

# LILO D. POZZO

*Curriculum Vitae*

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Chemical Engineering  
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## EDUCATIONAL HISTORY

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Carnegie Mellon University, Pittsburgh, PA  
Ph.D., Chemical Engineering  
May 2006  
Thesis Title: "Templating Nanoparticles using Thermo-reversible Soft Crystals"

Carnegie Mellon University, Pittsburgh, PA  
M.S., Colloids, Polymers and Surfaces  
May 2006

University of Puerto Rico, Mayagüez, PR  
B.S., Chemical Engineering  
May 2001

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## EMPLOYMENT HISTORY

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University of Washington, Seattle, WA - Dept. of Chemical Engineering  
Department Vice-Chair and Boeing-Roundhill Professor (September 2025 – present)

University of Washington, Seattle, WA – Adjunct Professor, Department of Human Centered Design and Engineering (July 2023 – present)

University of Washington, Seattle, WA - Dept. of Chemical Engineering  
Boeing-Roundhill Professor (September 2020 – September 2025)

University of Washington, Seattle, WA – Interim Department Chair, Materials Science and Engineering (September 2021 – March 2023)

University of Washington, Seattle, WA - Dept. of Chemical Engineering  
Weyerhaeuser Professor (September 2018 – 2019)

Technical Advisor, Membrion Inc., Seattle, WA, Nanoporous ceramic membranes for ionic separations and water purification, (2015-2019)

University of Washington, Seattle, WA - Dept. of Chemical Engineering  
Weyerhaeuser Associate Professor (September 2013 – 2018)

Co-Founder, Polydrop LLC, Technical and Business Advisor, Conductive Polymer Additives for Coatings and Materials, (2013-2023)

University of Washington, Seattle, WA - Dept. of Chemical Engineering  
Assistant Professor (September 2007 – 2013)

NIST Center for Neutron Research, Gaithersburg, MD  
Postdoctoral researcher (July 2006 – July 2007)

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## RELEVANT LEADERSHIP EXPERIENCE

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**Vice Chair, Department of Chemical Engineering (2025-present):** In charge of department operations including instructor course allocation and teaching assistant (TA) assignments. I oversee the department's teaching and research infrastructure including compliance and safety, as well as remodel of spaces and upgrades to shared equipment. Works with the Department Chair on workload balance for faculty and instructional staff. Supports strategic external engagement with industry, academic, research and social institutions including state and federal agencies. Supports the department to achieve continual and robust operations. Supports faculty development with emphasis on orientation and development of early-career professors. Oversees and supports efforts for ChemE community development and adherence to values of Diversity, Equity, Inclusion and Accessibility (DEIA).

**Interim Chair, Department of Materials Science and Engineering (2021-2023):** Completed hiring of two tenured and tenure-track senior faculty members and one teaching assistant professor. Oversaw promotion and tenure cases for two faculty members. Reorganized department's staffing structure for increased efficiency, involving the hiring of ten new staff members including the Department Administrator. Implemented new hiring procedures to include use of explicit rubrics and evaluation of contributions to Diversity, Equity and Inclusion across all faculty and staff ranks. Initiated and completed major renovations (>\$300k investment) of graduate student offices, social and study spaces as well as all main MSE staff office spaces. Restructured Full-Professor merit evaluation processes to meet faculty code compliance. Oversaw the successful completion of department's UW financial audit compliance findings and issues. Implemented new student advisory committee to the chair to create direct channels for communication between students and department leadership. Started new education and outreach initiatives to reverse long-standing trends of reduced enrolments in MSE BS degree programs, including three new freshmen-level hands-on lab experiences, new outreach activities to local community colleges, and increased advising staff to support new recruitment efforts. Implemented new policies to ensure equitable and fair student experiences including setting maximum limits on student TAships. Initiated a third-party 'Operational Assessment' for the new MSE permanent chair to continue process improvements and adopting best practices.

**Associate Chair for Research and Infrastructure in Chemical Engineering (2018-2021):** Led strategic planning for department research priorities, including plan to focus on Data Science and AI in Chemical Engineering. Led department's SWOT analysis for research strategy. Presented strategic plan and SWOT outcomes to External Advisory Board for commenting and improvement. Drafted and implemented the first Space Management Plan for Chemical Engineering, which was unanimously approved by the faculty. Started the Chemical Engineering Shared Equipment Facility (SIF), including the

creation of a Cell Culture Facility and the Colloid and Polymer SIF Characterization Facility. Co-Chaired three successful faculty searches together with Prof. Elizabeth Nance (Associate Chair for UG Education), including continued improvements on metrics and DEI assessment and integration.

**Chair 2024 ACS Colloid and Surface Science Symposium (2021-2024):** Leading the organization of symposium expecting >400 national and international participants at the University of Washington. Efforts include venue organization, technical program organization, plenary and keynote talk invitations, fundraising, and conference promotion.

**Chair of the NIST Center for Neutron Scattering Beamtime Allocation Committee (2015-2018):** Led the continued improvement of processes for the allocation of neutron beamtime to experimenters proposing work to be performed at the NIST Center for Neutron Research. This included compilation of comments from researchers participating in the beamtime review process and communication of findings to NIST NCNR leadership. Also participated in the review of small angle neutron scattering (SANS) beamtime allocation including travel 2-3 times a year for in-person reviews.

**Startup and Entrepreneurial Experience:** Launched multiple startup companies using technologies developed in my research laboratory and involving UW patents. PolyDrop LLC (2013-2023, inactive) commercialized conjugated polymer additives for electrostatic charge dissipation in coatings and rubber materials. Membrion LLC (2015-present, active) develops nanoporous ceramic membranes for efficient and effective ion separations ([membrion.com](http://membrion.com)). The company focuses on industrial process water purification involving corrosive and toxic effluents via electrodialysis. JanuTech (2025-present, active) Develops nanostructured additives for performance improvement in fast charging lithium and sodium-ion batteries. Companies were/are led by Pozzo group researchers.

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## AWARDS AND HONORS

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Fellow of the Neutron Scattering Society of America 2024  
Anne Mayes Memorial Award, 2022, Neutron Scattering Society of America  
DOE Women in Clean Energy C3E Education Award 2018, University of Washington  
College of Engineering Faculty Award for Teaching, 2018, University of Washington  
Latinx Faculty Recognition, 2017, University of Washington  
Leadership Excellence Project, 2017, University of Washington  
Weyerhaeuser Career Development Professorship, 2016, University of Washington  
Early Career Award, 2013, Department of Energy Office of Basic Energy Sciences  
Outstanding Undergraduate Research Mentor Award, 2013, University of Washington  
Certificate of Recognition, 2011, Hispanic Engineer National Achievement Awards Corporation  
ACS Petroleum Research Foundation, Doctoral New Investigator Award, 2008  
Geoffrey D. Parfitt Award, 2005, Department of Chemical Engineering Carnegie Mellon  
Lubrizol Graduate Fellowship, 2005, Department of Chemical Engineering Carnegie Mellon  
PPG Graduate Fellowship, 2004, Department of Chemical Engineering Carnegie Mellon  
Luis A. Monzón medal, 2001, Department of Chemical Engineering University of Puerto Rico  
Merck Award for outstanding engineering graduate, 2001, Merck Corporation  
Graduate Award, 2001, Institute of Chemical Engineers of P.R.  
Eastman Chemical Co. Engineering Scholarship, 2000, Eastman Chemical Company

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## AFFILIATIONS AND OTHER APPOINTMENTS

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- Editorial Board Member, RSC Digital Discovery Journal (since 2021)  
Editorial Advisory Board, ACS Polymers Au Journal (since 2021)  
Editorial Advisory Board, ACS Applied Polymer Materials (since 2021)  
Visiting Faculty, School of Chemistry, University of Melbourne, Melbourne, Victoria, Australia  
(Sabbatical Leave 2014)  
Full Member Acceleration Consortium, University of Toronto, Canada. (since 2021)

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## PUBLICATIONS

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### Refereed archival journal publications

(**Note:** Legal name-change occurred in 2013 from Pozzo DC to Pozzo LD)

(<sup>1</sup>UG Pozzo group member, <sup>2</sup>Graduate/Postdoc Pozzo group member). [Google Scholar Profile](#)

114. “H.T. Chiang<sup>2</sup>, N. Kern<sup>1</sup>, Z.R. Wylie<sup>2</sup>, A. Moezz<sup>2</sup>, H. Zhang, D. McKeen, N. SM Herringier, O. Gang, A.L. Ferguson, Z. Sherman, L.D. Pozzo, Soft Matter, 21, 9398-9411 (2025)
113. “Bond-centric modular design of protein assemblies” S. Wang, A. Favor, R.D. Kibler, J.M. Lubner, A.J. Borst, N. Coudray, R.L. Redler, H.T. Chiang<sup>2</sup>, W. Sheffler, Y. Hsia, N.P. Bethel, Z. Li, D.C. Ekiert, G. Bhabha, L.D. Pozzo, D. Baker, Nature Materials 24 (10), 1644-1652, (2025)
112. “Autonomous Phase Mapping of Gold Nanoparticles Synthesis with Differentiable Models of Spectral Shape”, K. Vaddi<sup>2</sup>, H.T. Chiang<sup>2</sup>, A. Grey<sup>1</sup>, Z.R. Wylie<sup>2</sup>, L.D. Pozzo, npj Computational Materials 11 (1), 335, (2025)
111. “Accelerated sol-gel synthesis of nanoporous silica via integrated small angle x-ray scattering with an open-source automation platform”, B.G. Pelkie<sup>2</sup>, C.Y. Yung<sup>1</sup>, Z.R. Wylie<sup>2</sup>, L.D. Pozzo, Digital Discovery, 4, 3018-3030 (2025)
110. “Synthesis, assembly, and electrochemical performance of ultrasmall Sb<sub>2</sub>S<sub>3</sub> nanoparticles.” Z.R. Wylie<sup>2</sup>, G. K. Lee, S. Lee, A. Moezz<sup>2</sup>, G. Ren, J.C. Idrobo, P. Pauzauskie, L.D. Pozzo, V. Holmberg, J. Mater. Chem. A, 13, 31292 (2025)
109. “Hydrogel-Immobilized Multienzyme Systems for Cell-Free Chemical Bioproduction”, W Sugianto, RAL Cardiff, C Benstead<sup>2</sup>, G Altin-Yavuzarslan, LD Pozzo, A Nelson, JM Carothers, ACS Synthetic Biology (2025) (in-press)
108. “Efficient analysis of small-angle scattering curves for large biomolecular assemblies using Monte Carlo methods”, HT Chiang<sup>2</sup>, Z Zhang, K Vaddi<sup>2</sup>, FA Tezcan, LD Pozzo, Applied Crystallography 58 (3) (2025)
107. “Design of light-and chemically responsive protein assemblies through host-guest interactions”, Z. Zhang, H.T. Chiang<sup>2</sup>, Y. Xia, N. Avakyan, R.R. Sonani, F. Wang, E.H. Egelman, J.J. De Yoreo, L.D. Pozzo, F.A. Tezcan, Chem, <https://doi.org/10.1016/j.chempr.2024.102407>, (2025)
106. “Surfactant-assisted phase selective sonochemical synthesis of sodium yttrium fluoride nanoparticles” F. Baum<sup>2</sup>, L. Forberger, A.B. Bard, R. Gariepy, P.J. Pauzauskie, L.D. Pozzo, Ultrasonics Sonochemistry, <https://doi.org/10.1016/j.ulsonch.2025.107275>, (2025)

