Journal of Chromatography A*, **2024**, 1718, 464733. ([link](#))

67. M. Doucet*, R. Candeago, H. Wang, J. F. Browning, **X. Su**, "Studying Transient Phenomena in Thin Films with Reinforcement Learning," *Journal of Physical Chemistry Letters*, **2024**, 15 (16), 4444-4450. ([link](#))
66. W. Shi, J. Li, F. Gao, L. Meng, **X. Su**, Z. Wang*, "Strongly Coordinating Mediator Enables Single-Step Resource Recovery from Heavy Metal-Organic Complexes in Wastewater," *Nature Communications*, **2024**, 15, 10828. ([link](#))
65. F. C. Kalutantirige, J. He, L. Yao, S. Cotty, S. Zhou, J. W. Smith, E. Tajkhorshid, C. M. Schroeder, J. S. Moore, H. An, **X. Su**, Y. Li, Q. Chen*, "Beyond Nothingness: Formation and Functional Relevance of Voids in Polymer Films," *Nature Communications*, **2024**, 15, 2852. ([link](#))
64. R. Chen, H. Wang, M. Doucet, J. Browning, **X. Su***. "Thermo-Electro-Responsive Redox-Copolymers for Amplified Solvation, Morphological Control, and Tunable Ion Interactions," *JACS Au*, **2023**, 3, 12, 333-3344. ([link](#)) [Supplementary Cover]
63. N. Kim, W. Oh, K. Knust, F. Galetto, **X. Su***. "Molecularly selective polymer interfaces for electrochemical separations," *Langmuir*, **2023**, 39, 47, 16685-16700. *Invited Perspective*. ([link](#))
62. E. Mousset*, M. Fournier, **X. Su***. "Recent advances of reactive electroseparation systems for water treatment and selective resource recovery," *Current Opinion in Electrochemistry*, **2023**, 101384. ([link](#))
61. K. Cho, R. Chen, J. Elbert, **X. Su***. "Redox-Functionalized Semiconductor Interfaces for Photoelectrochemical Separations," *Small*, **2023**, 202305275. ([link](#))
60. N. Kim, J. Elbert, C. Kim, **X. Su***. "Redox-copolymers for Nanofiltration-enabled Electrodialysis," *ACS Energy Letters*, **2023**, 8, 2097-2105. ([link](#))
59. P. Baldaguez Medina, V. Ardilla Contreras, F. Hartmann, D. Schmitt, A. Klimek, J. Elbert, M. Gallei, **X. Su*** "Investigating the electrochemically-driven capture and release of PFAS by redox-metallopolymers sorbents," *ACS Applied Materials & Interfaces*, **2023**, 15, 18, 22112-22122. ([link](#))
58. A. Román Santiago, S. Yin, J. Elbert, J. Lee, D. Shukla, **X. Su***. "Imparting selective fluorophilic interactions in redox copolymers for the electrochemically mediated capture of short-chain alkyl substances," *Journal of the American Chemical Society*, **2023**, 145, 17, 9508-9519. ([link](#))[Supplementary Cover]
57. J. Jeon, J. Elbert, J. Chae, **X. Su***. "Chiral Metallopolymers for Redox-Mediated Enantioselective Interactions," *Advanced Functional Materials*, **2023**, 202301545. ([link](#))
56. K. Kim, A. Zagalskaya, J. L. Ng, J. Hong, T. A. Pham, V. Alexandrov, **X. Su***. "Coupling nitrate capture with ammonia production through bifunctional redox-electrodes," *Nature Communications*, **2023**, 14, 823. ([link](#))
55. N. Kim, J. Lee, **X. Su***. "Precision Tuning of Highly Selective Polyelectrolyte Membranes for Redox-mediated Electrochemical Separation of Organic Acids," *Advanced Functional Materials*, **2023**, 33(12), 2211645. ([link](#))
54. S. Cotty, N. Kim, **X. Su***. "Electrochemically-mediated recovery and purification of gold for sustainable mining and electronic waste recycling," *ACS Sustainable Chemistry & Engineering*, **2023**, 11 (9), 3975-3986. ([link](#))
53. R. Alam, M. Faheem, Y. He, **X. Su**, L. Zou*. "Ion selective electrosorption by two pseudocapacitive intercalating nanocomposite electrodes," *Desalination*, **2023**, 566, 116923. ([link](#))
52. H. Kim, S. Kim, N. Kim, **X. Su**, C. Kim*. "Multi-electrode scale-up strategy and parametric investigation of redox-flow desalination systems," *Desalination*, **2023**, 549, 116350. ([link](#))

51. W. Shi, J. Ma, R. Dai, **X. Su**, Z. Wang*. "Metal-Organic Framework with Redox-Active Bridge Enables Electrochemically Highly-Selective Removal of Arsenic from Water," *Environmental Science & Technology*, **2023**, 57, 15, 6342–6352. ([link](#))
50. Y. H. Deng, J. Jeon, **X. Su**, H. J. Kong*, et al. "In situ Immobilization of MnO₂ Nanosheets on a Porous Support for Rapid and Continuous Cleaning of Bisphenol A-Contaminated Water," *Chemical Engineering Journal*, **2023**, 472, 144653. ([link](#))
49. S. Cotty, J. Jeon, J. Elbert, V. Jeyaraj, A. Mironenko, **X. Su***. "Electrochemical Recycling of Homogeneous Catalysts," *Science Advances*, **2022**, 8(42), eade3094. ([link](#))
48. N. Kim, J. Jeon, J. Elbert, C. Kim*, **X. Su***. "Redox-mediated Electrochemical Desalination for Waste Valorization in Dairy Production," *Chemical Engineering Journal*, **2022**, 428, 131082. ([link](#))
47. H. Hübner, R. Candeago, D. Schmitt, A. Schieber, B. Xiong, M. Gallei*, **X. Su***. "Synthesis and covalent immobilization of redox-active metallopolymers for organic phase electrochemistry," *Polymer*, **2022**, 23 (244), 124656. *Special Issue: 30 Year Anniversary of Polyferrocenylsilanes: An Inspiration for New Advances in Main Group and Transition-Metal Containing Polymers.* ([link](#))
46. N. B. Üner, P. Baldaguez Medina, J. L. Dinari, **X. Su***, R. Mohan Sankaran. "Rate, Efficiency, and Mechanisms of Electrochemical Perfluorooctanoic Acid Degradation with Boron-Doped Diamond and Plasma Electrodes," *Langmuir*, **2022**, 38 (29), 8975-8986. ([link](#))
45. F. Galetto*, C. Silva, R. Beche, R. Balaguez, M. S. Franco, F. F. Asiss, F. Frizon, **X. Su**. "Decarboxylative ring-opening of 2-oxazolidinones: a facile and modular synthesis of beta-chalcogen amines," **2022**, *RSC Advances*, 12, 34496-34502. ([link](#))
44. M. A. Alkhadra, **X. Su**, M. E. Suss, H. Tian, E. N. Guyes, A. N. Shocron, K. M. Conforti, J. P. De Souza, N. Kim, M. Tedesco, K. Khoiruddin, I. G. Wenten, J. G. Santiago, T. A. Hatton, M. Z. Bazant*. "Electrochemical Methods for Water Purification, Ion Separations, and Energy Conversion," *Chemical Reviews*, **2022**. 122, 16, 13547–13635. ([link](#))
43. H. An, J. W. Smith, B. Q. Ji, S. Cotty, S. Zhou, L. Yao, F. C. Kalutanirige, W. Chen, Z. Qu, **X. Su**, J. Feng, Q. Chen*. "Mechanism and performance relevance of nanomorphogenesis in polyamide films revealed by quantitative 3D imaging and machine learning," *Science Advances*, **2022**, 8, 8. ([link](#))
42. A. Roman Santiago, P. Baldaguez Medina, **X. Su***. "Electrochemical Remediation of Perfluoroalkyl Substances from Water," **2022**, *Electrochimica Acta*, 403(20), 139635. *Special Invited Issue for 29th ISE Topical Meeting: Energy and water: electrochemistry in securing the sustainable society development.* ([link](#))
41. J. Hong, K. Cho, V. Presser, **X. Su***, "Recent advances in wastewater treatment using semiconductor photocatalysts," *Current Opinion in Green and Sustainable Chemistry*, **2022**, 36. ([link](#))
40. N. Kim, J. Jeon, R. Chen, **X. Su***. "Electrochemical Separations in Bio and Food Manufacturing for Organic Acids and Protein Recovery", **2022**, 178, 267-288. *Chemical Engineering Research & Design. Emerging Stars Special Issue.* ([link](#))
39. Y. Kim, H. Kim, K. Kim, H. Eom, **X. Su**, J. Lee*. "Electrosorption of Cadmium Ions in Aqueous Solutions Using a Copper-gallate Metal-organic Framework." *Chemosphere*, **2022**, 286, 131853. ([link](#))
38. K. Kim, D. Raymond, R. Candeago, **X. Su***. "Selective Cobalt and Nickel Electrodeposition for Lithium-Ion Battery Recycling through Integrated Electrolyte and Interface Control," *Nature Communications*, **2021**, 12, 6554. ([link](#)). *2021 Editor's Highlight by Nature Communications in "Energy"*.

