

SCOTT BANTA, PhD

sbanta@columbia.edu

806 Mudd, MC 4721, 500 W. 120th Street, New York, NY, 10027

(212) 854-7531

EDUCATION

Rutgers, The State University of New Jersey PhD 2002

Department of Chemical and Biochemical Engineering MS 2000

- Advisor: Stephen Anderson, PhD (Department of Molecular Biology and Biochemistry)
- NIH pre-doctoral Biotechnology Training Program, 4.0 GPA

University of Maryland, Baltimore County BSE 1997

Department of Chemical and Biochemical Engineering

- Graduation with Honors, Minors in Mathematics and Physics

POSTDOCTORAL TRAINING

Harvard Medical School 2002-2004

Center for Engineering in Medicine, Shriners and Massachusetts General Hospitals

- Advisor: Martin Yarmush, MD, PhD

ACADEMIC APPOINTMENTS

Columbia University

Chair, Department of Chemical Engineering, SEAS 2022-present

Affiliated Member, Department of Systems Biology, CUIMC 2019-present

Affiliated Member, Columbia Electrochemical Energy Center, SEAS 2019-present

Affiliated Member of PhD Program, Department of Cellular and Molecular
Physiology and Biophysics, CUIMC 2019-present

Vice Chair, Department of Chemical Engineering, SEAS 2019-2022

Professor, Department of Chemical Engineering, SEAS 2015-present

Associate Professor (Tenured), Department of Chemical Engineering, SEAS 2011-2015

Associate Professor, Department of Chemical Engineering, SEAS 2009-2011

Assistant Professor, Department of Chemical Engineering, SEAS 2004-2009

AWARDS AND HONORS

- Fellow, American Association for the Advancement of Science (AAAS), 2025
- University of Maryland, Baltimore County (UMBC) Outstanding Alumni Award, Engineering & Information Technology, 2021
- Plenary Lecture, Division 15C (Bioengineering), American Institute of Chemical Engineers (AIChE) Annual Meeting, 2020
- Fellow, American Institute for Medical and Biological Engineering (AIMBE), 2016
- James M. Van Lanen Distinguished Service Award, Biochemical Technology (BIOT) Division of the American Chemical Society (ACS), 2016
- James D. Watson Investigator Program Award, New York State Office of Science, Technology and Academic Research (NYSTAR), 2005

- Martin L. Yarmush Award for Excellence in Biotech Research Poster Award, 2001
- Dissertation Teaching Award, Rutgers, 2000
- Graduate Student Excellence Award, Rutgers, 1999
- First Place Student Poster Award: Food, Pharmaceuticals, Bioengineering. and Fundamentals in Life Sciences, AIChE Annual Meeting, Miami FL, 1998
- Outstanding Senior in Chemical and Biochemical Engineering, UMBC, 1997

TEACHING EXPERIENCE

Columbia University

- CHEN 1000 Chemical Engineering for Humanity Fall 2026
- CHEN 6543 Chemical Engineering Research Methodology Fall 2015-'17, '26
- CHEN 4002 Essentials of Chemical Engineering B (Separations Module) Fall 2013-'26
- CHEN 4800 Protein Engineering Fall 2005-06, '12-15, '23-25, Spring '08,'10,'17, Sum '21
- CHEN 4230 Reactor Kinetics/Reactor Design Spring 2012-16, '25
- CHEN 4001 Essentials of Chemical Engineering A Fall 2016-'22
- CHEN 4002 Essentials of Chemical Engineering B Fall 2016-'22
- ENGI 1102 The Art of Engineering (Chem Eng) Fall 2017-'21, Spring 2019-'20, '22
- CHEN 2100 Introduction to Chemical Engineering Fall 2016-'21
- CHEN 4140 Chemical and Biochemical Engineering Separations Fall 2004-10, '13
- CHEN 9000 Chemical Engineering Colloquium Spring 2009-'11, Fall 2009-'10, '12
- CHEN 3810 Chemical Engineering Laboratory Spring 2005-'09, 2011-'12

Rutgers, The State University of New Jersey

- 155:492 Protein Engineering Spring 2001

EDITORIAL ACTIVITIES

- Consulting Editorial Board, *AIChE Journal*, 2017-present
- Co-Guest Editor (with Brian Pfleger, U Wisconsin) of special issue of *Current Opinion in Biotechnology* focused on *Energy Biotechnology*, June 2017
- Associate Editor, *Biochemical Engineering Journal*, 2016-present

ENTREPRENEURIAL ACTIVITIES

- Advisor, *1849 Bio, Inc* (2025-present)
- Co-Founder of *Still Bright, Inc* with Jon Vardner and Alan West (2022-present), Activate Fellowship 2022, Seed round fundraising complete
- Advisor, Prospect Mining Studio at New Lab, Brooklyn, NY (2019-2022)
- Co-Founder of *Ironic Chemicals LLC* with Alan West (2014-2019)
 NYSERDA Powerbridge Winner 2014, NSF STTR Phase I Grant Received 2016, First Employee Hired 2017, Second NSF STTR Phase I Grant Received 2017

PEER REVIEWED PUBLICATIONS (148 TOTAL)

(COLUMBIA UNIVERSITY SUBMITTED OR IN PREPARATION, 9 TOTAL)

Salas Valenzuela, B.E., Herishko, M., **Banta, S.**, and Vera, M. "Biofilms in Bioleaching" *Trends in Biotechnology* (In Preparation).

- Golla, D., Khoury, F., and **Banta, S.** "Extending RTX sequences to explore the impact of repeat ordering on metal binding affinity and beta roll domain folding" *Biopolymers (Peptide Science)* (In Preparation).
- Lim, S., McCan, J., Kumar, P., Xia, Z., Napieralski, S., Henson, W.R., Koder, R.L., and **Banta, S.** "Directed evolution of a bacterial two-component system for the on-demand development of biosensors" *Proceedings of the National Academy of Sciences of the United States of America* (In Preparation)
- Gokulu, I.S., Abeyrathna, S., and **Banta, S.** "Alcohol dehydrogenase D from *Pyrococcus furiosus* is a thermostable rare earth element binding enzyme: Metal/cofactor interactions modulate the apparent reaction equilibrium constant" *Chemical Science* (In Preparation).
- Abeyrathna, S., Khoury, F.F., Kucharzyk, K.H. and **Banta, S.** "Alcohol dehydrogenase D from *Pyrococcus furiosus* is a thermostable rare earth element binding enzyme: Characterization of metal-binding and chromatographic separation of critical materials" *Chemical Science* (In Preparation).
- Wang, W., Kucharzyk, K.H., and **Banta, S.** "Lanthanide element bioseparations are kinetically controlled, enabling efficient separation of adjacent elements using an abundant dairy protein: A new whey forward?" *Nature Communications* (Submitted).
- Jung, H., Zurier, H.S., Su, Z., Kucharzyk, K.H., and **Banta, S.** "Addition of acyl-homoserine lactone (AHL) accelerates *Acidithiobacillus ferrooxidans* cultivation" *Applied and Environmental Microbiology* (In Revision).
- Jung, H., Abeyrathna, S., Su, Z., and **Banta, S.** "Overexpression of *magA* in *Acidithiobacillus ferrooxidans* increases magnetosome production and pyrite bioleaching" *ACS Synthetic Biology* (In Revision).
- Herishko, M.A., and **Banta, S.** "Identification and characterization of quorum quenching enzyme AiiF from *Acidithiobacillus ferrooxidans* and its application in biofilm disruption" *Applied and Environmental Microbiology* (In Revision).

(COLUMBIA UNIVERSITY PUBLISHED, 127 TOTAL)

- Khoury, F.F., Abeyrathna, S., Herishko, M.A., Hu, X., Wang, W., Kumar, P., Dailey, D.A., Heater, B.S., Kucharzyk, K.H., and **Banta, S.** (2026) "Continuous evolution of calmodulin for high-purity separation of rare earth elements" *Angewandte Chemie International Edition* **65**(11) e14785 1-11.
- Xu, T., Donovan, B., Sirkoch, C., Yang, Y., Wang, Z., Chen, Y., Kim, C., **Banta, S.**, Fitts, J., and West, A.C. (2026) "Redox-mediated cerium(IV) leach process selectively extracts nickel from sulfidic ores" *Journal of Environmental Chemical Engineering* **14**(1) 120962.
- Ortuno Macias, L.E., Khoury, F., Bera, M.K., Bu, W., Lin, B., **Banta, S.**, and Tu, R.S. (2025) "Rare earth element-induced condensation of the Block V of the repeats-in-toxin domain from CycA from *Bordetella pertussis* for separations" *Langmuir* **41**(51) 34282-34291.
- Donovan, B., Xu, T., Wang, Z., Kim, C., **Banta, S.**, Fitts, J., Urban, A., and West, A.C. (2025) "Fast and selective leaching of pyrrhotite in the presence of pentlandite" *ACS Sustainable Resource Management* **2**(11) 2283-2291.
- Su, Z., Jung, H., Inaba, Y., and **Banta, S.** (2025) "Exploration of retron elements for the genetic engineering of *Acidithiobacillus ferrooxidans*" *ACS Synthetic Biology* **14**(11) 4563-4573.
- Lim, S., and **Banta, S.** (2025) "Engineering non-canonical cofactors to expand cellular functions" *ACS Synthetic Biology* **14**(9) 3321-3331.