105. "3D-Printed Protein-Based Bioplastics with Tunable Mechanical Properties Using Glycerol or Hyperbranched Poly (glycerol) s as Plasticizers" SC Millik, N Sadaba, SL Hilburg<sup>2</sup>, E Sanchez-Rexach, M Zhang, S Yu, AF Vass, L.D. Pozzo, A. Nelson, Biomacromolecules, <https://doi.org/10.1021/acs.biomac.4c01497>, (2025)
104. "Biomimetic mineralization of positively charged silica nanoparticles templated by thermoresponsive protein micelles: applications to electrostatic assembly of hierarchical and composite superstructures" NY Naser, WC Wixson, H Larson, BM Cossairt, L.D. Pozzo, F Baneyx, Soft Matter 21 (2), 166-178 (2025)
103. "Time-resolved small-angle neutron scattering for characterization of molecular exchange in lipid nanoparticle therapeutics" S.L. Hilburg<sup>2</sup>, A. Sokolova, M. Cagnes, L.D. Pozzo. Journal of Colloid and Interface Science 677, 387-395, (2025)
102. "Strain learning in protein-based mechanical metamaterials" N. Sadaba, E. Sanchez-Rexach, C. Waltmann, S.L. Hilburg<sup>2</sup>, L.D. Pozzo, M. Olvera de la Cruz, H. Sardon, L.R. Meza, A. Nelson, PNAS, 121(45), e2407929121, (2024)
101. "Induced Chirality in QDs Using Thermoresponsive Elastin-like Polypeptides." C.D. Lowe, H.C. Larson, Y. Cai, H.T. Chiang<sup>2</sup>, L.D. Pozzo, F. Baneyx, B.M. Cossairt, Langmuir, 41(1), 1047-1056, (2024)
100. "Self-assembly of a Triblock Copolymer in the Presence of a Rigid Conjugated Polyelectrolyte" K. Li<sup>2</sup>, K. Vaddi<sup>2</sup>, S. Seifert, J. Mata, L.D. Pozzo, Soft Matter, 57(24), 11717 (2024)
99. "Data-driven exploration of silver nanoplate formation in multidimensional chemical design spaces" HT Chiang<sup>2</sup>, K Vaddi<sup>2</sup>, L. Pozzo, Digital Discovery, 3 (11), 2252 (2024)
98. "Interfacial dynamics mediate surface binding events on supramolecular nanostructures" T. Christoff-Tempesta, Y. Cho, S. J Kaser, LD Uliassi, X Zuo, S L Hilburg<sup>2</sup>, LD Pozzo, JH Ortony, Nature Communications Volume 15, 7749, (2024)
97. "Engineering Low Volume Resuscitants for the Prehospital Care of Severe Hemorrhagic Shock" T. J. Pichon, X. Wang, E.E. Mickelson, W.C. Huang, S.L. Hilburg<sup>2</sup>, S. Stucky, M. Ling, A. E. S. John, K. M. Ringgold, J. M. Snyder, L.D. Pozzo, M. Lu, N.J. White, S.H. Pun, Angewandte Chemie International Edition, e202402078, (2024)
96. "Synthesis and laser cooling of porous cubic  $\alpha$ -NaYF nanocrystals" L. Forberger, M.A. Hilyard, R. Gariepy, F. Baum<sup>2</sup>, L.D. Pozzo, P.J. Pauzauskie, Photonic Heat Engines: Science and Applications VI, PC129020I, SPIE, (2024)
95. "Morphology of poly-3-hexyl-thiophene blends with styrene-isoprene-styrene block-copolymer elastomers from X-ray and neutron scattering", S.C. Scheiwiller<sup>2</sup>, J.P. Mata, L. D. Pozzo, Soft Matter, 20, 6247–6265 (2024)
94. "Multi-Step Nucleation of a Crystalline Silicate Framework via a Structurally Precise Prenucleation Cluster", B. Jin, Y. Chen, J. Tao, K.J. Lachowski<sup>2</sup>, M.E. Bowden, Z. Zhang, L.D. Pozzo, N.M. Washton, K.T. Mueller, J. De Yoreo, Angewandte Chemie 135 (28), e202303770 (2023)
93. "Anisotropic Gold Nanomaterial Synthesis Using Peptide Facet Specificity and Timed Intervention" K. J. Lachowski<sup>2</sup>, H. T. Chiang<sup>2</sup>, K. Torkelson, W. Zhou, S. Zhang, J. Pfaendtner, L. D. Pozzo, Langmuir 39 (45), 15878-15888, (2023)
92. "4D Printed Protein-AuNR Nanocomposites with Photothermal Shape Recovery" S. Yu, N. Sadaba, E. Sanchez-Rexach, S. L. Hilburg<sup>2</sup>, L. D. Pozzo, G. Altin-Yavuzarslan, L. M. Liz-

- Marzán, D. Jimenez de Aberasturi, H. Sardon, A. Nelson, Advanced Functional Materials, 2311209, (2023)
91. "Metric geometry tools for automatic structure phase map generation", K. Vaddi<sup>2</sup>, K. Li<sup>2</sup>, L. Pozzo, Digital Discovery, 2, 1471-1483, (2023)
90. "Insights into the Biomimetic Synthesis of 2D ZnO Nanomaterials through Peptoid Engineering", W. Yang, B. Cai, K.J. Lachowski<sup>2</sup>, Q. Yin, J. De Yoreo, L.D. Pozzo, C-L Chen, The Journal of Physical Chemistry Letters, 14, 9732, (2023)
89. "Combating energy poverty via small-scale solar for initial electrification and post-disaster recovery in Guatemala and Puerto Rico communities", B. M Sperry, F. Y Dou, T. Dillon, W. K Tatum, M. K Chapko, L.D. Pozzo, Energy for Sustainable Development, <https://doi.org/10.1016/j.esd.2023.101291> (2023)
88. "Mechanisms of Biomolecular Self-Assembly Investigated Through In Situ Observations of Structures and Dynamics", S. Y. Schmid, K. Lachowski<sup>2</sup>, H. T. Chiang<sup>2</sup>, L.D. Pozzo, J. De Yoreo, S. Zhang, Angewandte Chemie International Edition, <https://doi.org/10.1002/anie.202309725> (2023)
87. "Computational and Experimental Determination of the Properties, Structure, and Stability of Peptoid Nanosheets and Nanotubes" M. Zhao, S. Zhang, R. Zheng, S. Alamdari, C. J. Mundy, J. Pfaendtner, L.D. Pozzo, C-L Chen, J. De Yoreo, A.L. Ferguson, Biomacromolecules, 5(4), 2618, (2023)
86. "The human factor: results of a small-angle scattering data analysis round robin" B. R. Pauw, G. J. Smales, A. S. Anker, V. Annadurai, D. M. Balazs, R. Bienert, W. G. Bouwman, I. Breßler, J. Breternitz, E. S. Brok, G. Bryant, A. J. Clulow, E. R. Crater, F. De Geuser, A. Del Giudice, J. Deumer, S. Disch, S. Dutt, K. Frank, E. Fratini, P. R. A. F. Garcia, E. P. Gilbert, M. B. Hahn, J. Hallett, M. Hohenschutz, M. Hollamby, S. Huband, J. Ilavsky, J. K. Jochum, M. Juelsholt, B. W. Mansel, P. Penttilä, R. K. Pittkowski, G. Portale, L. D. Pozzo, L. Rochels, J. M. Rosalie, P. E. J. Saloga, S. Seibt, A. J. Smith, G. N. Smith, G. A. Spiering, T. M. Stawski, O. Taché, A. F. Thünemann, K. Toth, A. E. Whitten and J. Wuttke J. Appl. Cryst. 56 (2023)  
<https://doi.org/10.1107/S1600576723008324>
85. "A high-throughput workflow for the synthesis of CdSe nanocrystals using a sonochemical materials acceleration platform" M. Politi<sup>2</sup>, F. Baum, K. Vaddi, E. Antonio<sup>1</sup>, J. Vasquez, B. P Bishop, N. Peek, V. C Holmberg, L. D Pozzo, Digital Discovery, 2, 1042-1057 (2023)
84. "The laboratory of Babel: highlighting community needs for integrated materials data management" B. Pelkie<sup>2</sup>, and L.D. Pozzo, Digital Discovery, 2, 544-556 (2023)
83. "Triplet Fusion Upconversion for Photocuring 3D Printed Particle-Reinforced Composite Networks" J. Wong, S. Wei, R. Meir, N. Sadaba, N.A. Ballinger, E.K. Harmon<sup>2</sup>, X. Gao, G. Altin-Yavuzarslan, L.D. Pozzo, L.M. Campos, A. Nelson, Advanced Materials, <https://doi.org/10.1002/adma.202207673>, (2023)
82. "Mechanoredox Catalysis Enables a Sustainable and Versatile Reversible Addition-Fragmentation Chain Transfer Polymerization Process" P. Chakma, S.M. Zeitler, F. Baum<sup>2</sup>, J. Yu, W. Shindy, L.D. Pozzo, M.R. Golder, Angewandte Chemie International Edition, 62(2), e202215733, (2023)
81. "Perfluorocarbon nanodroplet size, acoustic vaporization, and inertial cavitation affected by lipid shell composition in vitro" P.J. Welch, D.S. Li, C.R. Forest, L.D. Pozzo, C. Shi, The Journal of the Acoustical Society of America, 152(4), 2493-2504, (2022)