37. R. Chen, J. Feng, J. Jeon, T. Sheehan, C. Ruettiger, M. Gallei, D. Shukla, **X. Su***. “Structure and Potential Dependent Selectivity in Redox-Metallopolymers: Electrochemically-mediated Multicomponent Metal Separations,” *Advanced Functional Materials*, **2021**, 31(15),2009307. ([link](#))
36. H. Vapnik, J. Elbert, **X. Su***. “Redox-Copolymers for the Recovery of Rare-Earth Elements by Electrochemically-Regenerated Ion Exchange,” *Journal of Materials Chemistry A*, **2021**, 9, 20068-20077. *Themed Issue: Journal of Materials Chemistry A Emerging Investigators*. ([link](#))
35. P. Baldaguez Medina, S. Cotty, K. Kim, J. Elbert, **X. Su***. “Electrochemically-mediated Remediation of GenX Using Redox-Copolymers,” *Environmental Science: Water Research & Technology*, **2021**, 7, 2231-2240. *Emerging investigator series*. ([link](#))
34. K. Kim, R. Candeago, . Raymond, G. Kim, A. H. Park, **X. Su***. “Electrochemical Approaches for Selective Recovery of Critical Elements in Hydrometallurgical Processes of Complex Feedstocks,” *iScience*, **2021**, 24(5), 102374. Special issue on *Material Criticality*. ([link](#))
33. Y. Kim, K. Kim, H. H. Eom, **X. Su***, J. W. Lee*. “Electrochemically-assisted removal of cadmium ions by redox active Cu-based framework,” *Chemical Engineering Journal*, **2021**, 421 (1),129765. ([link](#))
32. N. Kim, E. Lee, **X. Su***, C. Kim*. “Parametric investigation of the desalination performance in multichannel membrane capacitive deionization (MC-MCDI),” *Desalination*, **2021**, 503, 114950. ([link](#))
31. B. Gurkan*, **X. Su**, A. Klemm, Y. Kim, S. Mallikarjun Sharada, A. Rodriguez-Katakura, K. J. Kron. “Perspective and challenges in electrochemical approaches for reactive CO₂,” *iScience*, **2021**, 24, 12, 103422. ([link](#))
30. L. Bromberg, N. Ozbek, K. J. Tan, **X. Su**, L. Padhye, T. A. Hatton*. “Iron phoshomolybdate complexes in electrocatalytic reduction of aqueous disinfection byproducts,” *Chemical Engineering Journal*, **2021**, 408, 127354. ([link](#))
29. L. Bromberg, **X. Su**, V. Martis, T. A. Hatton*. “Reactive Fibrous Materials for Decontamination of Chemical and Biological Threats,” *Key Engineering Materials*, **2021**, 893, 3–10. ([link](#))
28. A. Kumar, Y. Kim, **X. Su**, H. Fukuda, G. Naidu, F. Du, F., S. Vigneswaran, E. Drioli, T. A. Hatton, J. Lienhard*. “Advances and challenges in metal ion separation in water”, *Trends in Chemistry*, **2021**, 3 (10), 819-831. ([link](#))
27. K. Kim, P. Baldaguez Medina, J. Elbert, E. Kaiywa, R. Cusick, Y. Men, **X. Su***. “Molecular Tuning of Redox Copolymers for Selective Electrochemical Remediation,” *Advanced Functional Materials*, **2020**, 30(52), 2004635. ([link](#))
26. K. Kim, S. Cotty, J. Elbert, R. Chen, C. H. Hou, **X. Su***. “Asymmetric Redox-Polymer Interfaces for Electrochemical Reactive Separations: Synergistic Capture and Conversion of Arsenic,” *Advanced Materials*, **2020**, 32(6), 1906877. ([link](#))
25. R. Candeago, K. Kim, H. Vapnik, S. Cotty, M. Aubin, S. Berensmeier, A. Kushima, **X. Su***. “Semi-conducting Polymer Interfaces for Electrochemically Assisted Mercury Remediation,” *ACS Applied Materials & Interfaces*, **2020**, 12(44), 49713–49722. ([link](#))
24. N. Kim, **X. Su***, C. Kim*. “Electrochemical lithium recovery system through the simultaneous lithium enrichment via sustainable redox reaction,” *Chemical Engineering Journal*, **2020**, 127715. ([link](#))
23. R. Chen, T. Sheehan, M. Brucks, J. L. Ng, **X. Su***. “Capacitive Deionization and Electrosorption for Heavy Metal Removal,” *Environmental Science: Water Research Technology*, **2020**, Themed Collection: Capacitive Deionisation,6, 258-282. ([link](#))

22. J.S. Kang, S. Kim, D. Y. Chung, Y. J. Son, K. Jo, **X. Su** et al. “Rapid Inversion of Surface Charges in Heteroatom-Doped Porous Carbon: A Route to Robust Electrochemical Desalination,” *Advanced Functional Materials*, **2020**, 30(9), 1909387. ([link](#))
21. K. J. Tan, **X. Su**, T. A. Hatton*. “An asymmetric iron-based redox-active system for electrochemical separation of ions in aqueous media,” *Advanced Functional Materials*, **2020**, 30(15), 1910363. ([link](#))
20. P. Srimuk, **X. Su**, D. Aurbach, V. Presser*. “Charge transfer materials for electrochemical water desalination, ion separation, and recovery of elements,” *Nature Reviews Materials*, **2020**, 5, 517-538. ([link](#))
19. **X. Su***. “Electrochemical Interfaces for Chemical and Biomolecular Separations,” *Current Opinion in Colloid and Interface Science*, **2020**, 46, 77-93. Special Issue on *Colloidal and Interfacial Challenges related to Separations, Analysis, and Recycling*. ([link](#))