- Zurier, H.S., Hart, C., Napieralski, S., Henson, W.R., **Banta, S.**, and Kucharzyk, K.H. (2025) "Extremophilic microbes tolerate high concentrations of rare earth elements (REEs)" *Biotechnology Letters* **47**(5) article 113, 1-11.
- Khoury, F.F., Abeyarthna, S., Heater, B.S., Kucharzyk, K.H., and **Banta, S.** (2025) "Reducing binding site heterogeneity via truncation of the RTX domain enhances selectivity for rare earth element separation" *Chemical Communications* **61**(76), 14629–14632. (**Featured on Inside Front Cover**).
- Khoury, F.F., Heater, B.S., Marzolf, D.R., Abeyrathna, S., Picking, J.W., Kumar, P., Higgins, S.A., Jones, R., Lewis Jr., A.T., Kucharzyk, K.H., and **Banta, S.** (2025) "Mining peptides for mining solutions: Evaluation of calcium-binding peptides for rare earth element separations" *Chemical Science* **16**(34), 15333-15346. (**Featured as a 2025 Chemical Science Pick of the Week, 2025 Chemical Science HOT Article, Featured on Back Cover, Selected for Inclusion in 2025 Most Popular Bioinorganic Chemistry Articles Collection**).
- Zurier, H.S., **Banta, S.**, Park, D.M., Reed, D.W., and Werner, A.Z. (2025) "Biotechnology solutions for critical mineral recovery from unconventional feedstocks" *Current Opinion in Biotechnology* **95**, 103336, 1-12.
- Kim, C., Donovan, B., Fitts, J.P., Farinato, R.S., Nagraj, D.R., **Banta, S.**, and West, A.C. (2025) "Vanadium(II) reductive upgrading of copper sulfide concentrates via iron leaching to facilitate stagewise oxidative copper leaching at room temperature" *Hydrometallurgy* **236** 1-10 106509.
- Zurier, H.S., Farinato, R., Kucharzyk, K.H., and **Banta, S.** (2025) "The outer membrane in *Acidithiobacillus ferrooxidans* enables high tolerance to rare earth elements" *Applied and Environmental Microbiology* **91**(5) 1-16 e02450-24.
- Jung, H., Inaba, Y., and **Banta, S.** (2025) "Overexpression of sulfide:quinone reductase (SQR) in *Acidithiobacillus ferrooxidans* enhances sulfur, pyrite, and pyrrhotite oxidation" *Applied and Environmental Microbiology* **91**(4) 1-13 e00170-25.
- Su, Z., Chao, Z., Jiang, V., Daniel, S., and **Banta, S.** (2025) "Mutagenesis of Cyc2 from *Acidithiobacillus ferrooxidans* reveals a critical role for bound iron atoms in extracellular electron transfer" *Small* **21**(11) 2408837.
- Xu, T., Donovan, B., Kim, C., **Banta, S.**, Fitts, J.P., West, A.C., (2024) "Leaching mechanism for chalcopyrite in electrochemically regenerated Vanadium (II)" *ACS Sustainable Chemistry & Engineering* **12**(43) 15913-15922.
- Jung, H., Inaba, Y., and **Banta, S.** (2024) "CRISPR/dCas12a knock-down of *Acidithiobacillus ferrooxidans* electron transport chain bc1 complexes enables enhanced metal sulfide bioleaching" *Journal of Biological Chemistry* **300**(9) 107703.
- Jung, H., Jiang, V., Su, Z., Inaba, Y., Khoury, F.F. and **Banta, S.** (2024) "Overexpression of a designed mutant oxyanion binding protein ModA/WtpA in *Acidithiobacillus ferrooxidans* for the low pH recovery of molybdenum and rhenium" *JACS Au* **4**(8) 2957-2965. (**Featured as an ACS Editor's Choice**).
- Gokulu, I.S. and **Banta, S.** (2024) "Enzyme engineering by force: DNA springs for the modulation of biocatalytic trajectories" *ACS Synthetic Biology* **13**(8) 2600-2610.
- Khoury, F.F., Su, Z., and **Banta, S.** (2024) "Rare earth element binding and recovery by a beta-roll forming RTX domain" *Inorganic Chemistry* **63**(29) 13223-13230.

- Jung, H., Su, Z., Inaba, Y., West, A.C., and **Banta, S.** (2023) "Genetic modification of *Acidithiobacillus ferrooxidans* for rare earth element (REE) recovery under acidic conditions" *ACS Environmental Science & Technology* **57**(48) 19902-19911.
- Chen, C.V.H.-H. and **Banta, S.** (2023) "Case-based learning in material and energy balances to help students practice the transferability of chemical engineering problem solving" *Chemical Engineering Education* **57**(4) 179-188.
- Jiang, V., Lucia, M.J., **Banta, S.**, and Chen, C.V.H.-H. (2023) "A remote, hands-on, and low cost sourdough lab for first year chemical engineering students" *Chemical Engineering Education* **57**(4) 189-199.
- Jung, H., Kim, J., Inaba, Y., Moutushi, T.T., Castaldi, M.J., West, A.C., and **Banta, S.** (2023) "Overexpression of AcoP in *Acidithiobacillus ferrooxidans* for enhanced copper reclamation" *ACS Environmental Science & Technology Engineering* **3**(10) 1468-1475.
- Vainstein, S. and **Banta, S.** (2023) "Engineering *Candida boidinii* formate dehydrogenase for activity with the non-canonical cofactor 3'-NADP(H)" *Protein Engineering, Design and Selection* **36**, gzad009, 1-12.
- Willett, E., and **Banta, S.** (2023) "A synthetic NAD(P)(H) cycle for ATP regeneration" *ACS Synthetic Biology* **12**(7) 2118-2126.
- Banta, S.** "Protein discerns between rare-earth elements" (2023) *Nature (News & Views)* **618** 35-36.
- Gokulu, I.S., and **Banta, S.** (2023) "Biotechnology applications of proteins functionalized with DNA oligonucleotides" *Trends in Biotechnology* **41**(4) 575-585.
- Jung, H., Inaba, Y., West, A.C., and **Banta, S.** (2023) "Overexpression of the quorum sensing genes in *Acidithiobacillus ferrooxidans* enhances cell attachment and covellite bioleaching" *Biotechnology Reports* **38** e00789.
- Vardner, J.T., Inaba, Y., Jung, H., Farinato, R.S., Nagaraj, D.R., **Banta, S.**, and West, A.C. (2023) "The reductive leaching of chalcopyrite by chromium (II) chloride for the rapid and complete extraction of copper" *ChemistryOpen* **12**(1) e202200196.
- Vardner, J.T., Gencer, E., Emerson, M., Farinato, R.S., Nagaraj, D.R., **Banta, S.**, and West, A.C. (2022) "Vanadium (II) sulfate for the reductive leaching of chalcopyrite: Replacing smelting with electrolysis for copper production" *ChemElectroChem* **9**(24) e202200920.
- Xie, Y., Minteer, S.D., **Banta, S.**, and Calabrese Barton, S. (2022) "Markov state study of electrostatic channeling within the tricarboxylic acid cycle supercomplex" *ACS Nanoscience Au* **2**(5) 414-421.
- Massad, N. and **Banta, S.** (2022) "Development of a kinetic model and figures of merit for formaldehyde carboligations catalyzed by formolase enzymes" *Biotechnology and Bioengineering* **119**(11) 3140-3148.
- Willett, E., Jiang, V., Koder, R.L. and **Banta, S.** (2022) "NAD⁺ kinase enzymes are reversible, and NAD⁺ product inhibition is responsible for the observed irreversibility of the human enzyme" *Biochemistry* **61**(17) 1862-1873.
- Jung, H., Inaba, Y., Vardner, J., West, A.C., and **Banta, S.** (2022) "Overexpression of the licanantase protein in *Acidithiobacillus ferrooxidans* leads to enhanced bioleaching of copper minerals" *ACS Sustainable Chemistry and Engineering* **10**(33) 10888-10897.
- Alcantar, N.A., **Banta, S.**, Cak, A.D., Chen, X., DelRe, C., Deravi, L.F., Dordick, J.S., Giebel, B.M., Greenfield, D., Groffman, P.M., Holford, M., John, G., Joshi, N.S., Kotov, N.A., Montclare, J.K., Moore, B.S., Ortony, J.H., Reinmann, A.B., Son, J., Stark, R.E., Ulijn, R.V.,