80. "High-throughput and data driven strategies for the design of deep-eutectic solvent electrolytes" J. Rodriguez<sup>2</sup>, M. Politi<sup>2</sup>, S. Adler, D. Beck, L. Pozzo, Molecular Systems Design & Engineering, 7, 933-949, (2022)
79. "Autonomous retrosynthesis of gold nanoparticles via spectral shape matching" K. Vaddi<sup>2</sup>, H. Thart Chiang<sup>2</sup>, L. Pozzo, RSC Digital Discovery, 1, 502-510, (2022)
78. "HARDy: Handling Arbitrary Recognition of Data in Python" M Politi<sup>2</sup>, A Moezz<sup>2</sup>, D Beck, S Adler, L. Pozzo, Journal of Open Source Software 7 (71), 3829, (2022)
77. "Multivariate Analysis of Peptide-Driven Nucleation and Growth of Au Nanoparticles", KJ Lachowski<sup>2</sup>, K Vaddi<sup>2</sup>, NY Naser, F Baneyx, LD Pozzo. RSC Digital Discovery, 1, 427-439 (2022)
76. "Predictive Theoretical Framework for Dynamic Control of Bioinspired Hybrid Nanoparticle Self-Assembly", X. Qi, Y. Zhao, K. Lachowski<sup>2</sup>, J. Boese, Y. Cai, O. Dollar, B. Hellner, L.D. Pozzo, J. Pfaendtner, J. Chun, F. Baneyx, C.J. Mundy, ACS Nano, 16(2), 1919, (2022)
75. "Hierarchical Self-Assembly Pathways of Peptoid Helices and Sheets". M. Zhao, K. J. Lachowski<sup>2</sup>, S. Zhang, S. Alamdari, J. Sampath, P. Mu, C. J. Mundy, J. Pfaendtner, J.J. De Yoreo, C.L. Chen, L.D. Pozzo, and A.L. Ferguson, Biomacromolecules, 23 (3), 992-1008, (2022)
74. "PhasIR: An Instrumentation and Analysis Software for High-throughput Phase Transition Temperature Measurements" J. Rodriguez<sup>2</sup>, M. Politi<sup>2</sup>, S. Scheiwiller<sup>2</sup>, S. Bonageri<sup>2</sup>, S. Adler, D. Beck, L.D. Pozzo, Journal of Open Hardware, 5(1), (2021)
73. "Strategies for the development of conjugated polymer molecular dynamics force fields validated with neutron and X-ray scattering", C. Wolf<sup>2</sup>, L. Guio<sup>2</sup>, S. Scheiwiller<sup>2</sup>, V. Pakhnyuk, C. Luscombe, L.D. Pozzo, ACS Polymers Au, 1 (3), 134-152 (2021)
72. "Evaluation of Solar-Powered Battery Systems for Individuals Using Electricity-Dependent Medical Devices in Puerto Rico Following Hurricane Maria" G.A. Tosado, M.A. Matos, M Ahumada-Paras, M.K. Chapko, L.D. Pozzo, Puerto Rico Solar Health Study Group, Disaster Medicine and Public Health Preparedness, 1-4, (2021)
71. "Dual-Stimuli Responsive Single-Chain Polymer Folding via Intrachain Complexation of Tetramethoxyazobenzene and  $\beta$ -Cyclodextrin" D.C. Lee, K.N. Guye, R.K. Paranji, K. Lachowski<sup>2</sup>, L.D. Pozzo, D.S. Ginger, S.H. Pun, Langmuir, 37(33), 10126-10134 (2021)
70. "Blend Morphology in Polythiophene–Polystyrene Composites from Neutron and X-ray Scattering", CM Wolf<sup>2</sup>, L Guio<sup>2</sup>, SC Scheiwiller<sup>2</sup>, RP O'Hara, CK Luscombe, LD Pozzo, Macromolecules 54 (6), 2960-2978 (2021)
69. "Spatially localized sono-photoacoustic activation of phase-change contrast agents", D.S. Li<sup>2</sup>, G.S. Jeng, J.J. Pitre Jr, M.W. Kim, L.D. Pozzo, M. O'Donnell, Photoacoustics, 20, 100202, (2020)
68. "Formulation of thrombin-inhibiting hydrogels via self-assembly of ionic peptides with peptide-modified polymers", J. Lee, T. Zhao, D.J. Peeler, D.C. Lee, T.J. Pichon, D. Li<sup>2</sup>, K.M. Weigandt, P.J. Horner, L.D. Pozzo, D.L. Sellers, S.H. Pun, Soft Matter, 16, 3762-3768, (2020)
67. "Fluorenone Based Anolyte for an Aqueous Organic Redox-Flow Battery", J Rodriguez<sup>2</sup>, C Niemet, LD Pozzo, ECS Transactions, 89 (1), 49, (2019)
66. "On-Demand Sonochemical Synthesis of Ultrasmall and Magic-Size CdSe Quantum Dots in Single-Phase and Emulsion Systems", R Kastilani<sup>2</sup>, B. Bishop, V. Holmberg, LD Pozzo, Langmuir, 35 (50), 16583 (2019)

65. "Contrast-variation Time-resolved SANS Analysis of Oil Exchange Kinetics Between Oil-in-water Emulsions Stabilized by Anionic Surfactants" YT Lee<sup>2</sup>, LD Pozzo, Langmuir, 35 (47), 15192 (2019)
64. "Kinetic Analysis of Ultrasound Induced Oil Exchange in Oil-in-water Emulsions through Contrast Variation Time-resolved SANS" YT Lee<sup>2</sup>, DS Li<sup>2</sup>, LD Pozzo, Langmuir, 35 (47), 15204 (2019)
63. "Assessment of molecular dynamics simulations for amorphous poly(3-hexylthiophene) using neutron and X-ray scattering experiments" CM Wolf<sup>2</sup>, KH Kanekal<sup>2</sup>, YY Yimer, M Tyagi, S Omar-Diallo, V Pakhnyuk, CK Luscombe, J Pfaendtner and LD Pozzo, Soft Matter, 15, 5067 - 5083 (2019)
62. "Self-assembly of Donor-acceptor Conjugated Polymers Induced by Miscible 'Poor' Solvents" Y. Xi<sup>2</sup>, C. Wolf<sup>2</sup> and LD Pozzo, Soft Matter, 15 (8), 1799-1812 (2019)61.
61. "PV Battery Systems for Critical Loads During Emergencies: Case Study from Puerto Rico After Hurricane Maria" C. Keerthisinghe, M. Ahumada-Paras, LD. Pozzo, D.S. Kirschen, H. Pontes, W.K. Tatum, M.A. Matos, IEEE Power and Energy Magazine, 17, 1, p82, January (2019)
60. "Ultrasound-based formation of nano-Pickering emulsions investigated via in-situ SAXS" YT Lee<sup>2</sup>, DS. Li<sup>2</sup>, J. Ilavsky, I. Kuzmenko, GS. Jeng, M. O'Donnell, LD. Pozzo, Journal of Colloid and Interface Science, 15, 281. (2019)
59. "Spontaneous Nucleation of Stable Perfluorocarbon Emulsions for Ultrasound Contrast Agents" DS Li<sup>2</sup>, S Schneewind<sup>1</sup>, M Bruce, Z Khaing, M O'Donnell, LD. Pozzo, Nano Letters, 10.1021/acs.nanolett.8b03585 (2018)
58. "A Small-Angle Scattering Environment for In Situ Ultrasound Studies" DS. Li<sup>2</sup>, YT Lee<sup>2</sup>, Y Xi<sup>2</sup>, I Pelivanov, M O'Donnell, LD. Pozzo, Soft Matter, 14, 5283-5293. (2018)
57. "Sonocrystallization of Conjugated Polymers with Ultrasound Fields" Y Xi<sup>2</sup>, DS. Li<sup>2</sup>, GM. Newbloom<sup>2</sup>, WK. Tatum, M O'Donnell, CK. Luscombe, LD. Pozzo, Soft Matter, 14, 4963-4976. (2018)
56. "A Highly Sensitive UV-vis-NIR All-Inorganic Perovskite Quantum Dot Phototransistor Based on a Layered Heterojunction" C Zou, Y Xi<sup>2</sup>, CY Huang, EG. Keeler, T Feng, S Zhu, LD. Pozzo, LY. Lin, Advanced Optical Materials, 6(14), 1800324 (2018)
55. "Macroscopically aligned nanowire arrays of  $\pi$ -conjugated polymers via shear-enhanced crystallization", JH Li, Y Xi<sup>2</sup>, LD. Pozzo, JT Xu, CK Luscombe, Journal of Materials Chemistry C, 5 (21), 5128, (2017)
54. "Polypyrrole Coated Perfluorocarbon Nanoemulsions as a Sono-Photoacoustic Contrast Agent" DS Li<sup>2</sup>, SJ Yoon, I Pelivanov, M Frenz, M O'Donnell, LD. Pozzo, Nanoletters, 17(10), 6184 (2017)
53. "Efficient Electrosteric Assembly of Nanoparticle Heterodimers and Linear Heteroassemblies" R Kastilani<sup>2</sup>, R Wong<sup>1</sup>, LD. Pozzo, Langmuir, 34(3), 826-836 (2017)
52. "Boosting performance of inverted organic solar cells by using a planar coronene based electron-transporting layer" J Yu, Y Xi<sup>2</sup>, CC Chueh, JQ Xu, H Zhong, F Lin, SB Jo, LD. Pozzo, W Tang, AK-Y Jen, Nano Energy, 39, 454 (2017)
51. "Understanding Interfacial Alignment in Solution Coated Conjugated Polymer Thin Films", G Qu, X Zhao, GM Newbloom<sup>2</sup>, F Zhang, E Mohammadi, JW Strzalka, LD. Pozzo, J Mei, Y Diao, ACS applied materials & interfaces, 9(33), 27863, (2017)