Publications prior to joining Illinois

18. **X. Su**, A. Kushima, C. Halliday, J. Zhou, J. Li, T. A. Hatton. “Electrochemically-Mediated Remediation of Heavy Metal Oxyanions by Redox-Active Metallopolymers: Selective Separation of Chromium and Arsenic,” *Nature Communications*, **2018**, 9, 4701. ([link](#))
17. J. Lee, P. Pattarachai, S. Fleischmann, **X. Su**, T. A. Hatton, V. Presser*. “Redox-electrolytes for non-flow electrochemical energy storage: A critical review and best practice,” *Progress in Materials Science*, **2019**, 101, 46-89. ([link](#))
16. L. Bromberg, **X. Su**, K. Philips, T. A. Hatton. “Magnesium Thiodialkanoates: Dually-Functional Additives to Organic Coatings,” *Industrial & Engineering Chemistry Research*, **2018**, 57(32), 10992–11004. ([link](#))
15. T. Winter, **X. Su**, T. A. Hatton, M. Gallei. “Ferrocene-Containing Inverse Opals by Melt-Shear Organization of Core/Shell Particles,” *Macromolecular Rapid Communications*, **2018**, 39, 1800428. ([link](#))
14. **X. Su**, T. A. Hatton. “Electrosorption at functional interfaces: from molecular-level interactions to electrochemical cell design,” *Physical Chemistry Chemical Physics*, **2017**, 19, 23570 – 23584. [Back-Cover Highlight] ([link](#))
13. **X. Su**, J. Hubner, M. Kauke, L. Dalbosco, C. Gonzalez, J. Thomas, E. Zhu, M. Franzreb, T.F. Jamison, T.A. Hatton. “Redox Interfaces for Electrochemically Controlled Protein-Surface Interactions: Bioseparations and Heterogeneous Enzyme Catalysis,” *Chemistry of Materials*, **2017**, 29 (13), 5702–5712. ([link](#))
12. **X. Su**, K.J. Tan, J. Elbert, C. Ruttiger, M. Gallei, T.F. Jamison, T.A. Hatton. “Asymmetric Faradaic systems for selective electrochemical separations,” *Energy & Environmental Science*, **2017**, 10, 1272–1283. ([link](#))
11. **X. Su**, T.A. Hatton. “Redox-electrodes for Selective Electrochemical Separations,” State-of-Art Perspective. *Advances in Colloid and Interface Science*, **2017**, 244, 6–20. ([link](#))
10. **X. Su**, L. Bromberg, V. Martis, F. Simeon, A. Huq, T.A. Hatton. “Post-synthetic Functionalization of Mg-MOF-74 with Tetraethylenepentamine: Structural Characterization and Enhanced CO₂ Adsorption,” *ACS Applied Materials & Interfaces*, **2017**, 9 (12), 11299–11306. ([link](#))
9. **X. Su**, L. Bromberg, K.J. Tan, T.F. Jamison, L.K. Padhye, T.A. Hatton. “Electrochemically Mediated Reduction of Nitrosamines by Hemin-Functionalized Redox Electrodes,” *Environmental Science & Technology Letters*, **2017**, 4 (4), 161–167. ([link](#))

8. J.R. Du, **X. Su**, X. Feng. “Chitosan/sericin blend membranes for adsorption of bovine serum albumin,” *The Canadian Journal of Chemical Engineering*, **2017**, 95 (5), 954–960. ([link](#))
7. **X. Su**, H. Kulik, T.F. Jamison, T.A. Hatton. “Anion-selective redox electrodes: electrochemically-mediated separation with organometallic interfaces,” *Advanced Functional Materials*. **2016**, 26(20), 3394–3404. [Back-Cover Highlight] ([link](#))
6. L. Bromberg, **X. Su**, V. Martis, Y. Zhang, T.A. Hatton. “Self-Decontaminating Fibrous Materials Reactive toward Chemical Threats,” *ACS Applied Materials & Interfaces*, **2016**, 8 (27), 17555–17654. ([link](#))
5. L. Bromberg, **X. Su**, T.A. Hatton. “Functional networks of organic and coordination polymers for Fructose Conversion,” *Chemistry of Materials*, **2014**, 26 (21), 6257–6264. ([link](#))
4. J. Kozak, J. Wu, **X. Su**, F. Simeon, T.A. Hatton, T.F. Jamison. “Bromine-Catalyzed Conversion of CO₂ and Epoxides to Cyclic Carbonates under Continuous Flow Conditions,” *Journal of American Chemical Society*, **2013**, 135 (49), 18497–18501. ([link](#))
3. L. Bromberg, **X. Su**, T.A. Hatton. “Heteropolyacid-Functionalized Aluminum 2-Aminoterephthalate Metal-Organic Frameworks as Reactive Aldehyde Sorbents and Catalysts,” *ACS Applied Materials Interfaces*, **2013**, 5 (12), 5468–5477. ([link](#))
2. L. Bromberg, **X. Su**, T.A. Hatton. “Aldehyde Self-Condensation Catalysis by Aluminum Aminoterephthalate Metal-Organic Frameworks Modified with Aluminum Isopropoxide,” *Chemistry of Materials*, **2013**, 25 (9), 1636–1642. ([link](#))
1. **X. Su**, C. Vesco, J. Fleming, V. Choh. “Density of Ocular Components of the Bovine eye,” *Optometry and Vision Science*, **2009**, 86(10), 1187–1195. ([link](#))

Reports

1. **X. Su***, P. Westerhoff, E. Taylor. Workshop Proceedings Report on “National Science Foundation (NSF) Workshop on Detection, Removal, and Safe Destruction of PFAS from Semiconductor Manufacturing Waste Streams”, November **2024**.

Book Chapters

2. A. Roman Santiago, J. Jeon, E. Kaiywa, R. Cusick, **X. Su**. “Membrane-based electrochemical technologies: III. Selective ion removal/recovery,” in *Electrochemical Membrane Technology for Water and Wastewater Treatment*, **2022**, 403-444. editors: Guohua Chen, Kwang-Ho Choo, Zhiwei Wang, Chuyang Tang, David Waite, Elsevier. ([link](#))
1. **X. Su**, T.A. Hatton. *Kirk-Othmer Encyclopedia for Chemical Technology*. “Electroseparations: Electrosorption,” **2016**, 1–11. ([link](#))

Society Magazines

3. R. C. Alkire*, **X. Su**, T. Osaka. “Historical Perspectives on Electroplating during the Past 100 Years,” *The Electrochemical Society Interface*, **2022**, In Press.
2. **X. Su***, Z. Chen, J. St-Pierre, N. Vasiljevic. “Electrochemistry for Recycling,” *The Electrochemical Society Interface*, **2021**, 30(3), 41. Fall 2021 Issue on Interface. ([link](#))
1. **X. Su***. “Electrochemical Separations for Metal Recycling,” *The Electrochemical Society Interface*, **2020**, 29, 55. Fall 2020 Issue on Electrochemistry for Sustainability. ([link](#))

PATENTS

23. **X. Su**, N. Kim, J. Elbert, International (PCT) Patent Application No. PCT/US25/41623 based on Provisional Patent Application No. 63/682,439. “Copolymer, working electrode, and electrochemical device and method for the selective recovery of lithium”, *Filed: 08/12/2025*.
22. W. Oh, **X. Su**. PCT Patent Application No.: PCT/US2025/040029, “System, method, and bicontinuous polyelectrolyte complex-layered membrane for the selective recovery of volatile fatty acids”. *Filed: 07/31/2025*.
21. **X. Su**, J. Jeon, Y. Kappenberg, F. Galetto, C. Y. Chen, U.S. Patent Application No. 63/795,595. “Electrochemical enantioselective separations through planar chiral metallopolymers”, *Filed: 04/27/2025*.
20. N. Kim, J. Elbert, **X. Su**. U.S. Patent Application No. 63/692,701, “Combining redox-electrodialysis and electrosorption for the removal of PFAS with various chain lengths”. *Filed: 09/09/2024*.
19. J. Jeon, E. Bergman, **X. Su**, U.S. Patent Application No. 63/680,834, “Method of recycling homogenous platinum-group metal catalyst”, *Filed: 08/08/2024*.
18. S. Cotty, A. Faniyan, J. Elbert, **X. Su**. U.S. Patent Application No. 63/472,762. “Electrified Liquid-Liquid Extraction System for Selective Extraction of Precious Metal Species.” *Filed: 06/11/2024. Published: 12/26/2024*.
17. **X. Su**, K. Cho, U.S. Patent Application No. 63/525,021. “Photoelectrochemical (PEC) System and Method, and Redox-Functionalized Photoelectrode for Separation of Ions”. *Filed: 07/01/2024. Published: 01/09/2025*.
16. N. Kim, J. Lee, **X. Su**. U.S. Patent Application No. 18/527,934. “System and Method for Recovering Organic Acid Products from a Multicomponent Feed Solution.” *Filed: 12/04/2023. Published: 06/06/2024*.
15. N. Kim, J. Elbert, **X. Su**. U.S. Patent Application No. 18/382,796. “Redox-Responsive Halogen Bonding Polymers for Selective Electrochemical Separation.” *Filed: 10/23/2023. Published: 05/09/2024*.