- Vorosmarty, C.J, and Wilson, C.J. (2022) "Matter of Opinion: Bioinspired green science and technology symposium in NYC" *Matter* **5**(7) 1980-1984.
- Jung, H., Inaba, Y., and **Banta, S.** (2022) "Genetic engineering of the acidophilic chemolithoautotroph *Acidithiobacillus ferrooxidans*" *Trends in Biotechnology* **40**(6) 677-692.
- Jung, H., Inaba, Y., Jiang, V., West, A.C., and **Banta, S.** (2022) "Engineering polyhistidine tags on surface proteins of *Acidithiobacillus ferrooxidans*: Impact of localization on the binding and recovery of divalent metal cations" *ACS Applied Materials and Interfaces* **14**(8) 10125-10133.
- Massad, N. and **Banta, S.** (2022) "NAD(H)-PEG swing arms improve both the activities and stabilities of modularly-assembled transhydrogenases designed with predictable selectivities" *ChemBioChem* **23**(3) e202100251 (**Featured on Journal Cover**).
- Abdallah, W., Hong, X., **Banta, S.**, and Wheeldon, I. (2022) "Microenvironmental effects can masquerade as substrate channeling in cascade biocatalysis" *Current Opinion in Biotechnology (Energy Biotechnology Issue)* **73** 233-239.
- Inaba, Y., West, A.C., and **Banta, S.** (2021) "Glutathione synthetase overexpression in *Acidithiobacillus ferrooxidans* improves halotolerance of iron oxidation" *Applied and Environmental Microbiology* **87**(20) 1-9 e01518-21. (**Featured as an AEM Editor's Spotlight Selection**).
- Inaba, Y., Kernan, T., West, A.C., and **Banta, S.** (2021) "Dispersion of sulfur creates a valuable new growth medium formulation that enables earlier sulfur oxidation in relation to iron oxidation in *Acidithiobacillus ferrooxidans* cultures" *Biotechnology and Bioengineering* **118**(8) 3225-3238.
- Jiang, V., Khare, S.D., and **Banta, S.** (2021) "Computational structure prediction provides a plausible mechanism for electron transfer by the outer membrane protein Cyc2 from *Acidithiobacillus ferrooxidans*" *Protein Science* **30**(8) 1640-1652.
- Donnelly, C.A., Vardner, J.T., Zhang, Z., **Banta, S.**, and West, A.C. (2020) "Impact of anode on product formation during the electrochemical reduction of chalcopyrite" *Journal of the Minerals, Metals and Materials Society* **72**(11) 3818-3825.
- Inaba, Y., West, A.C., and **Banta, S.** (2020) "Enhanced microbial corrosion of stainless steel by *Acidithiobacillus ferrooxidans* through the manipulation of substrate oxidation and overexpression of *rus*" *Biotechnology and Bioengineering* **117**(11) 3475-3485.
- Whitehead, T.A., **Banta, S.**, Bentley, W.E., Betenbaugh, M.J., Chan, C., Clark, D.S., Hoesli, C.A., Jewett, M.C., Junker, B., Koffas, M., Kshirsagar, R., Lewis, A., Li, C-T., Maranas, C., Papoutsakis, E.T., Prather, K.J., Schaffer, S., Segatori, L, and Wheeldon, I. (2020) "The importance and future of biochemical engineering" *Biotechnology and Bioengineering* **117**(8) 2305-2318.
- Banta, S.** and Wheeldon, I. (2020) "Theory-based development of performance metrics for comparing multireactant enzymes" *ACS Catalysis* **10**(2) 1123-1132.
- Inaba, Y., Xu, S., Vardner, J.T., West, A.C., and **Banta, S.** (2019) "Microbially influenced corrosion of stainless steel by *Acidithiobacillus ferrooxidans* supplemented with pyrite: Importance of thiosulfate" *Applied and Environmental Microbiology* **85**(21) 1-13 e01381-19.
- Fankhauser, A.M., Antonio, D.D., Krell, A., Alston, S.J., **Banta, S.**, and McNeill, V.F. (2019) "Constraining the impact of bacteria on the aqueous atmospheric chemistry of small organic compounds" *ACS Earth and Space Chemistry* **3**(8) 1485-1491.

- Abdallah, W., Chirino, V., Wheeldon, I., and **Banta, S.** (2019) "Catalysis of thermostable alcohol dehydrogenase improved by engineering the microenvironment through fusion with supercharged proteins" *ChemBioChem* **20**(14) 1827-1837.
- Bulutoglu, B., Macazo, F., Bale, J., King, N., Baker, D., Minteer, S.D., and **Banta, S.** (2019) "Multimerization of an alcohol dehydrogenase by fusion to a designed self-assembling protein results in enhanced bioelectrocatalytic operational stability" *ACS Applied Materials and Interfaces* **11**(22) 20022-20028.
- Bulutoglu, B. and **Banta, S.** (2019) "Calcium-dependent RTX domains in the development of protein hydrogels" *Gels* **5**(1) 10. (Invited Review for Special Issue: Gels from the Self-Assembling of Peptide-Based Compounds) (**Featured on Journal Cover**).
- Lancaster, L., Bulutoglu, B., **Banta, S.**, and Wheeldon, I. (2019) "Enzyme colocalization in protein-based hydrogels" *Methods in Enzymology* **617** 265-285.
- Inaba, Y., Banerjee, I., Kernan, T., and **Banta, S.** (2018) "Transposase-mediated chromosomal integration of exogenous genes in *Acidithiobacillus ferrooxidans*" *Applied and Environmental Microbiology* **84**(21) 1-12 e01381-18.
- Lancaster, L., Abdallah, W., **Banta, S.**, and Wheeldon, I. (2018) "Engineering enzyme microenvironments for enhanced biocatalysis" *Chemical Society Reviews* (Invited Review for Special Issue: Peptide and Protein Nanotechnology) **47**(14) 5177-5186.
- Ozbakir, H.F., Garcia, K.E. and **Banta, S.** (2018) "Creation of a formate:malate oxidoreductase by fusion of dehydrogenase enzymes with PEGylated cofactor swing-arms" *Protein Engineering, Design and Selection* **31**(4) 103-108.
- Abdallah, W., Solanki, K., and **Banta, S.** (2018) "Insertion of a calcium-responsive beta roll domain into a thermostable alcohol dehydrogenase enables tunable control over cofactor selectivity" *ACS Catalysis* **8**(2) 1602-1613.
- Bulutoglu, B., Haghpanah, J., Campbell, E., and **Banta, S.** (2018) "Engineered biomolecular recognition of RDX using a thermostable alcohol dehydrogenase as a protein scaffold" *ChemBioChem* **19**(3) 247-255.
- Ozbakir, H.F., and **Banta, S.** (2018) "Kinetic and transport effects on enzymatic biocatalysis resulting from the PEGylation of cofactors" *AIChE Journal* **64**(1) 12-17.
- Kernan, T., West, A.C., and **Banta, S.** (2017) "Characterization of endogenous promoters for control of recombinant gene expression in *Acidithiobacillus ferrooxidans*" *Biotechnology and Applied Biochemistry* **64**(6) 793-802. (**Featured in Issue Highlights**).
- Bulutoglu, B., Dooley, K., Szilvay, G., Blenner, M., and **Banta, S.** (2017) "Catch and release: Engineered allosterically regulated β -roll peptides enable on/off biomolecular recognition" *ACS Synthetic Biology* **6**(9) 1732-1741.
- Bulutoglu, B. and **Banta, S.** (2017) "Block V RTX domain of adenylate cyclase from *Bordetella pertussis*: A conformationally dynamic scaffold for protein engineering applications" *Toxins* (Invited Review for Special Issue: Adenylate Cyclase (CyaA) Toxin) **9**(9) 289.
- Bulutoglu, B., Yang, S.J. and **Banta, S.** (2017) "Conditional network assembly and targeted protein retention via environmentally responsive, engineered β -roll peptides" *Biomacromolecules* **18**(7) 2139-2145.
- Xia, L., Van Nguyen, K., Holande, Y., Han, H., Dooley, K., Atanassov, P., **Banta, S.**, and Minteer, S.D. (2017) "Improving the performance of methanol biofuel cells utilizing an enzyme cascade bioanode with DNA bridged substrate channeling" *ACS Energy Letters* **2**(6) 1435-1438.