50. "Peptide valency plays an important role in the activity of a synthetic fibrin-crosslinking polymer" RJ Lamm, EB Lim, KM Weigandt, LD Pozzo, NJ White, SH Pun, *Biomaterials*, 132, 96, (2017)
49. "Electric field directed formation of aligned conjugated polymer fibers", Y Xi<sup>2</sup>, LD Pozzo, *Soft Matter*, 13 (21), 3894, (2017)
48. "Effect of block composition on the morphology and transport properties of sulfonated fluoroblock copolymer blend membranes" E.G. Gutiérrez, M. Pérez-Pérez, G.M. Newbloom<sup>2</sup>, L.D. Pozzo, D. Suleiman, *Polymer Engineering and Science*, (2017)
47. "A Room-Temperature Processable PDI-Based Electron-Transporting Layer for Enhanced Performance in PDI-Based Non-Fullerene Solar Cells" J Yu, Y Xi<sup>2</sup>, CC Chueh, D Zhao, F Lin, LD Pozzo, W Tang, AK Jen, *Advanced Materials Interfaces*, 3 (18), 1600476 (2016)
46. "A Structuring Repeat for Peptide Design: Long Beta Ribbons" BL Kier, GM Newbloom<sup>2</sup>, LD Pozzo, NH Andersen, *ChemBioChem*, 17 (3), 224 (2016)
45. "Open-Circuit Voltage Losses in Selenium-Substituted Organic Photovoltaic Devices from Increased Density of Charge-Transfer States" DB Sulias, K Yao, JJ Intemann, ST Williams, CZ Li, CC Chueh, JJ Richards<sup>2</sup>, Y Xi<sup>2</sup>, LD Pozzo, C W Schlenker, A K-Y Jen, DS Ginger, *Chemistry of Materials*, 27, 19, 6583 (2015)
44. "Influence of Molecular Geometry of Perylene Diimide Dimers and Polymers on Bulk Heterojunction Morphology Toward High-Performance Nonfullerene Polymer Solar Cells" Chen, Hao Wu, Chu Chen Chueh, Y Xi<sup>2</sup>, HL Zhong, GP Gao, ZH Wang, LD Pozzo, TC Wen, AK Y Jen, *Advanced Functional Materials*, 25, 33, 5326 (2015)
43. "Structure Characterization and Properties of Metal Surfactant Complexes Dispersed in Organic Solvents" P de la Iglesia<sup>2</sup>, V Jaeger, Y Xi<sup>2</sup>, J Pfaendtner, LD Pozzo, *Langmuir*, 31, 33 (2015)
42. "Designing two-dimensional protein arrays through fusion of multimers and computational interface redesign" JF Matthaei, F DiMaio, JJ Richards<sup>2</sup>, LD Pozzo, D Baker, F Baneyx\*, *Nano letters*, 15(8), 5235, (2015)
41. "A synthetic fibrin cross-linking polymer for modulating clot properties and inducing hemostasis" LW Chan, X Wang, H Wei, LD Pozzo, NJ White, SH Pun, *Science translational medicine*, 7 (277), 277ra29-277ra29 (2015)
40. "Sono-photoacoustic imaging of gold nanoemulsions: Part II. Real time imaging" B Arnal, CW Wei, C Perez, TM Nguyen, M Lombardo<sup>2</sup>, I Pelivanov, T.J. Matula, L.D. Pozzo, and M. O'Donnell, *Photoacoustics*, 3 (1), 11-19 (2015)
39. "Sono-photoacoustic imaging of gold nanoemulsions: Part I. Exposure thresholds" B Arnal, C Perez, CW Wei, J Xia, M Lombardo<sup>2</sup>, I Pelivanov, T.J. Matula, L.D. Pozzo, and M. O'Donnell, *Photoacoustics* 3 (1), 3-10 (2015)
38. "Clusters and Inverse Emulsions from Nanoparticle Surfactants in Organic Solvents" MT Lombardo<sup>2</sup>, LD Pozzo, *Langmuir*, 31(4), 1344 (2015)
37. "A conductive liquid crystal via facile doping of an n-type benzodifurandione derivative" B Zhao, CZ Li, SQ Liu, JJ Richards<sup>2</sup>, CC Chueh, F Ding, LD Pozzo, X Li, AK Y Jen, *Journal of Materials Chemistry A*, 3 (13), 6929-6934 (2015)
36. "Solvatochromism and Conformational Changes in Fully Dissolved Poly (3-alkylthiophene)s" GM Newbloom<sup>2</sup>, SM Hoffmann, AF West<sup>1</sup>, MC Gile, P Sista, HKC Cheung, J. Pfaendtner, LD Pozzo, *Langmuir*, 31 (1), 458 (2015)

35. "Laser-induced cavitation in nanoemulsion with gold nanospheres for blood clot disruption: in vitro results" C Wei, J Xia, M Lombardo<sup>2</sup>, C Perez, B Arnal, K Larson-Smith<sup>2</sup>, I Pelivanov, T.J. Matula, L.D. Pozzo, and M. O'Donnell, Optics letters, 39 (9), 2599-2602 (2014)
34. "Correlating structure and photocurrent for composite semiconducting nanoparticles with contrast variation small-angle neutron scattering and photoconductive atomic force microscopy" JJ Richards<sup>2</sup>, CL Whittle<sup>1</sup>, G Shao, LD Pozzo, ACS Nano, 8 (5), 4313 (2014)
33. "Nonlinear Contrast Enhancement in Photoacoustic Molecular Imaging with Gold Nanosphere Encapsulated Nanoemulsions" C-W Wei, M. Lombardo<sup>2</sup>, K. Larson-Smith<sup>2</sup>, I.M. Pelivanov, C. Perez, J. Xia, T.J. Matula, D.C. Pozzo, and M. O'Donnell, Applied Physics Letters, 104, 033701 (2014)
32. "Controlled gelation of poly (3-alkylthiophene)s in bulk and in thin-films using low volatility solvent/poor-solvent mixtures" GM Newbloom<sup>2</sup>, P de la Iglesia<sup>2</sup>, DC Pozzo, Soft Matter, 10 (44), 8945 (2014)
31. "Anionic Branched Surfactants as Alternative Denaturing Agents for Protein Separations" M Ospinal-Jiménez<sup>2</sup> and DC Pozzo, Langmuir, 30 (5), 1351 (2014)
30. "Turning up the heat on wormlike micelles with a hydrotopic salt in microfluidics" JJ Cardiel, Y Zhao, P De La Iglesia<sup>2</sup>, LD Pozzo, AQ Shen, Soft matter, 10 (46), 9300 (2014)
29. "Flow-induced structured phase in nonionic micellar solutions" JJ Cardiel, L Tonggu, P De La Iglesia<sup>2</sup>, Y Zhao, DC Pozzo, L Wang, AQ Shen, Langmuir, 29 (50), 15485 (2013)
28. "Worming Their Way into Shape: Toroidal Formations in Micellar Solutions" JJ Cardiel, L Tonggu, AC Dohnalkova, P De La Iglesia<sup>2</sup>, DC Pozzo, L Wang, AQ Shen\*, ACS nano, 7 (11), 9704 (2013)
27. "Effects of supersaturation on the structure and properties of poly (9, 9-dioctyl fluorene) organogels" P de la Iglesia<sup>2</sup>, DC Pozzo, Soft Matter, 9 (47), 11214-11224, (2013)
26. "Modification of PCBM crystallization via incorporation of C<sub>60</sub> in polymer/fullerene solar cells" J. Richards<sup>2</sup>, A. Rice<sup>1</sup>, R. Nelson, F. Kim, S.A. Jenekhe, C.K. Luscombe, D.C. Pozzo, Advanced Functional Materials, 23(4), 514 (2013)
25. "Fibrin clot structure and mechanics associated with specific oxidation of methionine residues in fibrinogen" K. Weigandt<sup>2</sup>, N. White, D. Chung, E. Ellingson, Y. Wang, X Fu, D.C. Pozzo, Biophysical Journal, 103(11), 2399 (2012)
24. "Structural Analysis of Protein Denaturation with Alkyl Perfluorinated Sulfonates" M. Ospinal<sup>2</sup> and D.C. Pozzo, Langmuir, 28(51): 17749 (2012)
23. "Competitive Adsorption of Thiolated Polyethylene Glycol and Alkane-thiols on Gold Nanoparticles" K. Larson-Smith<sup>2</sup>, D.C. Pozzo, Langmuir, 28(37):13157 (2012)
22. "Numerical validation of IFT in the analysis of protein-surfactant complexes with SAXS and SANS" J. M. Franklin<sup>1</sup>, L.N. Surampudi, H.S. Ashbaugh, and D.C. Pozzo, Langmuir, 28(34):12593 (2012)
21. "Pickering Emulsions Stabilized by Nanoparticle Surfactants", K. Larson-Smith<sup>2</sup>, D.C. Pozzo, Langmuir, 28(32): 11725 (2012)
20. "Structure and Property Development of Poly(3-hexyl-thiophene) Organogels Probed with Combined Rheology, Conductivity and Small Angle Neutron Scattering" G. Newbloom<sup>2</sup>, K. Weigandt<sup>2</sup>, D.C. Pozzo, Soft Matter, 8: 8854 (2012)