14. J. Jeon, J. Elbert, **X. Su**. U.S. Patent Application No. 18/376,348. "Supramolecular chirality in redox-polymers." *Filed: 10/03/2023. Published: 04/25/2024.*
13. N. Kim, J. Elbert, **X. Su**. U.S. Patent Application No. 18/223,653, "System and Method for Redox Polymer Electrodialysis." *Filed: 07/19/2023. Published: 01/25/2024.*
12. S. Cotty, **X. Su**. U.S. Patent Application No. 63/444,334. "Electrochemical System and Method for Selective Recovery of Gold from Electronic Waste and Mining Streams." *Filed: 02/09/2023. Published: 02/08/2024.*
11. S. Cotty, **X. Su**. International Patent Application PCT/US2022/025467. "Electrochemical Recycling of Homogeneous Catalysts." *Filed: 04/20/2022, Published: 03/02/2023. Priority to: US 63/237,364.*
10. K. Kim, **X. Su**. U.S. Patent Application No 20240254017 "Redox-Active Composite and Electrochemical Reactive Separation of Nitrate to Ammonia." *Filing Date: 01/07/2023. Published: 08/01/2024.*
9. K. Kim, **X. Su**. International Patent Application No. PCT/US22/45674 "System and method of selective electrodeposition for metal recycling" *Filed: 10/04/2022. Published: 04/26/2024. Priority to: US 63/253,47.*
8. N. Kim, J. Elbert, C. Kim, **X. Su**. International Patent Application PCT/US2022/035675 (WO2023278666A2). "System and method for redox-mediated electrodialysis." *Filing Date: 2022/06/30. Published: 2023/02/09. Priority to: US18/568,009.*
7. H., Vapnik, J. Elbert, **X. Su**. U.S. Patent Application No. 18/382,796 "Electrochemically Regenerated Ion-Exchange Using Redox-Polymers." *Filed: 06/10/2021. Published: 06/09/2022.*
6. K. Kim, P. B. Medina, J. Elbert, **X. Su**. U.S. Patent Application No. 63/210,289. "Copolymers and Electrochemical Systems and Methods for the Remediation of Organic Pollutants." *Filed: 06/14/2021. Published: 09/12/2024.*
5. **X. Su**, R. Candeago. U.S. Patent Application No. 63/043,909 "Working Electrode, System, and Method for the Electrochemical Remediation of a Metal Species." *Filed: 06/25/2020. Published: 10/06/2023.*
4. **X. Su**, T. A. Hatton. U.S. Patent Application No. 62/413,960. "Use of electrochemical devices or systems comprising redox-functionalized electrodes for bioseparation and biocatalysis." *Filed: 10/27/2016.*
3. L. Bromberg, **X. Su**, T. A. Hatton. U.S. Patent US20170325495A1. "Selective reduction of tobacco specific nitrosamines and related methods." *Filing Date: 05/10/2017. Granted: 08/29/2019. Priority to: US15/592,160.*
2. **X. Su**, D. Achilleos, T. A. Hatton. International Patent Application WO2017/075263. "Electrochemical devices or systems comprising redox-functionalized electrodes and uses thereof." *Filing Date: 10/27/2016. Publication Date: 04/05/2017.*
1. **X. Su**, D. Achilleos, T. A. Hatton. U.S. Patent US20200399146A1. "Electrochemical devices or systems comprising redox-functionalized electrodes and uses thereof." *Filing Date: 07/06/2020. Granted: 2024/04/02. Priority to: US16/921,683.*

INVITED LECTURES AND INVITED CONFERENCE PRESENTATIONS**Invited Department Lectures**

88. **X. Su**, “Molecular design of electrochemical interfaces for selective separations”, Department of Chemical Engineering, October 30th, **2025**, University of Texas Austin.
87. **X. Su**, “Integrating electrochemical removal and concentration technologies with destruction for semiconductor manufacturing streams”, WaterTech Innovation Conference, Department of Civil and Environmental Engineering, June 12th, **2025**, National Taiwan University.
86. **X. Su**, “Controlling interfacial electrochemically-driven interactions for selective separations”, University of Pennsylvania, Chemical Engineering Department, May 8th, **2025** Philadelphia, PA.
85. **X. Su**, “Developing redox-mediated electrochemical separations for multicomponent systems”, UCLA Chemical & Biomolecular Engineering Seminar, April 18th, **2025**, Los Angeles, CA.
84. **X. Su**, ”Electrochemical pathways for PFAS removal and destruction”, Stonybrook University, June 11th, **2024**, Invited Lecture at NYS Center for Clean Water Technology.
83. **X. Su**, ”Generalizing electrochemical separations through molecular design”, City College of New York, May 13th, **2024**, Department Seminar in Chemical Engineering.
82. **X. Su**, ”Redox-mediated electrochemical separations: from fundamentals to applications”, Georgia Institute of Technology, March 20th, **2024**, *2024 Mellichamp Lecture in ChBE*. Atlanta, GA.
81. **X. Su**, ”Redox-mediated electrochemical separations: from fundamentals to applications”, Rice University, January 18th, **2024**, Department Seminar in Chemical Engineering. Houston, TX.
80. **X. Su**, Departmental Seminar at University of Wisconsin-Madison, December 5th, **2023**. Title: ”Interfacial engineering of electrodes for selective molecular separations”, Madison, WI.
79. **X. Su**, ”Unlocking Molecular Selectivity in Electrochemical Separations”, September 29th, **2023**, MIT Chemical Engineering, Fall 2023 Seminar Series. Cambridge, MA.
78. **X. Su**, ”Unlocking molecular selectivity at electrochemical interfaces through redox-electron transfer”, October 24th, **2023**, Caltech, Division of Chemistry and Chemical Engineering, Pasadena, CA.
77. **X. Su**, ”Redox Reactions in Action: Towards Molecular Selectivity in Electrochemical Separations”, September 11th, **2023**, Penn State, *David S. Kappe Lecture Series*.
76. **X. Su**, “Integrating reaction and separations through redox-active electrodes for environmental remediation and resource recovery,” June 28th, **2023**, National Tsing-Hua University (NTHU), Department of Chemical Engineering, Taiwan.
75. **X. Su**, “Controlling interfacial mechanisms at electro-responsive polymers for selective separations,” April 28th, **2023**, Iowa State University, Department of Chemistry, Ames, IA.
74. **X. Su**, “Redox-mediated electrochemical strategies for precision separations: a pathway for decarbonization and circularity,” April 14th, **2023**, Resnick Sustainability Institute Symposium, California Institute of Technology, Pasadena, CA.
73. **X. Su**, “Coupling reaction and separations through redox-electrochemistry for environmental remediation,” April 4th, **2023**, Department of Civil and Environmental Engineering, University of Auckland, Auckland, New Zealand.
72. **X. Su**, “Deploying reactive separation strategies for waste treatment, environmental remediation, and water purification,” February 24th, **2023**, Environmental Engineering Program, Department of Civil and Environmental Engineering, George Washington University. [virtual]