- Pfleger, B.F., and **Banta, S.** (2017) "Editorial overview: Energy Biotechnology" *Current Opinion in Biotechnology (Energy Biotechnology Issue)* **45** v-viii.
- Banerjee, I., Burrell, B., Reed, C., West, A.C., and **Banta, S.** (2017) "Metals and minerals as a biotechnology feedstock: Engineering biomining microbiology for bioenergy applications" *Current Opinion in Biotechnology (Energy Biotechnology Issue)* **45** 144-157.
- Solanki, K., Abdallah, W., and **Banta, S.** (2017) "Engineering the cofactor specificity of an alcohol dehydrogenase via single mutations or insertions distal to the 2'-phosphate group of NADP(H)" *Protein Engineering, Design and Selection* **30**(5) 373-380.
- Guan, J., Berlinger, S.A., Li, X., Chao, Z., Sousa e Silva, V., **Banta, S.**, and West, A.C. (2017) "Development of reactor configurations for an electrofuels platform utilizing genetically modified iron oxidizing bacteria for the reduction of CO₂ to biochemicals" *Journal of Biotechnology* **245** 21-27.
- Solanki, K., Abdallah, W., and **Banta, S.** (2016) "Extreme Makeover: Engineering the activity of a thermostable alcohol dehydrogenase (AdhD) from *Pyrococcus furiosus*" *Biotechnology Journal* (Special Issue: ECAB Conference 2015) **11**(12) 1483-1497.
- Bulutoglu, B., Garcia, K.E., Wu, F., Minteer, S.D., and **Banta, S.** (2016) "Direct evidence for metabolon formation and substrate channeling in recombinant TCA cycle enzymes" *ACS Chemical Biology* **11**(10) 2847-2853.
- Garcia, K.E., Babanova, S., Sheffler, W., Hans, M., Baker, D., Atanassov, P., and **Banta, S.** (2016) "Designed Protein Aggregates Entrapping Carbon Nanotubes for Bioelectrochemical Oxygen Reduction" *Biotechnology and Bioengineering* **113**(11) 2321-2327.
- Hjelm, R., Garcia, K.E., Babanova, S., Artyushkova, K., **Banta, S.** and Atanassov, P. (2016) "Functional Interfaces for Biomimetic Energy Harvesting: CNTs-DNA Matrix for Enzyme Assembly" *Biophysica et Biochimica Acta (Bioenergetics)* (Special Issue: Biodesign for Bioenergetics) **1857**(5) 612-620.
- Wheeldon, I., Minteer, S.D., **Banta, S.**, Calabrese Barton, S., Atanassov, P., and Sigman, M. (2016) "Substrate channeling as an approach to cascade reactions" *Nature Chemistry* **8**(4) 299-309.
- Li, X., West, A.C., and **Banta, S.** (2016) "Enhancing isobutyric acid production from engineered *Acidithiobacillus ferrooxidans* cells via media optimization" *Biotechnology and Bioengineering* **113**(4) 790-796.
- Ozbakir, H.F., Sambade, D.A., Majumdar, S., Linday, L., **Banta, S.**, and West, A.C. (2016) "Detection of 2,5-hydroxyvitamin D with an enzyme modified electrode" *Journal of Biosensors and Bioelectronics* **7**(1) 193.
- Kernan, T., Majumdar, S., Li, X., Guan, J., West, A.C., and **Banta, S.** (2016) "Engineering the iron-oxidizing chemolithoautotroph *Acidithiobacillus ferrooxidans* for biochemical production" *Biotechnology and Bioengineering* **113**(1) 189-197 (**Featured in B&B Editor's Spotlight Section - Ironic Biochemicals**).
- Lau, C., Moehlenbrock, M.J., Arechederra, R.L., Falase, A., Garcia, K., Rincon, R., Minteer, S.D., **Banta, S.**, Gupta, G., Babanova, S. and Atanassov, P. (2015) "Paper based biofuel cells: Incorporating enzymatic cascades for ethanol and methanol oxidation" *International Journal of Hydrogen Energy* **40**(42) 14661-14666.
- Smith, J.R., Amaya, K.R., Bredemeier, R.T., **Banta, S.**, and Crokek, D.M. (2015) "Selective biomolecular photocatalytic decomposition using peptide-modified TiO₂ nanoparticles" *Applied Catalysis B: Environmental* **176** 315-324.

- Patel, T.N., Park, A-H.A. and **Banta, S.** (2014) "Genetic manipulation of outer membrane permeability: Generating porous heterogeneous catalyst analogs in *Escherichia coli*" *ACS Synthetic Biology* **3**(12) 848-854.
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- Banta, S.***, Vemula, M.*, Yokoyama, T., Jayaraman, A., Berthiaume, F., and Yarmush, M.L. (2007) "Contribution of Gene Expression to Metabolic Fluxes in Hypermetabolic Livers Induced Through Burn Injury and Cecal Ligation and Puncture in Rats" *Biotechnology and Bioengineering* **97**(1) 118-137 (*co-first authors) (**Featured in Editor's Spotlight**).
- Banta, S.**, Yokoyama, T., Berthiaume, F., and Yarmush, M.L. (2005) "Effects of Dehydroepiandrosterone administration on rat hepatic metabolism following thermal injury" *Journal of Surgical Research* **127**(2) 93-105.
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BOOK CHAPTERS AND OTHER ARTICLES

- Vainstein, S., and **Banta, S.** (2024) "Engineering *Candida boidinii* formate dehydrogenase for activity with NMN(H)" *bioRxiv*, doi: <https://doi.org/10.1101/2024.07.17.604001>.
- Campbell, E., and **Banta, S.** (2014) "Protein Engineering for Enzymatic Fuel Cells" Enzymatic Fuel Cells: From Fundamentals to Applications Edited by H.R. Luckarift, P.B. Atanassov and G.R. Johnson, Wiley & Sons.
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PATENTS (9 U.S. PATENTS ISSUED)

- Park, A.A., Swanson, E.J., Zhao, H., Gadikota, G., Brady, P.V., Patel, T., and **Banta, S.** "Methods and Systems for Capturing and Storing Carbon Dioxide" (2019) U.S. Patent Number 10,456,744.
- Banta, S.**, West, A.C., and Kernan, T. "Methods and Systems for Producing Products Using Engineered Sulfur Oxidizing Bacteria" (2017) U.S. Patents 9,745,601 and 10,519,469.
- Banta, S.**, and Shur, O. "Precipitable peptides" (2017) U.S. Patents 9,550,805 and 10,358,461.
- Banta, S.**, Blenner, M.A., Wheeldon, I., and Dooley, K. "Leucine Beta Roll Domains and Uses Thereof" (2015) U.S. Patent Numbers 9,127,267 and 10,059,934.
- Banta, S.**, Calabrese-Barton, S., and Wheeldon, I. "Self-assembling protein hydrogel with bio-active protein" (2013) U.S. Patent Number 8,415,290.

Anderson, S. and **Banta, S.** “Design and production of mutant 2,5-diketo-D-gluconic acid reductase enzymes with altered cofactor dependency” (2002) U.S. Patent Number 6,423,518.

INVITED RESEARCH SEMINARS

- Banta, S.** “Biotechnology for critical materials production” Invited Research Seminar, University of Alabama, Tuscaloosa, AL, Feb. 2026
- Banta, S.** “Biotechnology for critical materials production” Invited Research Seminar, University of Michigan, Ann Arbor, MI, Jan. 2026
- Banta, S.** “Biotechnology for critical materials production” Invited Research Seminar, University of Oklahoma, Norman, OK, Oct. 2025
- Banta, S.** “Biotechnology for critical materials production” Invited Research Seminar, Missouri Science & Technology, Rolla, MO, Oct. 2025
- Banta, S.** “Biotechnology for critical materials production” Invited Research Seminar, Princeton University, Princeton, NJ, Sept. 2024
- Banta, S.** “Engineering cofactor regeneration for biocatalysis” Invited Presentation, Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Boston, MA Aug. 2024
- Banta, S.** “Chemical Engineering is the Best” Invited Keynote Lecture, AIChE, Mid-Atlantic Regional Conference, UMBC, Baltimore, MD, Apr. 2024
- Banta, S.** “Engineering of *Acidithiobacillus ferrooxidans* for bioelectrocatalysis applications” Invited Research Seminar, North American Meeting of the International Society for Microbial Electrochemistry and Technology (NA-ISMET) Houston, TX, Apr. 2024
- Banta, S.** “Engineering of *Acidithiobacillus ferrooxidans* for biofuel, biomining and biotechnology applications” Invited Research Seminar, National Renewable Energy Laboratory (NREL) Golden, CO, Mar. 2024
- Banta, S.** “Engineering the calcium-dependent beta roll peptide for biotechnology applications” Invited Research Seminar, Worcester Polytechnic Institute, Worcester, MA, Oct. 2023
- Banta, S.** “Biomining for the Production of Critical Energy Materials” Invited Research Seminar, Bio-Inspired Green (BIG) Science and Technology Symposium, New York, NY, Apr. 2023
- Banta, S.** “Extreme Makeover: Engineering a thermostable alcohol dehydrogenase for biotechnology applications” Invited Research Seminar, Cornell University, Ithaca, NY, Jan. 2023
- Banta, S.** “Extreme Makeover: Engineering a thermostable alcohol dehydrogenase for biotechnology applications” Invited Research Seminar, University of California, Santa Barbara, Santa Barbara, CA, Nov. 2022
- Banta, S.** “Extreme Makeover: Engineering a thermostable alcohol dehydrogenase for biotechnology applications” Invited Research Seminar, University of Nebraska, Lincoln, NE, Nov. 2022
- Banta, S.** “Engineering of *Acidithiobacillus ferrooxidans* for biofuel, biomining and biotechnology applications” Invited Research Seminar, Washington University, St. Louis, MO, Sept. 2022