19. "Bioinspired templates for the synthesis of silica nanostructures" N. Hassan, A. Soltero, D.C. Pozzo, P.V. Messina, J.M. Russo, *Soft Matter*, 8:9553 (2012)
18. "Electrical, Mechanical and Structural Characterization of Self-Assembly in Poly(3-hexylthiophene) Organogel Networks." G. Newbloom<sup>2</sup>, K. Weigandt<sup>2</sup> and D.C. Pozzo, *Macromolecules*, 45(8): 3452 (2012)
17. "SANS and SAXS Analysis of Charged Nanoparticle Adsorption at Oil-Water Interfaces" K. Larson-Smith<sup>2</sup>, A. Jackson and D.C. Pozzo, *Langmuir*, 28: 2493 (2012)
16. "The Conformation of Poly(ethylene glycol) Chains in Mono-PEGylated Lysozyme and Mono-PEGylated Human Growth Hormone" S.S. Pai, B. Hammouda, K. Hong, D.C. Pozzo, T.M. Przybycien, R.D. Tilton, *Bioconjugate Chemistry*, 22: 2317 (2011)
15. "Aqueous Dispersions of Colloidal Poly(3-hexylthiophene) Gel Particles with High Internal Porosity" J. Richards<sup>2</sup>, K. Weigandt<sup>2</sup> and D.C. Pozzo, *J. Colloid and Interface Science*, 364: 341 (2011)
14. "In situ neutron scattering study of structural transitions in fibrin networks under shear deformation" K. Weigandt<sup>2</sup>, L. Porcar and D.C. Pozzo, *Soft Matter*, 7: 9992 (2011)
13. "Rheo-small-angle neutron scattering at the National Institute of Standards and Technology Center for Neutron Research" L. Porcar, D.C. Pozzo, G. Langenbucher, J. Moyer, and P. Butler, *Review of Scientific Instruments*, 82, 083902 (2011)
12. "Mesoscale Morphology and Charge Transport in Colloidal Networks of Poly(3-hexylthiophene)" G.M. Newbloom<sup>2</sup>, F.S. Kim, S.A. Jenekhe and D.C. Pozzo, *Macromolecules*, 44, 3801 (2011)
11. "Scalable Synthesis of Self-Assembling Nanoparticle Clusters Based on Controlled Steric Interactions" K. Larson-Smith<sup>2</sup> and D.C. Pozzo, *Soft Matter*, 7, 5339 (2011)
10. "Structural Analysis of Protein Complexes with Sodium Alkyl Sulfates by Small-Angle Scattering and Polyacrylamide Gel Electrophoresis" M. Ospinal<sup>2</sup> and D.C. Pozzo, *Langmuir*, 27(3): 928 (2011)
9. "Small Angle Scattering Model for Pickering Emulsions and Raspberry Particles" K. Larson-Smith<sup>2</sup>, A.J. Jackson and D.C. Pozzo, *J. Colloid and Interface Science*, 343: 36 (2010)
8. "Structure of high density fibrin networks probed with neutron scattering and rheology" K. Weigandt<sup>2</sup>, L. Porcar and D.C. Pozzo, *Soft Matter*, 5(21): 4321 (2009)
7. "Neutron-Scattering Probe of Complexes of Sodium Dodecyl Sulfate and Serum Albumin during Polyacrylamide Gel Electrophoresis" D.C. Pozzo, *Langmuir*, 25(3): 1558-1565 (2009)
6. "Macroscopic alignment of nanoparticle arrays in soft crystals of cubic and cylindrical polymer micelles." D.C. Pozzo and L. M. Walker, *European Physical Journal E*, 26(1-2): 183 (2008)
5. "Shear orientation of nanoparticle arrays templated in PEO-PPO-PEO soft crystals" D.C. Pozzo, L. M. Walker, *Macromolecules*, 40(16): 5801-5811 (2007)
4. "Small angle neutron scattering of silica nanoparticles templated in PEO-PPO-PEO cubic crystals" D. C. Pozzo, L. M. Walker, *Colloids & Surfaces A*, 294: 117 (2007)
3. "Rheology and Phase Behavior of Copolymer Templated Nanocomposite Materials" D.C. Pozzo, K. R. Hollabaugh, L. M. Walker, *Journal of Rheology*, 49-3:759-782 (2005)
2. "Three-dimensional nanoparticle arrays templated by self-assembled block-copolymer gels" D.C. Pozzo, L. M. Walker, *Macromolecular Symposia*, 227-1:203-210 (2005)

1. "Reversible Shear Gelation of Clay-Polymer Dispersions" D. C. Pozzo and L. M. Walker Colloids & Surfaces A, 240:187-198 (2004)

#### Conference proceedings and other non-journal articles

##### *Fully refereed publications*

1. "Real-time sono-photoacoustic imaging of gold nanoemulsions" B Arnal, CW Wei, C Perez, M Lombardo<sup>2</sup>, IM Pelivanov, D Pozzo, M O'Donnell, Photons Plus Ultrasound: Imaging and Sensing 9323, (2015)
2. "Nonlinear acoustic enhancement in photoacoustic imaging with wideband absorptive nanoemulsion beads" C Wei, M Lombardo<sup>2</sup>, J Xia, I Pelivanov, C Perez, K Larson-Smith<sup>2</sup>, TJ Matula, DC Pozzo, M O'Donnell, Photons Plus Ultrasound: Imaging and Sensing 2014 8943, (2014)
3. "Inertial cavitation in theranostic nanoemulsions with simultaneous pulsed laser and low frequency ultrasound excitation" B Arnal, CW Wei, J Xia, IM Pelivanov, M Lombardo<sup>2</sup>, C Perez, TJ Matula, LD Pozzo, M O'Donnell, Photons Plus Ultrasound: Imaging and Sensing 2014 8943, 8943E, (2014)
4. "Nonlinear Photoacoustic Contrast Enhancement with Gold Nanospheres Coated Emulsion Beads" C-W Wei, M. Lombardo<sup>2</sup>, K. Larson-Smith<sup>2</sup>, I.M. Pelivanov, C. Perez, J. Xia, D.C. Pozzo, T.J. Matula, and M. O'Donnell, Proceedings of the 2013 IEEE Ultrasonics Symposium IUS-UFFC2013-000469, 124 (2013)
5. "Contrast enhancement by simultaneous ultrasound/laser pulse probing of gold nanosphere encapsulated emulsion beads" C Wei, K Larson-Smith<sup>2</sup>, IM Pelivanov, C Perez, J Xia, D. Pozzo, TJ Matula, M. O'Donnell, Photons Plus Ultrasound: Imaging and Sensing 8581 (2013)
6. "Inertial Cavitation Manipulation in Nanoemulsion Induced by Low Frequency Acoustic Wave with Laser Irradiation for Potential Therapeutic Applications" J. Xia, C-W Wei, B. Arnal, I.M. Pelivanov, M. Lombardo<sup>2</sup>, C. Perez, J. Xia, T.J. Matula, D.C. Pozzo, and M. O'Donnell, Proceedings of the 2013 IEEE Ultrasonics Symposium IUS-UFFC2013-001109, 128 (2013)
7. "Integration of the chemical engineering laboratory with a focus on bio-fuel production." D.C. Pozzo, J. Pfaendtner, M.A. Matos, W. Baratuci and A. Bierman, ASEE Annual Conference Proceedings (2011) <http://www.asee.org/search/proceedings>
8. "Novel open-ended liquid-liquid extraction module for the chemical engineering laboratory" M.A. Matos and D.C. Pozzo, ASEE Annual Conference Proceedings (2009) <http://www.asee.org/search/proceedings>

#### Parts of books (chapters in edited books)

GM Newbloom<sup>2</sup>, K Kanekal<sup>2</sup>, JJ Richards<sup>2</sup>, LD Pozzo, Section II: Microstructure of Semiconducting Polymers Chapter 5: Characterization of Polymer Semiconductors by Neutron Scattering Techniques, In "*Semiconducting Polymers: Controlled Synthesis and Microstructure*", Christine Luscombe. Royal Society of Chemistry, 978-1-78262-034-1, 21, 165 (2017)

K. Weigandt<sup>2</sup> and D.C. Pozzo. Protein Gel Rheology. In "*Proteins in solution and at interfaces: Methods and Applications in Biotechnology and Materials Science*" J.M. Ruso & A. Piñero. Wiley book series, ISBN: 9780470952511, 437-448, (2013)

#### Patents

1. Ceramic proton-conducting membranes, US Patent 10537854 (2020)
2. Nanoporous ceramic membranes, membrane structures, and related methods, US Patent 10525417 (2020)

3. Conductive polymer-matrix compositions and uses thereof, US Patent, 10087320 (2018)
4. Ceramic proton-conducting membranes, US Patent, 10124296 (2018)
5. Composites incorporating a conductive polymer nanofiber network, US Patent, 9620259, (2017)
6. Composite organic-inorganic energy harvesting devices and methods, US Patent, 9508944, (2016)

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## OTHER SCHOLARLY ACTIVITY

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### Invited lectures and seminars

1. Australasian Colloid and Interface Society (ACIS), Plenary Speaker, "Engineering Soft-Matter with Agent-Driven High-Throughput Experiments", Adelaide South Australia (February 2026)
2. Canadian High-Polymer Forum, Plenary Speaker, Barrie Ontario, "AI-Driven Experiments and Open Science Automation for Accelerated Soft Matter Research" (August 2025)
3. MIT Boston, Department of Chemical Engineering, "AI-Driven Experiments and Open Science Automation for Accelerated Soft Matter Research", (March 2025)
4. UMASS Amherst, Department of Polymer Science and Engineering, "AI-Driven Experiments and Open Science Automation for Accelerated Soft Matter Research", (March 2025)
5. Materials for AI, AI for Materials Conference, Nature Publishing, Daejeon Republic of Korea, (February 2025)
6. Concordia University Quebec Centre for Advanced Materials Seminar, Montreal Canada (January 2025)
7. McGill University Quebec Centre for Advanced Materials Seminar, Montreal Canada (January 2025)
8. Winter Meeting of the Mexican Physical Society, Ciudad de Mexico (virtual), (January 2025)
9. AIChE Annual Meeting Plenary Lecture Area 1C 'Interfacial Phenomena', San Diego, CA (November 2024)
10. VW Foundation Workshop "Nanoconfinement in Chemistry – Tinkering with Nanoporous Architectures to Solve Contemporary Societal Issues", Hanover Germany (October 2024)
11. Neutrons and Food 7, Plenary Lecture, Accelerating and broadening research and education at the intersection of food, scattering, robotics and artificial intelligence (June 2024)
12. Machine Learning Conference for X-ray and Neutron-based Experiments, Munich Germany (April 2024)
13. Machine Learning Modalities for Materials Science, Open-Science laboratory automation for AI-accelerated materials research and optimization, Ljubljana Slovenia (February 2024)
14. Molecule Maker Laboratory Institute Symposium, Engineering Soft-Matter with Agent-Driven High-Throughput Experiments, Urbana Champaign IL, (March 2024)
15. Brazilian Materials Research Society, Engineering Soft-Matter with Agent-Driven High-Throughput Experiments, Maceio, Brasil (October 2023)
16. Congreso Argentino de Tecnicas Neutronicas (TN-2023), User Meeting of the Argentinian Neutron Science Laboratory, Buenos Aires, Argentina
17. American Physical Society (Invited talk), Cold, warm, warmer, Hot: Impact of distance metrics on autonomous experimentation, Las Vegas NV, (March 2023)
18. Argonne National Laboratory Center for Nanoscale Materials Seminar Series (virtual), Cold, warm, warmer, Hot: Impact of distance metrics on autonomous experimentation,