71. **X. Su**, “Redox-mediated electrochemical separations as a sustainable pathway for critical element recovery, materials recycling, and waste valorization,” January 13th, **2023**, University of Tokyo, Institute of Industrial Science, Tokyo, Japan.
70. **X. Su**, “Redox-responsive interfaces for electrochemical separations: from molecular selectivity to process intensification,” October 24th, **2022**, Department of Chemical and Biomolecular Engineering, Cornell University. Ithaca, NY.
69. **X. Su**, “Molecularly-selective separations: the role of electrochemistry and electrochemical engineering,” June 23rd, **2022**. Argonne National Laboratory (ANL). Lemont, IL.
68. **X. Su**, “Polymer-functionalized electrodes for advanced separations: from electrosorption to electrodeposition”, Department of Chemistry, University of Saarland, May 16th, **2022**. Organisch-Chemisches & Makromolekulares Kolloquium. Saarbrücken, Germany.
67. **X. Su**, “Redox-electrochemistry for separations: from molecular selectivity to process intensification,” Institute of Electrochemistry, Ulm University, May 6th, **2022**. Ulm Germany.
66. **X. Su**, “Molecular Engineering of electroactive interfaces for reactive separations,” September 16th, **2021**. College of Engineering, Rochester Institute of Technology (RIT). [Virtual]
65. **X. Su**, “Molecular Design and Electrochemical Engineering of Redox-Active Interfaces for Selective Electrochemical Separations,” August 13th, **2021**, Department of Chemistry, Universidade Federal de Santa Catarina (UFSC), Brazil. [Virtual]
64. **X. Su**, “Molecular Design of Charge-Transfer Interactions for Selective Electrochemical Separations,” March 4th, **2021**. Invited Seminar in the Department of Chemical Engineering, University of Illinois Chicago. [Virtual]
63. **X. Su**, “Redox-Electrodes for integrating reactions and separations: a path for process intensification,” February 4th, **2021**. Invited Seminar in the Department of Chemical Engineering, Case Western Reserve University. [Virtual]
X. Su, “Electrochemical Interfaces for Selective Chemical and Environmental Separations,” Invited Seminar, Eindhoven University of Technology, Netherlands. June 23rd, **2020** [Virtual]
62. **X. Su**, “The Role Of Charge-Transfer Interactions In Electrochemical Separations: Tunability And Selectivity,” August 20th, **2019**. Invited INM Colloquium, Leibniz Institute of New Materials. Saarbrücken, Germany.
61. **X. Su**, “Molecular Engineering of Advanced Electrochemical Interfaces,” May 27th, **2019**. Invited Symposium, Xi’an JiaoTong University, School of Materials Science and Engineering. Xi’an, China.
60. **X. Su**, “Design of molecularly-selective separations,” Department of Mechanical Engineering, Technical University of Munich, September 10th, **2018**. Munich, Germany.
59. **X. Su**, “Design of advanced electrochemical interfaces for molecularly-selective separations,” Karlsruhe Institute of Technology, Institute of Functional Interfaces, May 17th, **2018**. Karlsruhe, Germany.
58. **X. Su**, “Molecular Engineering of Electrochemical Materials for Advanced Environmental Separations and Green Sustainable Processing.” April 10th, **2018**. Columbia University, Department of Earth and Environmental Engineering, New York, NY.
57. **X. Su**, “Molecular Design of Redox-Interfaces for Selective Electrochemical Separations.” February 27th, **2018**. University of Illinois Urbana-Champaign, Department of Chemical and Biomolecular Engineering, Champaign, IL.

56. **X. Su**, “Molecular Engineering of Electrochemical Interfaces for Advanced Separations and Green Process Intensification.” February 8th, **2018**. McGill University, Department of Chemical Engineering, Montreal, Canada.
55. **X. Su**, “Organometallic Redox-Interfaces for Selective Electrochemical Separations.” University of Darmstadt, March 17th, **2017**. Technical Darmstadt, Germany.
54. **X. Su**, “Organometallic Redox-Interfaces for Selective Electrochemical Separations.” University of Jena, March 15th, **2017**. Jena, Germany.
53. **X. Su**, T. F. Jamison, T. A. Hatton. “Design of redox-electrodes for selective electrochemical separations.” Invited Seminar in Physical Chemistry Group, Université Blaise Pascal, August 30th, **2016**. Clermont-Ferrand, France.

Invited Award Lectures

52. **X. Su**, “Molecular Design of Redox-Polymers for Selective Electrochemical Separations,” ACS Analytical Division Awards Lecture and Symposium for Satinder Ahuja Award for Young Investigators in Separation Science, March 2nd, **2025**, Pittcon, Boston, MA.
51. **X. Su**, AIChE Annual Meeting Separations Division Awards Lecture, November 5-10th, **2023**. Title: “Redox-mediated electrochemical separations: from Fundamentals to Applications”, AIChE Annual Meeting. Orlando, FL.
50. **X. Su**, “Molecularly-selective electrochemical separations for sustainable chemical manufacturing, materials recycling, and environmental remediation,” September 3rd, **2023**. *74th Annual International Society of Electrochemistry (ISE) Meeting*, ISE Green Electrochemistry Prize Award Lecture. Lyon, France.
49. **X. Su**, “Redox reactions in action: electro-responsive interfaces for sustainable separations,” June 5th, **2023**. *97th ACS Colloid and Surface Science Symposium*, Unilever Award Lecture. Raleigh, NC.
48. **X. Su**, “Electrochemically-driven reactive separations for environmental remediation and resource recovery,” March 26-30, **2023**, American Chemical Society, ACS ENVR, RSC Environmental Science Journals Symposium, Showcasing Emerging Investigators. Indianapolis, IN.
47. **X. Su**, “Redox-Active Electrochemical Interfaces for Molecularly-Selective Separations,” June 10th **2020**, 94th ACS Colloid & Surface Science Symposium, Rice University, *94th ACS Colloids & Surface Science Meeting*. Victor K. Lamer Award Lecture. Houston, TX.
46. **X. Su**, “Molecular Design of Redox-Electrodes for Selective Separations and Environmental Remediation,” University of Auckland, Department of Civil and Environmental Engineering, January 23rd, **2018**. Whakapukahatanga Taiao Research Fellowship. Auckland, New Zealand.
45. **X. Su**, “Design of redox-responsive electrochemical interfaces for molecular recognition and advanced separation processes,” Langmuir Graduate Student Award Oral Symposium. *90th ACS Colloid and Surface Science Symposium*, Harvard University, June 6th, **2016**. Cambridge, MA.

Invited Industry and Workshop Lectures

44. **X. Su**, “Translating electrochemical separations to industrial applications in critical element recovery and chemical manufacturing,” UOP Honeywell **2025** Invitational Lecture Series, Des Plaines, IL, MA. June 10th, 2025.
43. **X. Su**, “The role of polymer design and electrochemistry for the sustainable capture, concentration, and destruction of PFAS”. German Chemical Society (GDCh), Makro invited lecture. May 16th, **2025**. *Virtual*.