- Banta, S.** “Engineering the calcium-dependent Beta Roll peptide domain for emerging biotechnology applications”, Invited Keynote Talk, National Meeting of the American Chemical Society, San Diego, CA, Mar. 2022
- Banta, S.** “Engineering of *Acidithiobacillus ferrooxidans* for biofuel, biomining and biotechnology applications” Invited Virtual Research Seminar, University of Maryland, Baltimore County, Baltimore, MD Nov. 2021
- Banta, S.** “Adventures in the Engineering of Oxidoreductase Enzymes” Division 15C (Bioengineering) Plenary Award Talk, AIChE Annual Meeting, Virtual, Nov. 2020
- Banta, S.** “Extreme Makeover: Engineering a thermostable alcohol dehydrogenase for biotechnology applications” Invited Virtual Research Seminar, University of California Irvine, Irvine, CA Jun. 2020
- Banta, S.** “Extreme Makeover: Engineering a thermostable alcohol dehydrogenase for biotechnology applications” Invited Research Seminar, Northeastern University, Boston, MA Feb. 2020
- Banta, S.** “Engineering of *Acidithiobacillus ferrooxidans* for biofuel, biomining and biocorrosion applications” Invited Research Seminar, University of California Riverside, Riverside, CA Feb. 2020
- Banta, S.** “Engineering the biomining bacterium *Acidithiobacillus ferrooxidans* for emerging applications” 2nd Space Travel: Adaptive Research and Technologies from Biological and Chemical Engineering (STAR Tech) Meeting, Boston, MA Nov. 2019
- Banta, S.** “Engineering the calcium-dependent beta roll domain for biotechnology applications” Invited Research Seminar, University of Connecticut, Storrs, CT, Feb. 2019
- Banta, S.** “Biofuels Without Photosynthesis: Electrofuels and Biomining” Invited Seminar, 13th Annual Energy Conference: Bioenergy & Natural Systems, New York Institute of Technology, Long Island, NY Jun. 2018
- Banta, S.** “Engineering the calcium-dependent beta roll domain for biotechnology applications”, Center for Biomanufacturing Science and Technology (CBST) at the University of Delaware, Newark, DE, Mar. 2018
- Banta, S.** “Extreme Makeover: Engineering the thermostable alcohol dehydrogenase D (AdhD) enzyme to expand its biotechnology applications” Invited Research Seminar, Rensselaer Polytechnic Institute, Troy NY, Jan. 2018
- Banta, S.** “Engineering the beta roll domain for bioseparation applications”, Protein Purification & Recovery Track, PepTalk Congress, San Diego, CA, Jan. 2018
- Banta, S.** “Engineering Cofactor Selectivity: Some New Ideas for an Old Problem”, Biocatalysis and Bio-Based Chemical Production Track, PepTalk Congress, San Diego, CA, Jan. 2018
- Banta, S.** “Extreme Makeover: Engineering the Thermostable Alcohol Dehydrogenase D (AdhD) Protein Scaffold for New Applications”, Invited Keynote Talk, AIChE Annual Meeting, Minneapolis, MN Nov. 2017
- Banta, S.** “The Importance of Thinking Big in Academia”, Invited Talk, American Institute of Chemical Engineers Annual Meeting, Minneapolis, MN Nov. 2017
- Banta, S.** “Engineering the Calcium-Regulated β -roll Peptide for Biomaterials Applications” Recombinant Biomaterials Symposium, National Meeting of the American Chemical Society, Washington, DC, Aug. 2017

- Banta, S.** "Characterizing the conformationally dynamic Beta Roll peptide domain and engineering it to participate in useful biomolecular interactions" Invited Research Talk, 2017 Colorado Protein Stability Conference, Breckenridge, CO, Jul. 2017
- Banta, S.** "Engineering the Beta Roll peptide to participate in useful biomolecular interactions" Invited Research Seminar, Tufts University, Medford, MA, Feb. 2017
- Banta, S.** "Fuels from the wind or rocks: Engineering the iron-oxidizing chemolithoautotroph *Acidithiobacillus ferrooxidans* for biochemical production" Invited Seminar, North Carolina State University, Raleigh, NC Oct. 2016
- Banta, S.** "Engineering the Beta Roll peptide to participate in useful biomolecular interactions" Invited Research Seminar, Case Western Reserve University, Cleveland OH, Sept. 2016
- Banta, S.** "Engineering the Beta Roll peptide to participate in useful biomolecular interactions" Invited Research Seminar, Villanova University, Philadelphia PA, May. 2016
- Banta, S.** "Fuels from the wind or rocks: Engineering the iron-oxidizing chemolithoautotroph *Acidithiobacillus ferrooxidans* for biochemical production" Invited Seminar, Clemson University, Clemson, SC Apr. 2016
- Banta, S.** "Biofuels without Plants: Engineering the iron-oxidizing chemolithoautotroph *Acidithiobacillus ferrooxidans* for biochemical production from CO₂" Invited Research Seminar, Eastern Regional Photosynthesis Conference, Woods Hole, MA Apr. 2016
- Banta, S.** "Making biofuels from the wind or rocks" Invited Seminar, New York Chemistry and Physics Teachers' Clubs, New York, NY Feb. 2016
- Banta, S.** "Engineering *Acidithiobacillus ferrooxidans* cells for biochemical production using electricity and CO₂" Invited Research Seminar, Virginia Tech, Blacksburg, VA Nov. 2015
- Banta, S.** "Engineering a thermostable alcohol dehydrogenase for biofuel cells and biosensors" Key-note Talk, 3rd European Congress of Applied Biotechnology (ECAB3), Nice, France, Sept 2015
- Banta, S.** "Engineering of the small laccase (SLAC) from for incorporation into bioelectrochemical systems" Soft Nano Symposium, Nanoscience Initiative of The CUNY Advanced Science Research Center (ASRC), New York, NY, Jun. 2015
- Banta, S.** "Engineering the Beta Roll peptide to participate in useful biomolecular interactions" Invited Research Seminar, Rensselaer Polytechnic Institute, Troy NY, Feb. 2015
- Banta, S.** "Engineering the Protein/Nanomaterial Interface for Biosensors and Biofuel Cells" Invited Plenary Talk, AIChE Annual Meeting, Atlanta, GA Nov. 2014
- Banta, S.** "Engineering the Beta Roll peptide to participate in useful biomolecular interactions" Invited Research Seminar, Georgia Tech, Atlanta, GA Oct. 2014
- Banta, S.** "A designed calcium-responsive peptide domain for non-chromatographic protein purification", The Bioprocessing Summit, Boston MA, Aug. 2014
- Banta, S.** "Adventures in the start-up of an electrofuels company" Rutgers University Biotechnology Training Program Annual Mini-Symposium, Piscataway, NJ, June 2014
- Banta, S.** "Development of a directed evolution strategy to identify cell penetrating peptides (CPPs) for brain delivery", Biologics Formulation and Delivery Summit, Boston MA, May 2014
- Banta, S.** "Engineering the Beta Roll peptide to participate in useful biomolecular interactions" Invited Research Seminar, University of Virginia, Charlottesville, VA Dec. 2013