(March 2023)

19. Lorentz Center Symposium ‘Designing Soft Matter In and Out of Equilibrium’, Leiden University (Invited Talk), Engineering Soft-Matter with Agent-Driven High-Throughput Experiments, Leiden Netherlands, (February 2023)
20. Department of Materials Science and Engineering, University of Delaware, Opportunities and Challenges in Experimental High-Throughput Materials Research, (January 2023)
21. Department of Materials Science and Engineering, Cornell University, Opportunities and Challenges in Experimental High-Throughput Materials Research, (October 2022)
22. Department of Materials Science and Engineering, University of Massachusetts Amherst, Opportunities and Challenges in Experimental High-Throughput Materials Research, (September 2022)
23. Plenary Talk, Accelerate Conference, University of Toronto, Opportunities and Challenges in Experimental High-Throughput Soft-Matter Research, (August 2022)
24. Plenary Talk, International Congress on Neutron Scattering, Buenos Aires Argentina, Reflections on the Past, Present and Future of Small Angle Scattering in Soft Matter Research, (August 2022)
25. Department of Chemical Engineering, Princeton University, Opportunities and Challenges in Experimental High-Throughput Materials Research, (March 2022)
26. Department of Chemical Engineering, Arizona State University, Opportunities and Challenges in Experimental High-Throughput Materials Research, (March 2022)
27. Department of Materials Science and Engineering, University of Florida, Opportunities and Challenges in Experimental High-Throughput Materials Research, (February 2022)
28. Pacific Northwest National Laboratory, Opportunities and Challenges in Experimental High-Throughput Materials Research, (Virtual January 2022)
29. School of Chemistry, University of Sydney, Opportunities and Challenges in Experimental High-Throughput Materials Research, (Virtual August 2021)
30. Department of Materials Science and Engineering, MIT, Opportunities and Challenges in Experimental High-Throughput Materials Research, (Virtual May 2021)
31. Department of Chemistry, Carnegie Mellon University, Probing Nanoscale and Molecular Processes in Emulsions Systems with Neutron and X-ray Scattering, (Virtual May 2021)
32. Polymers Collective, Stanford University, Hierarchical Structures in Conjugated Polymers: Self and Field-Directed Assembly, (Virtual April 2021)
33. Department of Physics, Georgetown University, Understanding Nanoscale and Molecular Processes in Emulsions Systems with Neutron and X-ray Scattering, (Virtual April 2021)
34. Department of Chemical Engineering, University of Rhode Island, Probing Nanoscale and Molecular Processes in Emulsions Systems with Neutron and X-ray Scattering (Virtual October 2020)
35. Energy and Efficiency Institute, UC Davis, Meeting Our Global Obligations: Hurricane Maria Energy and Health Project, (Virtual October 2020)
36. Laboratorio Argentino de Haces de Neutrones, Buenos Aires Argentina, Analysis de Procesos Moleculares en Emulsiones con el uso de SANS y SAXS, (Virtual October 2020)
37. Department of Chemical and Biomolecular Engineering, Notre Dame, Opportunities and Challenges in Experimental High-Throughput Materials Research, (Virtual September 2020)
38. Dept. of Chemical Engineering, University of Florida, Gainesville FL, Understanding Nanoscale and Molecular Processes in Emulsions Systems with Neutron and X-ray Scattering, (February 2020)
39. Materials Research Center, University of California Santa Barbara, Santa Barbara CA, Understanding Nanoscale and Molecular Processes in Emulsions Systems with Neutron and X-ray Scattering, (February 2020)

40. Dept. of Bioengineering, Georgia Tech University, Atlanta GA, Nano-Emulsion design, synthesis and applications in medicine, (July 2019)
41. Xiamen Soft Matter Symposium, Xiamen University, Xiamen China, Nano-Emulsion design, synthesis and applications in medicine, (October 2019)
42. Dept. of Materials Science and Engineering, University of Pennsylvania, Philadelphia PA. Nano-Emulsion design, synthesis and applications in medicine, (March 2019)
43. Louisiana Consortium for Neutron Scattering, Louisiana State University, Baton Rouge LA., Hierarchical Structures in Conjugated Polymers: Self and Field-Directed Assembly, (March 2019)
44. Dept. of Polymer Science and Engineering, University of Southern Mississippi, Hierarchical Structures in Conjugated Polymers: Self and Field-Directed Assembly, Hattiesburg MS, Eastman seminar. (March 2019)
45. Colloids Polymers and Surfaces Program, Carnegie Mellon University, Pittsburgh PA, Kitchen Engineering: From Fine Dining to Modern Technology, (September 2018)
46. Dept. of Chemical Engineering Carnegie Mellon University, Pittsburgh PA, 2018 Ethel Casassa Named Lecture. Nano-Emulsion Design, Synthesis and Applications in Medicine (September 2018)
47. ACS Colloids Conference, State College PA, Keynote Speaker, Phase-change emulsions for use in photo-acoustic imaging and therapy, (June 2018)
48. Gordon Research Conference, Polymer Physics, South Hadley MA, Self-Assembly and Field-Directed Manipulation of Hierarchical Structures in Conductive Polymers, (July, 2018)
49. Global Marathon, Online Global Conference to Empower Women in Engineering, A Day in the Life of Engineers: Making Global Impact, (April 2018)
50. NCNR 50 Year Celebration: Invited Speaker, Gaithersburg MD, Tickling Soft-Matter: Manipulating Materials with External Fields (December 2017)
51. Dept. of Chemical and Biomolecular Engineering, University of Delaware, Newark DE Center for Neutron Science Seminar Series, Ultrasound and Photo-acoustic Nano-Emulsion Agents for use in Medicine. (December 2017)
52. International Sample Environment School, Gaithersburg MD, Ultrasound Sample Environment for Small Angle Scattering. (November 2017)
53. International Union of Crystallography, Hyderabad India, Structure and Dynamics of conjugated polymers from neutron scattering and molecular simulation, (August 2017)
54. Department of Chemical Engineering Stanford University. Stanford CA, *Improving Molecular Modeling of Conjugated Polymers with Neutron Scattering* (November 2016)
55. Queer Perspectives Speaker Series oSTEM, Stanford University, Stanford CA, (November 2016)
56. Dep. Of Chemical Engineering UC Irvine, Irvine CA, Nanoparticle Surfactants: Self-assembly and Medical Applications, (June 2016)
57. Materials Research Society Invited Symposium, Boston MA, Structure and Dynamics of P3ATs from Neutron Scattering and MD Simulations (November 2015)
58. Bragg Institute ANSTO, NSW Australia, Neutron-Aided Optimization of Polymeric Energy Materials (September 2014)
59. University of Sydney School of Chemistry, Sydney Australia, Self-Assembly of Nanoparticle Surfactants and their use as Theranostic Agents (September 2014)
60. University of Melbourne School of Chemistry, Melbourne Australia, Self-Assembly of Nanoparticle Surfactants and their use as Theranostic Agents (July 2014)
61. University of Melbourne Chemical Engineering, Melbourne Australia, Neutron-Aided Optimization of Polymeric Energy Materials (October 2014)
62. Department of Chemical and Biological Engineering Princeton University, Princeton NJ, Self-Assembly of Conjugated Polymers for Organic Electronics (February 2014)

63. American Conference on Neutron Scattering, Washington DC, *Structure-Property Relationships of Semiconductor Organogels Developed through in-situ Rheology, Dielectric Spectroscopy and Small Angle Neutron Scattering*. (June 2012)
64. Dept. of Chemical and Biological Engineering Colorado School of Mines, Golden CO, *Structure Property Relationships of Fiber Networks*, (April 2012)
65. Boeing Research and Technology, Seattle WA, *Structure-Property Relationships in Conjugated Polymer Networks*, (November 2011)
66. Dept. Chemical and Biomolecular Engineering Tulane University, New Orleans LA, *Structure-property relationships of fiber networks*, (September 2011)
67. Dept. Chemical and Biomolecular Engineering Clemson University, Clemson SC, *Structure-property relationships of fiber networks*, (April 2011)
68. School of Chemical, Biological and Environmental Engineering, Oregon State University, Corvallis OR, *Structure Property Relationships of Fiber Networks*, (February 2011)
69. PR-LSAMP Transdisciplinary Research Conference, San Juan PR, Plenary, *Neutron and X-ray Scattering: Unique Structural Probes for Soft Matter Research*, (May 2010)
70. Dept. of Chemical Engineering University of Missouri Columbia, Columbia MO, *Small Angle Neutron Scattering for Structural Analysis of Soft Matter*, (March 2010)
71. Puget Sound AIChE Local Chapter, Seattle WA, *Small angle Scattering: A unique structural probe for soft condensed matter*, (April 2009)
72. NIST CNR Summer School, Gaithersburg MD, *SANS as an in-situ probe for nano-structure evolution in real-world processes*, (June 2008)
73. ORNL users meeting, Oak Ridge TN, *Relating the structure and mechanical properties of fibrin clots using neutrons*, (Oct. 2007)
74. NSTI Nanotech Conference, Santa Clara CA, *Inorganic and Organic Nanoparticle Arrays Templated in thermoreversible Block Copolymers*, (May 2007)
75. NIH Tissue Biophysics and Biomimetics, Bethesda MD, *Composite Nanostructures: Proteins and nanoparticle arrays templated in block-copolymer mesophases*, (Jan. 2006)

#### Professional society memberships

- American Institute of Chemical Engineers  
American Chemical Society  
Materials Research Society  
American Physical Society  
International Association of Colloid and Interfacial Scientists  
Neutron Scattering Society of America (Fellow)

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#### GRADUATE STUDENTS

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##### Current Ph.D./MS Thesis Research Students:

- Claire Benstead (ChemE Ph.D expected 2026) – Membranes from living hydrogel materials for distributed biomanufacturing (Co-Advised with Bergsman)  
Abdul Moeez (MolES Ph.D. expected 2027) – Autonomous small angle scattering analysis of nanomaterials  
Zachery Wylie (ChemE Ph.D. expected 2027) – Self Driving Laboratory workflow for nanomaterials synthesis, purification, and isolation  
Hanson Chen (ChemE Ph.D. expected 2028) – Hierarchical assembly of soft matter using laboratory automation  
Elena Toups (MolES Ph.D. expected 2030) – Nanoscale structuring of suspended aerosols via acoustic levitation and controlled evaporation.  
Tobias Rangel (MolES Ph.D. expected 2030) – Self-driving laboratories for 0D, 2D and

3D materials synthesis.