42. **X. Su**, A. Mironenko, “Designing electrochemical separations for industrial chemical manufacturing: from catalyst recycling to multicomponent purification”, DOW invited seminar, February 26th, **2025**. Lake Jackson, TX.
41. **X. Su**, “Empowering biomanufacturing: unlocking the potential of electrochemical separations for sustainable downstream processing,” June 22nd, **2023**, BioMADE Webinar.
40. **X. Su**, “Molecular design of redox-interfaces for sustainable separation processes,” May 23rd, **2023**, Unilever Invited Lecture, *Unilever Ltd* [Virtual].
39. **X. Su**, “Developing next-generation electrochemical separation technologies for water treatment, chemical manufacturing, and resource recovery,” March 14th, **2023**, Nalco Ecolab. Naperville, IL.
38. **X. Su**, “Electrochemical separations for multicomponent metal recovery in battery recycling,” November 2nd, **2022**. Northeastern-MIT Battery Sustainability Workshop. “Forum for future collaborators to CBS”. Boston, MA.
37. **X. Su**, “Engineering Electrochemical Reactive Separations for Environmental Remediation of Persistent Micropollutants,” Corning R&D, July 28th, **2022**. [Virtual]
36. **X. Su**, “Engineering precision separations for sustainable manufacturing & recycling,” May 19th, **2022**. Merck Innovation Seminar, Merck EMD. Darmstadt, Germany.
35. **X. Su**, “Supramolecular control of redox-mediated interactions for ion-selective electroseparations,” August 12th, **2021**, Department of Energy (DOE), Office of Basic Energy Sciences (BES), 2021 Separation Science Program Meeting. [Virtual]
34. **X. Su**, “Electrifying separation processes: molecular design, functional materials, and process development,” July 15th, **2021**. DOW Invited Seminar. [Virtual]
33. **X. Su**, “Electrochemical Separations and Metal Recycling,” November 23rd, 2020, Xerion Battery Inc, Distinguished Lecture Series. [Virtual]
32. **X. Su**, “Digital Transformations in Education: Challenges, Computational Tools, New Methodologies,” School of Chemistry, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, August 21st, 2018 (videoconference).

Invited Conference Presentations

31. **X. Su**, “Molecular design of polyelectrolytes for advanced separations”, February 1-6, **2026**. Gordon Research Conference for Colloidal, Macromolecular and Polyelectrolyte Solutions, Ventura, CA. [Upcoming]
30. **X. Su**, “Redox-mediated electrochemical separations for the sustainable recycling of metals from e-waste”, Pacificchem 2025, December 15-20, **2025**. Sustainable Electronics: from metal recovery and plastics valorization to biodegradable electronics. [Upcoming]
29. **X. Su**, “The development path of redox-mediated electrochemical separations”, AIChE Annual Meeting, November 2-6, **2025**. Symposium Celebrating T. Alan Hatton’s 75th Birthday (Invited).
28. **X. Su**, “Molecular Design of Electroactive Polyelectrolytes for Selective Electrochemical Separations”, Keynote Lecture in the International Symposium of Polyelectrolytes, July 13-18, **2025**, Campinas, Brazil. [Upcoming]
27. **X. Su**, “Continuous redox-electrochemical separations for critical element recovery”, 7th Conference of Electrochemical and Membrane Separations, May 19, **2025**, Wroclaw, Poland. *Virtual*.
26. **X. Su**, “Engineering Scalable and Continuous Electrochemical Separations for Critical Metal Recovery”, 247th Electrochemical Society (ECS) Meeting, May 20, **2025**, Montreal, Canada. Symposium ”E01: Electrochemical Deposition for Advanced Manufacturing and Sustainability”.

25. **X. Su**, “Engineering continuous redox-electrochemical separations for ion-selective recovery”, ACS Spring 2025, March 24, **2025**, San Diego, CA. Symposium on “Advancements in Ion Separations: From Fundamental to Applied Research”.
24. **X. Su**, “Electrochemical adsorption and membrane platforms for ultra-short, short-, and long-chain PFAS remediation”, ACS Spring 2025, March 26, **2025**, San Diego, CA. Symposium on “Electrified Wastewater Management”.
23. **X. Su**, “Redox-mediated electrochemical separations for homogeneous catalyst recycling”, Telluride Meeting on Electrochemical Separations, February 18, **2025**, Telluride, CO.
22. **X. Su**, “Molecular Design of Redox-Mediated Electrochemical Separations for Critical Element Recovery”, AICHE Annual Meeting, October 29th, **2024**, Critical Minerals for the Clean Energy Transition III (Invited Talks), San Diego, CA.
21. **X. Su**, “Imparting Selectivity in Electrodialysis and Electrodeposition Platforms for Value-Added Ion Recovery”, 15th International Symposium on Electrokinetics (ELKIN2024), September 18-20th, **2024**, Seville, Spain.
20. **X. Su**, “Electrochemical separation processes for sustainable mining”, 63rd Annual Conference of Metallurgists on August 19-22, **2024**, Halifax, Canada.
19. **X. Su**, “Coupling Redox-Electrochemistry with Membrane Design for Environmental Remediation and Resource Recovery”, Gordon Research Conference (GRC) on Membrane Separations, July 28th - August 2nd, **2024**, New Hampshire.
18. **X. Su**, “Electrochemical separations for enabling sustainable biomanufacturing”, May 18th, **2024**, BioMade Member’s Meeting, Unit Operations in Biomanufacturing, Minneapolis, MN.
17. **X. Su**, J. Browning, H. Wang, M. Doucet, R. Candeago, R. Chen, “Leveraging In-situ Neutron Reflectometry (NR) for the Investigation of Ion-selective Electrochemical Separations”, May 9th, **2024**, Joint APS/CNM Workshop 2: Advanced Characterizations for Critical Materials Innovation and Sustainability, Argonne National Laboratory.
16. **X. Su**, Kiwyong Kim “Selective electrodeposition for lithium-ion battery recycling: tuning interfacial chemistry for selective cobalt and nickel recovery,” November 26 - December 1, **2023**, MRS Fall 2023, Symposium on “Lithium Battery Recycling and Re-use.” Boston, MA.
15. **X. Su**, “Molecular design of redox-active materials for selective electrochemical separations,” November 26-December 1, 2023, MRS Fall 2023, Symposium on “Materials for Emerging Electrochemical Separations.” Boston, MA.
14. **X. Su**, Electrochemical separations toward sustainability: analytical techniques and emerging applications, AICHE Fall Meeting **2023**. Orlando, FL.
13. **X. Su**, R. Candeago, H. Wang, M. Doucet, J. Browning, Neutron Scattering and Electrochemistry Workshop, Oak Ridge National Laboratory, August 31 **2023**. Oak Ridge, TN.
12. **X. Su**, “Redox-mediated electrochemical separations for ion-selective recovery and environmental remediation,” July 2-6, **2023**, 6th International Conference on Battery Deionization and Electrochemical Separations. Taipei, Taiwan. [*Keynote Talk*]
11. **X. Su**, “Leveraging redox-electrochemistry for adsorption and membrane-driven water treatment processes,” August 13-17, **2023**, ACS Fall 2023, Division of Environmental Chemistry, Symposium on “Electrochemical Materials & Interfaces for Environmental & Sustainability Challenges.”
10. **X. Su**, “Coupling electrochemical reaction and separations for environmental remediation,” August 13-17, **2023**, ACS Fall 2023, Division of Environmental Chemistry, Symposium on “Electrified Water Treatment Processes.” San Francisco, California.