- Banta, S.** "Exploiting Peptide Conformational Changes for Protein Purification" Invited Ketynote Presentation, The 2013 Biotechniques Virtual Symposium - Exploring The Modern Lab, Oct. 2013
- Banta, S.** "Protein Engineering for Bioelectrocatalysis: We can do more than just Vmax" Invited talk, Indo-US Workshop on Electrocatalytic Materials for Fuel and Biofuel Cells, Banaras Hindu University, Varanasi, India, Feb 2013
- Banta, S.** "Engineering the Beta Roll peptide to participate in useful biomolecular interactions" Invited Research Seminar, Princeton University, Princeton, NJ Dec. 2012
- Banta, S.** "Engineering Enzymes to Self-Assemble into Catalytic Biomaterials", Ten-Year Anniversary Symposium, Institute for Biotechnology, St. John's University, Queens, NY May 2012
- Banta, S., West, A.C., and Chandran, K.** "Electrofuel Production using Ammonia or Iron as Redox Mediators in Reverse Microbial Fuel Cells" Chemical Engineering Discussion Group, New York Academy of Sciences, New York, NY, Mar. 2012
- Banta, S.** "Selection of Novel Cell Penetrating Peptides Using Plasmid Display", Roche, Nutley, NJ, Jan 2012
- Banta, S.** "Protein and Metabolic Engineering Laboratory" Life Science Summit, New York, NY, Nov 2011
- Banta, S., West, A.C., and Chandran, K.** "Electrofuel Production using Ammonia or Iron as Redox Mediators in Reverse Microbial Fuel Cells" Society for Biological Engineering's Conference on Electrofuels Research, Providence, RI, Nov. 2011
- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, Yale University, New Haven CT, Nov. 2011
- Banta, S.** "Development of the Beta Roll Motif as a Novel Biomolecular Recognition Scaffold" Invited research seminar, 25th Anniversary Center for Advanced Biotechnology and Medicine Symposium, Rutgers University, Piscataway, NJ, Oct. 2011
- Banta, S.** "Electrofuels" Invited research seminar, 2011 Biofuels Conference, Mississippi State University, Starkville, MS, Oct 2011
- Banta, S.** "The Beta Roll Motif as a Novel Scaffold for Engineering Biomolecular Recognition" Invited research seminar, Department of Chemistry, Biochemistry Seminar, City College of CUNY, New York, NY, Sept. 2011
- Banta, S.** "A Plasmid Display System for the Identification of New Functional Cell Penetrating Peptides" Invited research seminar, 4th Annual Symposium on Integrating Nanotechnology with Cell Biology and Neuroscience, University of New Mexico, Albuquerque, NM, Aug. 2011
- Banta, S., West, A.C., and Chandran, K.** "Biofuels from CO₂ using Ammonia-Oxidizing Bacteria in a Reverse Microbial Fuel Cell" ARPA-E Annual Energy Innovation Summit, Washington D.C., Mar. 2011
- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, University of Minnesota, Minneapolis MN, Dec. 2010
- Banta, S.** "Selection of Novel Cell Penetrating Peptides Using Plasmid Display" Invited presentation, Biological Design: 4th Annual Advances in Biomolecular Engineering Symposium, The New York Academy of Sciences, New York, NY, Dec. 2010
- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, Rutgers University, Piscataway NJ, Nov. 2010

- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, Ohio State University, Columbus OH, Oct. 2010
- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, NYU Poly, Brooklyn, NY, Oct. 2010
- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, Arizona State University, Tempe AZ, Sept. 2010
- Banta, S.** "Protein Engineering for Improved Electron Transfer in Bioelectrocatalysis Applications" Invited talk, BIO World Congress on Industrial Biotechnology and Bioprocessing, Washington, DC, June 2010
- Banta, S.** "Engineering Enzymes to Self-Assemble into Catalytic Biomaterials" Invited talk, ARO/ARL sponsored Bio-Directed Assembly Workshop, Keystone, CO, May 2010
- Banta, S.** "Protein Engineering for Bioelectrocatalysis: We can do more than just V_{max} " Invited keynote talk, Electrochemical Society Meeting, Vancouver, BC, CA, Apr 2010
- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, Michigan State University, East Lansing MI, Feb 2010
- Banta, S.** "Protein Engineering for Biosensors and Biofuel Cells" Invited research seminar, University of New Mexico, Albuquerque NM, May 2009
- Banta, S.** "Self-Assembling Enzymatic Hydrogels from Designed Bifunctional Building Blocks" Invited research seminar, University of Medicine and Dentistry of New Jersey, Piscataway NJ, Sept. 2008
- Gao, S., Simon, M., Morrison III, B., and **Banta, S.** "Directed Evolution of Cell Penetrating Peptides for Delivery Across the Blood Brain Barrier to Specific Cellular Targets" Invited research seminar, Wyeth Pharmaceuticals, Princeton, NJ, May 2008
- Banta, S.** "Engineering of Stimulus-Responsive Peptides and their Application to Bioelectrocatalysis and Biosensing" Invited research seminar, University of Tennessee, Knoxville TN, Sept. 2007
- Banta, S.** "Peptide Engineering: Applications in Nanotechnology, Bioelectrocatalysis and Drug Delivery" Invited research seminar, Ecole Polytechnique, Paris, France, Jun. 2007
- Banta, S.** "Peptide Engineering: Applications in Nanotechnology, Bioelectrocatalysis, and Drug Delivery" Invited research seminar, University of Wyoming, Laramie WY, Mar. 2007
- Banta, S.** "Engineering of Stimulus-Responsive Peptides and their Application to Bioelectrocatalysis and Biosensing" Invited research seminar, Colorado State University, Ft. Collins CO, Mar. 2007
- Banta, S.** "Directed Evolution of Peptides: Applications in Nanotechnology and Bioelectrocatalysis" Invited research seminar, Rensselaer Polytechnic Institute, Troy NY, Aug. 2006
- Banta, S.** "Applications of Protein Engineering and Metabolic Engineering: Vitamin C, Hepatic Metabolism, and Biofuel Cells" Invited research seminar, Sandia National Labs and The University of New Mexico, Albuquerque NM, Sept. 2005.
- Banta, S.** "Applications of Protein and Metabolic Engineering to Health and Disease" Invited research seminar, Northeastern University, Boston, MA, Feb. 2004
- Banta, S.** "Applications of Protein and Metabolic Engineering to Health and Disease" Invited research seminar, Drexel University, Philadelphia, PA, Jan. 2004
- Banta, S.** "Applications of Protein and Metabolic Engineering to Health and Disease" Invited research seminar, Columbia University, New York, NY, Jan. 2004

- Banta, S.** “Applications of Protein and Metabolic Engineering to Health and Disease” Invited research seminar, University of Maryland, Baltimore County, Baltimore, MD, Dec. 2003
- Banta, S.** “Applications of Protein and Metabolic Engineering to Health and Disease” Invited research seminar, Rutgers University, Piscataway, NJ, Nov. 2003
- Banta, S.** “Engineering the cofactor specificity of *Corynebacterium* 2,5-diketo-D-gluconic acid reductase for use in vitamin C biosynthesis” Invited research seminar, Center for Engineering in Medicine, Harvard Medical School, Boston, MA, Oct. 2001
- Banta, S.** “Engineering the cofactor specificity of *Corynebacterium* 2,5-diketo-D-gluconic acid reductase for use in vitamin C biosynthesis” Invited research seminar, National Cancer Institute, National Institutes of Health, Bethesda, MD, Oct. 2001

SELECTED OTHER PRESENTATIONS (2004-PRESENT)

- Dailey, D. (speaker), Khoury, F., Wang, W., and **Banta, S.** “Recovering gallium from industrial waste streams using metalloproteins” National Meeting of the American Chemical Society, Atlanta, GA, Mar. 2026
- Dailey, D. (speaker), Hernandez-Pagan, E., Doherty, C., and **Banta, S.** “Biomining rare earth elements (REEs) from phytomined resources using *Acidithiobacillus ferrooxidans*” National Meeting of the American Chemical Society, Atlanta, GA, Mar. 2026
- Wang, W. (speaker), Kucharzyk, K., and **Banta, S.** “Decoding biological lanthanide selectivity: Kinetic control dictates meta ion recognition and separations by proteins” National Meeting of the American Chemical Society, Atlanta, GA, Mar. 2026
- Herishko, M. (speaker) and **Banta, S.** “Engineering quorum sensing pathways for programmable microbial communities in biomining” National Meeting of the American Chemical Society, Atlanta, GA, Mar. 2026
- Khoury, F. (speaker), Abeyarthna, S., Hu, X., Herishko, M., Wang, W., Kumar, P., Heater, B., Kucharzyk, K., and **Banta, S.** “Phage-assisted continuous evolution of calmodulin for high-purity separations of rare earth minerals” AIChE Annual Meeting, Boston, MA, Nov. 2025
- Gokulu, I.S. (speaker) and **Banta, S.** “Redox state dependent modulation of biocatalysis by rare earth elements (REE)” National Meeting of the American Chemical Society, San Diego, CA, Mar. 2025
- Khoury, F. (speaker) and **Banta, S.** “Engineering of the RTX domain using phage-assisted continuous evolution (PACE) for Biomolecular recognition for application in affinity chromatography” AIChE Annual Meeting, San Diego, CA Oct. 2024
- Su, Z. (speaker), Chao, Z., Daniel, S. and **Banta, S.** “Biomimetic platform to explore conductive outer membrane proteins from acidophilic biomining bacteria” AIChE Annual Meeting, San Diego, CA Oct. 2024
- Xu, T. (speaker), Donovan, B., Kim, C., **Banta, S.**, Fitts, J., and West, A.C. “Leaching mechanism for chalcopyrite in electrochemically regenerated Vanadium(II)” AIChE Annual Meeting, San Diego, CA Oct. 2024
- Khoury, F. (presenter), Kumar, P., Abeyarthna, S., Picking, J., Heater, B., Kucharzyk, K., and **Banta, S.** “Protein-based isocratic separation of REEs using newly identified calcium-binding proteins” AIChE Annual Meeting, San Diego, CA Oct. 2024
- Kucharzyk, K. (presenter), Zurier, H., Immethun, C., Hart, C., Napieralski, S., Henson, W., Heater, B., Agler, S., Krisha, A., Cerda, C., Rubio Marrero, A., and **Banta, S.** “Extremophilic microbes grown and survive in high concentrations of rare earth elements (REEs)” Society