Yu-Fang Hsieh (ChemE Ph.D. expected 2029) – Transport in nanoemulsion systems from simulations and neutron scattering experiments

Current Postdoctoral Researchers:

Kevin Lee – Ultra-small nanoparticles for interface control in high-power Li-ion batteries

Past Postdoctoral Researchers:

David Li – Photoacoustic clot breakup using functional nanoemulsions.

Greg Newbloom – Nanostructured ceramic membranes for redox flow batteries

Fabio Baum – AI-Driven sonochemical synthesis of nanomaterials

Shayna Hilburg – Autonomous retrosynthesis of non-viral DNA delivery vectors

Kiran Vaddi – Data representation for AI-Driven materials acceleration

Rebecca Vincent – Non-Invasive analysis of battery health using non-linear EIS

Graduated Ph.D./MS Students:

Kathleen Weigandt (Ph.D. 2012) – Structure and rheology of fiber networks.

Kjersta Larson-Smith (Ph.D. 2012) – Nanoparticle self-assembly in dispersion.

Monica Ospinal (Ph.D. 2013) – Adv. nanostructures for protein separations.

Jeff Richards (Ph.D. 2014) – Structure control in polymer solar-cells.

Greg Newbloom (Ph.D. 2014) – Percolation in conjugated polymer networks.

Michael Lombardo (MS 2014) – Self-assembly of nanoparticle clusters.

Pablo de la Iglesia (Ph.D. 2015) – Structure of conductive organogels.

Kiran Kanekal (MS 2016) – Structure and dynamics of conjugated polymers.

Canfeng, Wei (MS 2018) – Ceramic membranes for flow-battery applications.

Yuyin Xi (Ph.D. 2018) – Field-directed and self-assembly of conjugated polymers.

Ryan Kastilani (Ph.D. 2019) – Nanomaterial synthesis via interfacial structuring.

Yi-Ting Lee (Ph.D. 2019) – Ultrasound manipulation of emulsion systems.

Shrilakshmi Bonageri (MS 2020) – Data sorting for high-throughput experiments

Caitlyn Wolf (Ph.D. 2021) – Polymer simulation and neutron scattering

Jaime Rodriguez (Ph.D. 2021) – Advanced materials for flow batteries

Cameron Tavacoli (MSE MS 2022) – Sonochemical exfoliation of borides

Elizabeth Harmon (ChemE MS 2022) – Structured hydrogels for biomanufacturing

Kacper Lachowsky (MolES Ph.D. 2023) – Self-assembly in sequence defined polymers and their use in controlled synthesis of nanomaterials

Sage Scheiwiller (ChemE Ph.D. 2024) – Structural analysis of conjugated polymer polymer composites and blends

Maria Politi (ChemE Ph.D. 2024) – AI-Driven optimization of soft-matter and nanomaterials with open-source laboratory automation (Co-Advised with Adler and Beck)

Lorenzo Guio (MSE Ph.D. 2024) – Synthesis and assembly of donor-acceptor conjugated polymers (Co-Advised with Christine Luscombe)

Faiza Abdillahi (ChemE MS, 2024) – Meta-model analysis for ML prediction of solubility

Huat Thart-Chiang (ChemE Ph.D 2025) – Data-driven analysis of experimental design spaces for colloidal synthesis and assembly

Brenden Pelkie (ChemE Ph.D. 2025 – Development of synthesis pipelines for autonomous laboratories

Karen Li (ChemE Ph.D 2025) – Structure and property control in organic mixed ionic and electronic conducting polymers (OMIEC)

Christopher Gould (ChemE MS, 2025) – Automation workflow for high-throughput mechanochemical synthesis of polymer libraries

Undergraduate Researchers:

Supervised over 120 undergraduate student researchers in 18 years at UW performing a variety of research projects over summer and during the academic year.

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## RESEARCH ACTIVITIES

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### Funded Research

Agency	Title	Role	Amount	Dates
NSF	<i>POSE Phase II: RepLab: Open Source Hardware for Laboratory Automation</i>	Co-PI (PI Nadya Peek)	Total: \$1,491k Pozzo: \$253k	9/2025-8/2027
NSF	<i>PREM: MRE-C with University of Hawaii Manoa</i>	Co-PI (PI Godwin Severa)	Total: \$600k Pozzo: \$0	9/2024-8/2030
NSF	<i>MRSEC: UW Molecular Engineering Materials Center</i>	Investigator (PI Gamelin)	Total: \$18,000k Pozzo: ~\$360k	8/2023-8/2029
NSF	<i>POSE: Pathways to Open-Source Hardware for Laboratory Automation</i>	Co-PI (PI Prof. Peek UW HCDE)	Total: \$290k Pozzo: \$111k	10/2022-10/2023
DOE	<i>EFRC: Center for the Science of Synthesis Across Scales</i>	Co-PI and Thrust 3 Lead (PI- Prof. Baneyx)	Total: \$12,600k Pozzo: ~\$700k	7/2022-7-2026
DOE	<i>AI-Accelerated Optimization of Self-Assembled Organic Mixed Ionic-Electronic Conductors (OMIEC)</i>	PI (single PI)	Total: \$727k Pozzo: \$727k	6/2022-6/2025
NSF	<i>MRI: Acquisition of a High-Throughput Small Angle X-ray Scattering Instrument for Data-Driven Materials Design</i>	PI (CoPIs Prof. Roumeli, Nelson, Golder, Luscombe)	Total NSF: \$548k UW Cost Share: \$225k	8/2021-8/2024
NSF	<i>EFRI-DCheM: Modular SynBio Processing Units for Distributed Manufacturing of High-Value Products</i>	PI (CoPIs Prof. Nelson, Peek, Carothers, Alper UT Austin)	Total: \$2,000k Pozzo: \$430k	10/2020-10/2024
NSF	<i>CBET: Molecular Design and Analysis of Flow Battery Electrolytes based on Redox Deep Eutectic Solvents</i>	PI (CoPIs Adler, Beck)	Total: \$486k (Shared Funds Co-supervised student)	7/2019-7/2023
NSF	<i>PREM: University of Hawaii - University of Washington PREM: Materials Research and Education Consortium (MRE-C)</i>	Investigator (PI Severa U. Hawaii)	Total: \$800k Pozzo: \$0	8/2021-8/2024
NSF	<i>MRSEC: UW Molecular Engineering Materials Center</i>	Investigator (PI Gamelin)	Total: \$16,000k Pozzo: \$320k	6/2018-6/2023
DOE	<i>Neutron Analysis of Structure-Property Relationships in Conductive Polymer Plastic Composites</i>	PI (CoPI Luscombe)	Total: \$630k Pozzo: \$330k	6/2019-6/2022
NSF	<i>S-STEM: Developing Pathways to Diversify the Profession of Engineered Materials</i>	Co-PI (PI Arola, CoPIs Luscombe,	Total: \$1,000k Pozzo: \$0	3/2019-3/2024

		Wang, Margherio)		
JCDREAM	<i>High-throughput Solubility Optimization of Earth Abundant Organic Redox Flow Battery Electrolytes</i>	PI (single PI)	Total: \$29k Pozzo: \$29k	1/2020- 6/2020
ACS-PRF	<i>In-situ Small Angle Scattering Analysis of Ultrasound Excitation of Emulsion Droplets</i>	PI (single PI)	Total: \$110k Pozzo: \$110k	7/2017- 8/2019
NIH	<i>Nano-agent for photoacoustic theranostics of dialysis graft/fistula occlusions</i>	PI (Co-PIs Prof. O'Donnell, Prof. Matula and Prof. Monsky)	Total: \$2,822k Pozzo: \$1,400k	11/2014- 11/2019
UW-COE	<i>Strategic Instruction Initiative: Kitchen Engineering</i>	PI (Co-PI Prof. Sniadecki)	Total: \$50k Pozzo: \$50k	10/2017- 6/2019
UW-Global Innovation Initiatives	<i>Global Engagement in Clean Energy and Population Health</i>	PI (single PI)	Total: \$10k Pozzo: \$10k	10/2017- 10/2018
NIH	<i>A Synthetic Hemostat to Revolutionize Early Trauma Care (Co-Investigator)</i>	Co-Investigator (PI Prof. Pun)	Total: \$3,763k Pozzo: \$21k	8/2017- 6/2021
UW-RRF	<i>Development of Process-Structure-Property Relationships for Novel Silica Membranes used in Flow Battery Applications</i>	PI (single PI)	Total \$35k Pozzo \$35k	7/2016- 7/2017
M.J. Murdock Charitable Trust	<i>Enabling a Renewable Energy Grid: Cost Reduction and Performance Gains for Flow Battery Technology</i>	PI (single PI)	Total \$60k Pozzo \$60k (UW matching \$60k)	8/2016- 8/2018
DOE	<i>Neutron Scattering Investigation of the Relationship between Molecular Structure, Morphology and Dynamics in Conjugated Polymers</i>	PI (single PI) Early Career Award	Total \$875k Pozzo \$875k	7/2013- 7/2018
Amazon	<i>Enabling a Renewable Energy Grid: Cost Reduction and Performance Gains for Flow Battery Technology</i>	PI (single PI)	Total: \$100k Pozzo: \$100k	11/2016- 3/2018
DOD	<i>Synthesis and Characterization of Block Copolymers with Unique Chemical Functionalities and Entropically Hindering Moieties</i>	Sub-contractor (PI Prof. Suleiman UPR)	Subcontract \$113k Pozzo: \$113k	11/2014- 5/2016
NSF	<i>STTR: Self-Assembled Conductive Polymer Nanostructures as Coating Additives for Carbon Fiber Reinforced Composite Aircraft</i>	Co-PI (PI Hrecka PolyDrop)	Total: \$225k Pozzo: \$74k	1/2014- 1/2015