9. **X. Su**, R. Chen, R. Candeago, "Structure and potential dependence of redox-polymer functionalized electrodes for ion-selective separations," March 22nd, **2022**. ACS Spring 2022. Energy-Efficient Chemical Separations through 21st Century Scientific Capabilities. San Diego, CA.
8. **X. Su**, "Electrifying separation processes through molecular design of redox-active interfaces," February 25th, **2022**, The Energy and Fuels Division of American Chemical Society, Monthly Invited Talk Series. [Virtual]
7. **X. Su**, "Molecular Design of Electroactive Redox-Interfaces for Integrating separations and reactions," AIChE Annual Meeting, November 8th, **2021**. Emerging Topics in Electrochemical Engineering: Electrochemical Separations (Invited Talk). Boston, MA.
6. **X. Su**, "Electrochemical Engineering of redox-active systems for materials processing and selective separations," June 16th, 2021. 12th European Symposium on Electrochemical Engineering. Leeuwarden, Netherlands. [*Keynote Talk*]
5. **X. Su**, "Electrochemical reactive separations for micropollutant remediation and sustainable metal recovery," April 19th, **2021**, 29th ISE Topical Meeting, "Energy & Water: electrochemistry in securing the sustainable society development." Prague Czech Republic. [Virtual]
4. **X. Su**, "Molecular Design of Charge-Transfer Interactions for Electrochemically-Mediated Multicomponent Separations," AIChE Annual Meeting, November 16-20, **2020**, Invited Seminar in "Symposium on Electrochemical Separations (Invited Talks)." [Virtual]
3. **X. Su**, "Molecular Engineering of Redox-Active Electrodes for Selective Ion Separations and Process Intensification (Invited)," Electrochemical Society (ECS) Annual Meeting, Division of Electrochemical Engineering: F02 Electrochemical Separations and Sustainability Symposium, October 15th, **2019**. Atlanta, Georgia. [*Keynote talk*]
2. **X. Su**, T. A. Hatton. "Design of advanced electrochemical interfaces for ion-selective separations," International Association of Colloids and Interface Scientists, May 22nd, **2018**. Rotterdam, Netherlands.
1. **X. Su**, T. Alan Hatton. "Nanostructured Faradaic Electrodes for water purification and environmental remediation," 9th International Conference on Porous Media & Annual Meeting (Interpore), May 9th, **2017**. Rotterdam, Netherlands.

SELECTED COMMITTEES AND SERVICE**Journal Editorships**

Early Career Advisory Board Member (ECAB) for *JACS Au* 2024-Current
 Guest Editor for *Desalination*, “Capacitive Deionization & Electrosorption” 2022
 Guest Editor for *J. of Electrochemical Society*, “Electrochemical Separations and Sustainability” 2022
 Guest Editor for *Electrochemical Society Interface* (ECS) Fall 2021 Issue: *Electrochemical Recycling* 2021

Federal Agencies

Lead organizer for NSF workshop on “Detection, removal, and safe destruction of PFAS from semiconductor manufacturing waste streams” August 2024, Hillsboro OR
 DOE BES CSGB Workshop on “Synergy between Chemical Separations and Reactions” January 2021
 Reviewer for NSF CBET, DOE BES, and USDA proposals 2020 - current

American Institute of Chemical Engineers (AIChE)

Programming Chair for AIChE Area 1E: Electrochemical Fundamentals 2022-2024
 Programming Co-Chair for AIChE Area 1E: Electrochemical Fundamentals 2020-2021
 Secretary for AIChE Area 1E: Electrochemical Fundamentals 2019
 Organizer for “2E: Chromatography & SMB” Annual Meeting 2021, 2023
 Organizer for “2E: Adsorbent Materials for Sustainable Energy and Chemicals” Annual Meeting 2020
 Organizer for “Decarbonization of the Chemical Industry through Electrification” Topical 2023, 2025
 Organizer for Invited Electrochemical Separations Symposium (1E and 2E) Annual Meeting 2019
 Organizer for Area 1E Faculty Candidate Symposium Annual Meeting 2019, 2020

Americal Chemical Society (ACS)

ACS Energy & Fuels Division (ENFL) Program Committee 2021-2024
 Organizer for “Electrochemical materials and interfaces for environment” ACS Fall 2022
 Session chair for “Electrokinetic Phenomena” ACS Colloid Symposium 2019
 Session chair for “Energy-Efficient Chemical Separations” ACS Spring 2022
 Awards Committee for Victor K. Lamer Award 2023 - 2025
 Poster judge for ENFL Student poster session ACS Fall 2022

Electrochemical Society (ECS)

IE&EE Technical Planning Committee Member, Electrochemical Society (ECS) 2020-Current
 ECS Meetings Subcommittee, Electrochemical Society (ECS) 2024-Current
 Organizer for “Electrochemical Water Remediation” Session Fall 2021
 Organizer for “Electrochemical Recovery and Recycling” Session Fall 2021, Spring 2024
 Organizer for “Electrochemical Separations” Session Fall 2021, 2022, 2023
 Organizer for “Electrochemistry: Path from Discovery to Product” Session Spring 2022, 2023, 2025

International Society of Electrochemistry (ISE)

Organizer for ISE “Electrochemistry for resource and energy recovery” ISE Annual Meeting, 2023
 Organizer for ISE “Cutting-Edge Electrolysis” symposium ISE Annual Meeting, 2022
 Session chair for Symposium 5 Applied Electrochemistry ISE Regional Meeting in Prague, 2022
 Awards Committee for ISE Green Electrochemistry and Tajima awards 2023 - Current

Other Organizations

Co-organizer for Capacitive Deionization and Electrosorption (CDI&E) Conference Atlanta 2021
 Member of international working group for CDI&E 2019-Current

Co-organizer for Telluride Workshop on Electrochemical Separations

February 2025

Discussion Leader for Chemical Separations GRC

September 2022

Discussion Leader for Electrochemistry GRC

January 2025

Scientific Leadership Committee: ReNEW NSF Engine

2024 – Current

Postdoctoral Mentoring Program Advisor, ReNEW NSF Engine

2025 – Current

CURRENT AND FORMER GROUP MEMBERS**Supervised Graduate Students**

Name	Degree	Graduation Date and Current Position
Emmanuel Kayiwa	MSc, CEE	06/2021, 3M Inc.
Raylin Chen	Ph.D. ChBE	06/2023, Abbvie Inc.
Stephen Cotty	Ph.D. ChBE	06/2023, UofI postdoc
Haley Vapnik	Ph.D. ChBE	07/2023, Department of Defense
Darien Raymond	MSc, ChBE	08/2024, UofI PhD program
Paola Baldaquez Medina	Ph.D. ChBE	05/2024, Assistant Professor University of Puerto Rico Mayaguez
Jemin Jeon	PhD, ChBE	08/2024, Takeda Pharmaceuticals
Nayeong Kim	PhD, ChBE	05/2025, postdoc (MIT) Assistant Professor at UT Dallas MatSE (start in 2026)
Anaira Roman Santiago	PhD, ChBE	05/2025, postdoc (MIT) starting in 08/25

Current Graduate Students

Name	Degree	Expected Graduation Date
Riccardo Candeago	Ph.D. ChBE	2025
Jaeyoung Hong	Ph.D. MatSE	2025
Ching-Hsiu Hung	Ph.D. ChBE	2026
Aderiyike Faniyan	Ph.D. ChBE	2027
Ching-Yu Chen	Ph.D. ChBE	2027
Feray Buyuktopcu	Ph.D. ChBE	2028
Feray Buyuktopcu	Ph.D. ChBE	2029
Elijah Harbut	Ph.D. ChBE	2029
Bryan Seo	Ph.D. ChBE	2029
Simwoo Bae	Ph.D. ChBE	2029
Shannon Kim	Ph.D. MatSE	2029

Supervised Postdoctoral Associates and Visiting Scholars

Name	Dates	Current Position
Dr. Kwiyong Kim	2019 – 2022	Assistant Professor, UNIST, South Korea
Dr. Yonghwan Kim	2021 – 2023	Samsung, Korea
Dr. Jiho Lee	2020 – 2024	Samsung, Korea
Prof. Kyle Knust	2022 – 2023	Milikin University
Prof. Fabio Galetto	2022 – 2023	Universidade Federal de Santa Catarina (UFSC)
Dr. Kihyun Cho	2021 – 2024	Assistant Professor, Dankook University, South Korea