- of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Boston, MA Aug. 2024
- Marzolf, D., Heater, B., Henson, W. (presenter), **Banta, S.**, and Kucharzyk, K. "Enzymatic synthesis of rare earth element phosphates" Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Boston, MA Aug. 2024
- Banta, S.** (speaker) and Gokulu, I.S. "Enzyme engineering by force: Modulating the catalytic activity of an alcohol dehydrogenase via mechanical forces applied by DNA springs", ECI Biochemical and Molecular Engineering XXIII, Dublin, Ireland, Jul. 2024
- Banta, S.** (speaker) "Engineering of *Acidithiobacillus ferrooxidans* for enhanced metal biominng" 2024 Synthetic Biology: Engineering, Evolution & Design (SEED), Atlanta, GA Jun. 2024
- Gokulu, I.S. (speaker) and **Banta, S.** "Enzyme engineering by force: Modulation of biocatalytic trajectories via DNA springs" Bio-Inspired Green (BIG) Science and Technology Symposium, New York, NY, Apr. 2024
- Su, Z. (speaker), Jung, H., and **Banta, S.** "Retron based genetic engineering tool development for *Acidithiobacillus ferrooxidans*" National Meeting of the American Chemical Society, New Orleans, LA, Mar. 2024
- Khoury, F. (speaker) and **Banta, S.** "Development of a protein purification platform" National Meeting of the American Chemical Society, New Orleans, LA, Mar. 2024
- Su, Z. (presenter), Chao, Z., Daniel, S. and **Banta, S.** "Supported lipid bilayers for the exploration of the conductive outer membrane proteins from acidophilic biomining bacteria" National Meeting of the American Chemical Society, New Orleans, LA, Mar. 2024
- Gokulu, I.S. (speaker) and **Banta, S.** "Modulating the Activity of Alcohol Dehydrogenase (AdhD) from *Pyrococcus Furiosus* via Applied Mechanical Forces", AIChE Annual Meeting, Orlando, FL Nov. 2023
- Gokulu, I.S. (presenter) and **Banta, S.** "Effects of applied mechanical forces on enzymatic activity via DNA spring assembly around alcohol dehydrogenase (AdhD) from *Pyrococcus furiosus*", National Meeting of the American Chemical Society, San Francisco, CA, Aug. 2023
- Khoury, F. and **Banta, S.** (presenter) "Calcium-dependent platform for protein purification and sensing", National Meeting of the American Chemical Society, San Francisco, CA, Aug. 2023
- Zurier, H. (speaker), Jung, H., **Banta, S.**, Henson, W., and Kucharzyk, K. "Effects of Rare Earth Elements on the Biomining Organism *Acidithiobacillus ferrooxidans*" Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Minneapolis, MN Jul 2023
- Kucharzyk, K. (speaker), Henson, W., Immethun, C., Napieralski, S., Hart, C., Zurier, H., and **Banta, S.** "Microbial chassis for growth and extraction of REEs" Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Minneapolis, MN Jul 2023
- Willett, E. (speaker) and **Banta, S.** "Development and assembly of a synthetic membrane-less enzymatic ATP regeneration cascade powered by fuel oxidation", AIChE Annual Meeting, Phoenix, AZ Nov. 2022
- Lucia, M. (presenter), Golla, D. (presenter), Khoury, F., and **Banta, S.** "Designing versatile beta roll peptide scaffolds" AIChE Annual Meeting, Phoenix, AZ Nov. 2022
- Banta, S.** (speaker) "Engineering of *Acidithiobacillus ferrooxidans* for emerging metal mining and recovery applications", Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, San Francisco, CA Aug 2022

- Banta, S.** (speaker) and Willett, E. "Development of a novel membrane-less ATP regeneration cascade using reversible NAD Kinase enzymes from bird or cat liver", ECI Biochemical and Molecular Engineering XXII, Cancun, Mexico, Jun. 2022
- Vardner, J. (speaker), Gencer, E., Farinato, R., Nagaraj, D., **Banta, S.**, and West, A.C. "Electron mediators for the reductive leaching of chalcopryrite: Replacing smelting with electrolysis for copper production", Electrochemical Society Meeting, Vancouver, Canada Jun. 2022
- Massad, N. and **Banta, S.** (speaker) "Mechanistic kinetic model for formaldehyde carboligations using a designed formose enzyme", National Meeting of the American Chemical Society, San Diego, CA, Mar. 2022
- Willett, E. (speaker) and **Banta, S.** "Development and demonstration of a membrane-less enzymatic ATP regeneration cascade powered by the oxidation of formate", National Meeting of the American Chemical Society, San Diego, CA, Mar. 2022
- Massad, N. (speaker) and **Banta, S.** "NAD(H)-PEG swing arms improve both the activities and stabilities of modularly-assembled transhydrogenases designed with predictable selectivities", AIChE Annual Meeting, Boston, MA Nov. 2021
- Jiang, V., Lucia, M. (presenter), Golla, D. (presenter), Khoury, F., and **Banta, S.** "Computational design for the lengthening and widening of beta roll-forming peptides for emerging biotechnology applications" AIChE Annual Meeting, Boston, MA Nov. 2021
- Jung, H. (presenter), Inaba, Y., Vardner, J., West, A.C., and **Banta, S.** "Overexpression of the licanantase lipoprotein in *Acidithiobacillus ferrooxidans* enhances copper sulfide bioleaching" National Meeting of the American Chemical Society, Virtual, Aug. 2021
- Massad, N. (presenter), Preston, J., Eskil, A., Uvaydov, A., Koder, R., and **Banta, S.** "Development of a novel bioprocess for CO₂ conversion using synthetic designed proteins and non-growing cells" AIChE Annual Meeting, Virtual Nov. 2020
- Inaba, Y. (presenter), West, A.C. and **Banta, S.** "Engineering the bioavailability of sulfur to control iron redox states in *Acidithiobacillus ferrooxidans*", AIChE Annual Meeting, Virtual Nov. 2020
- Banta, S.** (speaker) "We can do better than k_{cat}/K_M : Theory-based development of performance metrics for comparing multi-reactant enzymes" National Meeting of the American Chemical Society, Virtual, Aug. 2020
- Massad, N. (speaker), Preston, J., Eskil, A., Uvaydov, A., Koder, R., and **Banta, S.** "Development of a novel electrofuels platform for biochemical production from CO₂ using synthetic designed proteins and non-growing cells" National Meeting of the American Chemical Society, Virtual, Aug. 2020
- Massad, N. (speaker) and **Banta, S.** "Developing formate dehydrogenase into a modular cofactor regeneration and sequestration tool", AIChE Annual Meeting, Orlando, FL Nov. 2019
- Inaba, Y. (presenter), West, A.C. and **Banta, S.** "Mechanisms of microbially influenced corrosion enabled by *Acidithiobacillus ferrooxidans*", AIChE Annual Meeting, Orlando, FL Nov. 2019
- Banta, S.** (speaker) "Developing the calcium-dependent conformational behavior of the RTX peptide domain for novel protein capture and recovery applications" ECI Biochemical and Molecular Engineering XXI, Mont Tremblant, Quebec CA Jul. 2019
- Banta, S.** (speaker) "Synthetic biology in biomining and microbial corrosion applications" 2019 Synthetic Biology: Engineering, Evolution & Design (SEED), New York, NY Jun. 2019