NSF	<i>Self-Assembly of Plasmonic Nanoclusters Mediated by Localized Steric Repulsion</i>	PI (single PI)	Total \$292k Pozzo \$292k	7/2012 – 7/2016
Boeing	<i>Development of Durable Transparent Conductive Films for P-Static Dissipation</i>	PI (single PI)	Total \$165k Pozzo \$165k	9/2012- 9/2015
LSDF UWAMIT	<i>Multifunctional Nanostructures based on Nanoparticle Surfactants for US Imaging and Photothermal Therapy</i>	PI (single PI)	Total \$40k Pozzo \$40k	1/2012 - 1/2013
DOE	<i>Self-Assembly of Conjugated Polymer Networks: A Neutron Scattering Study</i>	PI (single PI)	Total \$525k Pozzo \$525k	6/2010 - 6/2013
NSF	<i>A Consolidated Chemical Engineering Laboratory with a Focus on Bioenergy</i>	PI (co-PI, Prof. Pfaendtner)	Total \$200k Pozzo \$200k	9/2010 - 9/2013
UW-RRF	<i>Relating the Structure and Properties of Novel Organogel Systems</i>	PI (single PI)	Total \$34k Pozzo \$34k	3/2009 – 3/2010
NSF	<i>BRIGE: Protein-surfactant nanostructures for enhanced electrophoretic separations</i>	PI (single PI)	Total \$175k Pozzo \$175k	9/2008 – 9/2010
ACS-PRF	<i>Interfacial Structure and Stability of 'Pickering emulsions' Subjected to Freeze-Thaw Cycling</i>	PI (single PI)	Total \$50k Pozzo \$50k	9/2008 – 9/2010
NSF	<i>Acquisition of a SAXS Facility for Research and Education in Nano-structured Materials</i>	PI (co-PI's Prof. Adler, Prof. Jenekhe, Prof. Overney, Prof. Krishnan)	Total \$261k Pozzo \$261k	7/2008 – 7/2009

Total Funding - \$8,065,000 (only accounting for Pozzo amounts)

### Unsponsored research.

- **Health effects due to extended power outages on ambulatory patients in rural Puerto Rico after hurricane Maria.** This unfunded research was led by me with participation of volunteer students and faculty from Chemistry, Materials Science, Chemical Engineering, Construction Management, Electrical Engineering, Industrial Engineering, Global Health and Health Services. We travelled three times to Jayuya Puerto Rico after hurricane Maria to interview over 50 subjects to understand the health implications of power outages and to deploy 21 nanogrids (solar + battery installations) that were used to evaluate the functionality of small-scale clean energy systems for use in emergency power applications. Data was collected and analyzed for publication in two separate peer reviewed articles. The project was highlighted by the New York Times (<https://www.nytimes.com/2017/12/11/us/rethinking-electric-power-prompted-by-politics-and-disaster.html>) and several other news organizations.
- **Post-translational modification of fibrinogen due to traumatic shock.** This project was a collaboration with Dr. Nathan White (UW Emergency Medicine) and Dr. Dominic Chung (UW Biochemistry). We performed structural and rheological characterization of blood clots formed under conditions leading to oxidative stress in the proteins. One publication resulted from this collaboration.

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## TEACHING AND EDUCATION INNOVATION

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I am prepared to teach and have taught most of the core Chemical Engineering courses in the curriculum, including Thermodynamics, Transport (Heat, Mass, Momentum), Materials and Energy Balances, Colloid and Interface Science, Unit Operations Laboratories, Chemical Engineering Design (I, II), and have developed innovative new courses for 1<sup>st</sup> year Introduction to Engineering (Kitchen Engineering), Graduate Colloid and Interface Science and Introduction to Experimental Design. Table below itemizes all courses taught at UW with key evaluation metrics.

**Courses Taught & Student Evaluations (Ratings are on range from 5-best to 0-worst)**

Course	Title	Quarter	Instructor's Contribution	Instructor's Effectiveness
CHEME 310	Materials and Energy Balances	2025, S	4.1	3.9
CHEME 455	Surface and Colloid Lecture Lab	2024, F	4.6	4.6
CHEME 498	Kitchen Engineering	2021, S	4.3	4.3
CHEME 556	Intermolecular & Surface Forces	2021, W	4.7	4.6
CHEME 498	Kitchen Engineering	2020, S	4.9	4.7
CHEME 497B	Entrepreneurial Capstone Design	2020, S	4.8	4.8
CHEME 497D	Entrepreneurial Capstone Design	2020, S	5.0	5.0
CHEME 497C	Entrepreneurial Capstone Design	2020, S	4.0	4.5
CHEME 498	Kitchen Engineering	2019, S	4.6	4.4
CHEME 497B	Entrepreneurial Capstone Design	2019, S	3.5	3.0
CHEME 497A	Entrepreneurial Capstone Design	2019, S	3.0	3.2
CHEME 340	Heat Transfer	2019, W	4.4	4.4
CHEME 497	Entrepreneurial Capstone Design	2018, S	4.2	3.8
CHEME 498	Kitchen Engineering	2018, S	4.1	3.3
CHEME 498 599	Global Engagement in Clean Energy	2018, W	4.7	4.5
CHEME 340	Heat Transfer	2018, W	4.0	3.9
CHEME 497	Entrepreneurial Capstone Design	2017, S	4.3	4.3
CHEME 497	Entrepreneurial Capstone Design	2017, S	4.4	4.1
CHEME 340	Heat Transfer	2017, W	3.8	3.6
CHEME 455, 555	Surface and Colloid Lecture Lab	2017, F	3.5	3.4
CHEME 497	Entrepreneurial Capstone Design	2016, S	4.5	4.4
CHEME 556	Intermolecular & Surface Forces	2016, W	4.8	4.7
CHEME 497	Entrepreneurial Design	2016, W	4.1	4.5
CHEME 455, 555	Surface and Colloid Lecture Lab	2016, F	4.3	3.8
CHEME 556	Intermolecular & Surface Forces	2014, S	4.4	4.1
CHEM E 437	Unit Operations Lab 2	2014, W	3.4	3.6
CHEM E 437	Unit Operations Lab 2	2014, W	3.3	3.5
CHEME 455, 555	Surface and Colloid Lecture Lab	2013, F	3.6	3.5
CHEME 497	Entrepreneurial Capstone Design	2013, S	3.3	2.9
CHEM E 437	Unit Operations Lab 2	2013, W	3.2	3.2
CHEME 455, 555	Surface and Colloid Lecture Lab	2012, F	4.0	3.7
CHEME 497	Entrepreneurial Capstone Design	2012, F	4.0	4.5
CHEME 599	Colloidal Systems	2012, S	4.2	4.0
CHEM E 437	Unit Operations Lab 2	2012, W	3.9	4.0
CHEME 455, 555	Surface and Colloid Lecture Lab	2011, F	4.0	4.2
CHEME 340	Heat Transfer	2011, S	4.4	4.1

CHEME 437	Unit Operations Lab 2	2011, W	4.4	4.0
CHEME 455	Surface and Colloid Lecture Lab	2010, F	4.2	4.1
CHEME 340	Heat Transfer	2010, S	4.3	4.1
CHEME 437	Unit Operations Lab 2	2010, W	3.2	3.0
CHEME 455	Surface and Colloid Lab	2009, F	3.9	3.5
CHEME 486	Capstone Design II	2009, S	3.9	3.7
CHEME 437	Unit Ops Lab 2	2009, W	3.8	3.5
CHEME 455	Surface and Colloid Lecture Lab	2008, F	4.0	3.8
CHEME 260	Thermodynamics	2008, S	4.2	3.8
CHEME 515	Experimental Methods in ChemEng	2008, W	NA	NA

### **Supervision of independent study (design projects and research).**

I have mentored and supervised over 120 undergraduate students in research in my laboratory since 2007. Typically, students enrolled for 2-3 credits per quarter (equivalent to 6-9 hr/week or research work) and usually performed research for 3-4 quarters under my supervision. These students are listed below (UG Research). The list includes summer research students (UW and external) that were sponsored by federal or industrial agencies but who did not receive school credit for their work (Summer UG Researcher). Several of these students are listed in publications as co-authors or, in certain cases, as first authors. Many of these students have also continued into graduate school to obtain advanced degrees and have been recognized with awards (Rhodes Scholars) and fellowships.

### **Unique Teaching Contributions**

CHEME 498 (Global Engagement in Clean Energy: Hurricane Maria Project): In 2017-2018 I organized and taught an interdisciplinary research and service course with students and faculty from engineering, public health, global health and arts & sciences looking at the health effects of hurricane Maria on rural communities in PR, where I was raised. We specifically analyzed the effects of extended power outages on the health of people who depend on electricity for medical treatments in their residences. The course ran as an ‘action-oriented seminar’ where we discussed analysis of research data (e.g. interviews, literature data), learned from expert speakers and coordinated for on-site visits. We travelled with students (UG and graduate) three times to Jayuya PR, where students performed interviews to patients, healthcare providers and family members. Students and I also procured donated funds and we installed 21 clean energy nanogrids (solar+battery) to evaluate the impact of this technology during emergency situations. Students led the execution and analysis of the research data, which culminated in two student-led peer reviewed publications in peer-reviewed journals.

CHEME 498 (Kitchen Engineering): Prof. Sniadecki (MechE) and I co-developed and taught a new course to introduce engineering disciplines to undecided engineering first-year students entering the UW. The course uses culinary examples and demonstrations from local chefs to introduce concepts such as tissue structure/engineering, heat transfer, alloys, glasses, solid mechanics, rheology, machine design, fermentation, chemical separations and sustainability. After introducing concepts using culinary demonstrations, analogies are made with examples of professional engineering practice. Students did weekly HW assignments and participated in a final design project.

CHEME 497 (Entrepreneurial Senior Design Option): Since 2012 I have also taught groups of students on a special capstone design project that guides them through a product design and technology translation experience. Student groups of (4-6 students) engage in a year-long project

starting from developing the problem statement, performing customer and market research, developing specifications, idea generation/brainstorming, prototyping, IP landscape analysis, developing business plans, pitching to investors and analyzing regulatory landscapes. Students participate in several business plan competitions and produce a final designs and reports. Some students have used this course to jump start their own ventures including an instant decaffeination technology (Decafino LLC) and a company producing conductive polymer additives for paints and composites (PolyDrop LLC).

**Teaching Awards, Nominations for Teaching Awards –**

2018 College of Engineering Faculty Award for Teaching

2018 C3E Clean Energy Education and Empowerment Award

2013 Outstanding Undergraduate Research Mentor Award

**References**

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