Current Postdoctoral Associates and Visiting Scholars

Name	Dates	Position
Dr. Johannes Elbert	2020 – Current	Research Scientist
Dr. Devashish Ghokale	2024 – Current	Postdoc
Dr. Wangsuk Oh	2020 – Current	Postdoc
Dr. Yuri Kappenberg	2020 – Current	Postdoc
Dr. Hee-Eun Kim	2023 – Current	Postdoc
Dr. Shao-Wei Tsai	2023 – Current	Postdoc
Dennis Rocker	2023	Visiting PhD Student, TU Munich
Dr. Jhen-Cih Wu	2023	Visiting PhD Student, NTU
Dr. Junghyun Kim	2024 – Current	Postdoc
Dr. Deborah Schmitt	2024 – Current	Postdoc
Dr. Tsai-Hsuan Chen	2025 – Current	Postdoc

Supervised Undergraduate Researchers

Name	Dates	Program
Shio Kinoshita	2019	Chemistry
Matthew Brucks	2019 - 2020	ChBE
Mateus Arauko Almeida	2019	ABE, Visiting student from U. Sao Paulo
Leticia de Souza Stefanini	2020	ABE, Visiting student from U. Sao Paulo
Waliyat Oyewole	2019 - 2020	ChBE
Thomas Sheehan	2019 - 2020	ChBE
Angelique Klimek	2019 - 2021	ChBE
Kristina Roth	2019 - 2021	ChBE
Jing Lian Ng	2020 - 2021	ChBE
Emily Bolger	2020 - 2021	ChBE
Seungyeop Kim	2020 - 2021	MatSE
Ruth Lam	2021 - 2022	ChBE
David Xiong	2021 - 2022	ChBE
Alexandra Marchert	2021 - 2022	ChBE
Lily Bizub-Rodriguez	2021 - 2022	ChBE
Erfren Guerrero	2021 - 2022	ChBE
Sung Jin Seo	2021 - 2022	ChBE
Junice Chae	2021 - 2022	ChBE
Jisoo Choi	2021 - 2022	ChBE
Jiho Lee	2022	ChBE
Valentina Adrillas Contreras	2022	ChBE
Kwanghyun Kim	2022	ChBE

Current Undergraduate Researchers

Name	Dates	Program
Sean Roh	2022 - Current	Chemistry
Olivia Hunsberger	2022 - Current	NPRE
Brian Wu	2022 - Current	ChBE
Matthew Faustino	2022 - Current	ChBE
Freemon Chiu	2022 - Current	ChBE
Danielle Chao	2023 - Current	Chemistry
Celine Sutio	2023 - Current	ChBE
Katie Schukina	2023 - Current	ChBE
Junuh Hyun	2023 - Current	ChBE
Martin Joseph Pouliot	2023 - Current	ChBE
Edwin Choi	2023 - Current	ChBE
Shoya Takeda	2023 - Current	ChBE
Iyer Adwaita Sunder	2023 - Current	ChBE

TEACHING, OUTREACH AND EDUCATIONAL ACTIVITIES

Instructor, **ChBE 422 Mass Transfer Operations**

Semesters: Spring **2019**, Fall **2019**, Fall **2020**, Fall **2021**, Fall **2022**, Fall **2023**.

List of Teachers Ranked as Excellent (Fall 2019, Fall 2022, Fall 2023, Fall 2024).

Instructor, **ChBE 453 Electrochemical Engineering**

Semesters: Spring **2020**, Spring **2021**.

Instructor, **ChBE 494/594 Advanced Separations in Energy & Sustainability**

Semesters: Spring **2025**.

List of Teachers Ranked as Excellent (Spring 2025).

Electrochemical Society (ECS) Student Chapter Faculty Advisor, **2022-current**.

Illinois Scholar Undergraduate Research Program (ISUR) mentor, **2019 – current**.

Coordinator for undergraduate student abroad in ChBE, **2019 – current**.

Coordinator for WYSE and CURIE K-12 summer camps, **2019 – current**.

Illini Day Recruitment, **2020 – current**.

Gordon Research Seminar (GRS) Mentorship Career Panel, **2022**

ChBE Grad Recruitment Energy Talk, **2020 – current**.

ChBE Department Faculty Search Committee, **2023, 2025**.

ChBE Department Undergraduate Studies Committee, **2019 - Current**.

ChBE Department Graduate Admissions Committee, **2023 - Current**.

ChBE Advisory Committee, **2024 - Current**.

ChBE Strategic Planning Committee, **2024 - Current**.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Institute of Chemical Engineers

2011–Current

American Chemical Society

2011–Current

Electrochemical Society

2019–Current

International Society of Electrochemistry

2015–Current

International Society for Porous Media

2017–2018

MEDIA OUTREACH

- “Custom-designed polymers open new path to electrochemical separations for sustainable drug manufacturing”. May 30, 2025. [ChBE News](#).
- “Electrochemical process separates valuable industrial chemicals from animal waste”. April 7, 2025. [Science Daily](#), [University of Illinois Grainger College of Engineering](#).
- “New study details method for recycling platinum catalysts from industrial streams”. March 3, 2025. [ChBE News](#).
- “New PFAS removal process aims to stamp out pollution ahead of semiconductor industry growth”. November 7, 2024. [UofI News Bureau](#).
- “Halogen bonding for selective electrochemical separation, path to sustainable chemical processing demonstrated”. August 12, 2024. [ChBE News](#).
- “Researchers study effects of solvation and ion valency on metallopolymer”. April 10, 2024. [ChBE News](#).
- “Electrochemistry helps clean up electronic waste recycling, precious metal mining”. March 25, 2024. [UofI News Bureau](#).
- “Study presents new pathway for electrochemically controlling ion selectivity”. December 13, 2023. [ChBE News](#).
- “Renewable solar energy can help purify water, the environment”. July 24, 2023. [Beckman Institute News](#).
- “Don’t wait, desalinate: the electrified future of clean water”. June 26, 2023. [Beckman Institute News](#).

- “Mirror, mirror: Su group demonstrates new method of recognizing reverse-image molecules”. May 5, 2023. [Beckman Institute News](#).
- “PFAS lurking in US water supply as U of Illinois researchers develop filter technology ”. April 20, 2023. [ABC 7 Chicago News](#).
- “Advanced electrode to help remediation of stubborn new ‘forever chemicals’”. March 27, 2023. [Illinois News Bureau](#).
- “Study demonstrates energy-efficient conversion of nitrate pollutants into ammonia”. February 16, 2023. [Illinois News Bureau](#).
- “Redox, reuse, recycle: novel process extends life cycle of valuable catalysts”. *Beckman Institute News*. October 19, 2022, Links: <https://chbe.illinois.edu/news/stories/51695>, [ChemistryWorld](#), [RSC Education in Chemistry](#).
- “Copolymer helps remove pervasive PFAS toxins from environment”. *Illinois News Bureau*. October 29, 2020, Link: <https://news.illinois.edu/view/6367/1939248119>
- “Advanced polymers help streamline water purification, environmental mediation”. *UIUC ChBE, Phys.org*. 21 January 2020. Link: <https://phys.org/news/2020-01-advanced-polymers-purification-environmental-remediation.html>, [Advanced Science News](#).
- “MIT Water Redox Solutions.” *Massachusetts Clean Energy Center – Success Stories*, 2018, Link: <https://www.masscec.com/success-stories/mit-redox-water-solutions>
- “MIT scientists develop new technique for cleaning contaminated water.” *Reuters Editor Pick*, 28 December 2017, Link: <https://reut.rs/2zF19D2>
- “MIT researchers develop new way to clear pollutants from water”. *MIT News Office*. 10 May 2017, Link: <http://news.mit.edu/2017/electrochemical-clear-pollutants-water-0510>