- Banta, S.** (speaker), Massad, N., and Ozbakir, H. "Conjugation of cofactors using polymeric swing arms enables creation of cofactorless ping pong enzymes with predictable kinetics" National Meeting of the American Chemical Society, Orlando, FL, Mar. 2019
- Banta, S.** (speaker) "Engineering substrate channeling mechanisms in proteins" Society for Biological Engineering, 9th International Conference on Biomolecular Engineering, Newport Beach, CA Jan. 2019
- Inaba, Y. (speaker), Kernan, T., Banerjee, I., West, A.C. and **Banta, S.** "Development of genetic tools for the biomining bacterium *Acidithiobacillus ferrooxidans*", AIChE Annual Meeting, Pittsburgh, PA Oct. 2018
- Abdallah, W. (speaker), Lancaster, L., Wheeldon, I., and **Banta, S.** "Engineering the active site microenvironment of a thermostable alcohol dehydrogenase as a means to modulate kinetic activity", AIChE Annual Meeting, Pittsburgh, PA, Oct. 2018
- Banta, S.** (speaker) "Engineering the iron-oxidizing chemolithoautotroph *Acidithiobacillus ferrooxidans* for biochemical production" Annual Meeting of the Society for Industrial Microbiology and Biotechnology, Chicago, IL, Aug. 2018
- Banta, S.** (presenter) "Engineering the extremely thermostable alcohol dehydrogenase D (AdhD) from *P. furiosus* for new applications" Annual Meeting of the Society for Industrial Microbiology and Biotechnology, Chicago, IL, Aug. 2018
- Abdallah, W., Lancaster, L., Hickey, D., Minter, S.D., Wheeldon, I.R. and **Banta, S.** (presenter) "Site-specific incorporation of the TEMPO organic catalyst into a thermostable alcohol dehydrogenase produces a selective bio/organo- hybrid catalyst" National Meeting of the American Chemical Society, New Orleans, LA, Mar. 2018
- Abdallah, W. (speaker) and **Banta, S.** "Insertion of a Calcium-Binding Beta Roll Domain into a Thermostable Alcohol Dehydrogenase Enables Allosteric Control over Cofactor Specificity", AIChE Annual Meeting, Minneapolis, MN Nov. 2017
- Banta, S.** (speaker) "Engineering the calcium-regulated beta roll peptide for bioseparations applications" National Meeting of the American Chemical Society, San Francisco, CA, Apr. 2017
- Abdallah, W., Solanki, K., and **Banta, S.** (presenter) "Insertion of a calcium-responsive beta roll domain into a thermostable alcohol dehydrogenase enables tunable control over cofactor selectivity" National Meeting of the American Chemical Society, San Francisco, CA, Apr. 2017
- Banta, S.** (speaker) "Using conformationally dynamic beta roll peptides to control engineered protein functions" Society for Biological Engineering, 7th International Conference on Biomolecular Engineering, San Diego, CA Jan. 2017
- Bulutoglu, B. (speaker), and **Banta, S.** "Engineering new allosterically-regulated protein interactions for applications in biotechnology" AIChE Annual Meeting, San Francisco, CA Nov. 2016
- Garcia, K. (speaker), Bulutoglu, B., and **Banta, S.** "Engineering artificial metabolons for substrate channeling" AIChE Annual Meeting, San Francisco, CA Nov. 2016
- Ozbakir, H. (speaker), Brisendine, J., Koder, R.L., and **Banta, S.** "Wiring of redox enzymes using a collagen heterotrimer protein" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2016

- Garcia, K. (speaker), Bulutoglu, B., Wu, F., Minter, S.D., and **Banta, S.** "Artificial TCA cycle metabolon: Direct evidence for metabolon formation and substrate channeling" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2016
- Bulutoglu, B. (speaker), Dooley, K., and **Banta, S.** "Evolving an intrinsically disordered peptide, the β -roll, for biomolecular recognition" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2016
- Banta, S.** (speaker). Garcia, K., Sheffler, W., Baker, D., Babanova, S., Hjelm, R. and Atanassov, P. "Engineering the small laccase (SLAC) from for incorporation into enzymatic biofuel cell cathodes" Pacific Chem, Honolulu, HI Dec. 2015
- Bulutoglu, B. (speaker), Dooley, K., and **Banta, S.** "Engineering the β -roll Peptide for Biotechnology Applications" AIChE Annual Meeting, Salt Lake City, UT Nov. 2015
- Haghpahan, J. (presenter), Bulutoglu, B., and **Banta, S.** "Converting a Thermostable Enzyme into a Binder of Explosive Molecules" AIChE Annual Meeting, Salt Lake City, UT Nov. 2015
- Banta, S.** (speaker) "Fuels from the wind or rocks: Engineering the iron-oxidizing chemolithoautotroph *Acidithiobacillus ferrooxidans* for biochemical production" ECI Biochemical and Molecular Engineering XIX, Puerto Vallarta, Mexico, Jul 2015
- Banta, S.** (speaker) and West, A.C. "Engineering the chemolithoautotroph *Acidithiobacillus ferrooxidans* for chemical and fuel production" National Meeting of the American Chemical Society, Denver, CO, Mar. 2015
- West, A.C. (speaker) and **Banta, S.** "Production of Chemicals from Dilute CO₂ and Electricity" National Meeting of the American Chemical Society, Denver, CO, Mar. 2015
- Bulutoglu, B. (speaker), Garcia, K.E., Wu, F., Minter, S.D., and **Banta, S.** "Engineering and Characterization of Artificial Metabolons from the TCA Cycle" AIChE Annual Meeting, Atlanta, GA, Nov. 2014
- Garcia, K.E. (speaker), Bulutoglu, B., Hjelm, R., Babanova, S., Sheffler, W., Baker, D., Atanassov, P., and **Banta, S.** "Design of Self-Assembling Biocomplexes for Bio/Nano-Device Integration" AIChE Annual Meeting, Atlanta, GA, Nov. 2014
- Li, X. (speaker), Majumdar, S., Kernan, T., Mercado, R., West, A.C., and **Banta, S.** "Engineering of *Acidithiobacillus ferrooxidans* for Application in a Novel Non-Photosynthetic Electrofuel Production Platform" AIChE Annual Meeting, Atlanta, GA, Nov. 2014
- Ozbakir, H. (speaker), Sambade, D., Majumdar, S., **Banta, S.**, and West, A.C. "Towards the Development of an Electrochemical Biosensor for the Detection of Vitamin D" AIChE Annual Meeting, Atlanta, GA, Nov. 2014
- Banta, S.** (speaker) and West, A.C. "Electrofuel production using genetically engineered *Acidithiobacillus ferrooxidans* cells and iron as a redox mediator" Electrochemical Society Meeting, Cancun, Mexico Oct. 2014
- Banta, S.** (speaker). Garcia, K., Sheffler, W., Baker, D., Babanova, S., and Atanassov, P. "Adventures in the engineering of the small laccase (SLAC) from for incorporation into enzymatic biofuel cell cathodes" Electrochemical Society Meeting, Cancun, Mexico Oct. 2014
- Dooley K., Bulutoglu, B. and **Banta, S.** (speaker) "Engineering of Functional Proteinaceous Hydrogels for Biotechnology Applications" Northeast BioEngineering Conference, Boston, MA, Apr. 2014

- Banta, S.** (speaker) Li, X., Majumdar, S., Kernan, T., Mercado, R., and West, A.C. "Engineering *Acidithiobacillus ferrooxidans* for electrofuel production" National Meeting of the American Chemical Society, Dallas, TX, Mar. 2014
- Banta, S.** (speaker), Dooley K., Bulutoglu, B., and Tu, R. "Development of Functional Proteinaceous Hydrogels for Biotechnology Applications" AIChE Annual Meeting, San Francisco, CA, Nov. 2013
- Patel, T.N. (speaker), Swanson, E.J., Park, A-H.A., and **Banta, S.** "Whole-cell Biocatalysts for CO₂ Hydration" National Meeting of the American Chemical Society, New Orleans, LA, Apr. 2013
- Majumdar, S., (speaker) Kernan, T., Li, X., Mercado, R., West, A.C., and **Banta, S.** "Conversion of electrical energy to isobutanol using chemolithoautotrophic iron oxidizing bacteria *Acidithiobacillus ferrooxidans*, New Orleans, LA, Apr. 2013
- Dooley, K. (speaker) and **Banta, S.** "Engineering the repeats-in-toxin (RTX) domain for molecular recognition" National Meeting of the American Chemical Society, New Orleans, LA, Apr. 2013
- Banta, S.** (presenter) "Overhauling the Activity of a Thermostable Alcohol Dehydrogenase" Society for Biological Engineering, 4th International Conference on Biomolecular Engineering, Fort Lauderdale FL, Jan. 2013.
- Dooley, K. (presenter) and **Banta, S.** "The Beta Roll Domain As a Scaffold For Protein Engineering" Society for Biological Engineering, 4th International Conference on Biomolecular Engineering, Fort Lauderdale FL, Jan. 2013.
- Banta, S.** (speaker), Alan C. West, Kartik Chandran, Wendell Khunjar, Asli Sahin, and Timothy Kernan "Electrofuel" Production Using Ammonia or Iron as Redox Mediators in Reverse Microbial Fuel Cells" Electrochemical Society Meeting, Seattle, WA May 2012
- Banta, S.** (speaker) and West, A. "Electricity to Biofuels and Chemicals in Reverse Microbial Fuel Cells" University Research and Entrepreneurship Symposium, Boston, MA, Apr 2012
- Felsovalyi, F. (speaker), Tushar, P., Mangiagalli, P., Kumar, S. and **Banta, S.** "Assessing the impact of thermal stability on protein adsorption behavior using naturally occurring enzymes of the aldo-keto reductase superfamily" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2012
- Kernan, T. (speaker), Sahin, A., West, A. and **Banta, S.** "Electrofuel production using chemolithoautotrophic iron oxidizing bacteria in a reverse microbial fuel cell" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2012
- Felsovalyi, F. (speaker), Mangiagalli, P., Kumar, S. and **Banta, S.** "What determines protein desorption behavior?" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2012
- Dooley, K. (speaker), Tu, R., and **Banta, S.** "Development of an engineered beta roll motif for the creation of stimulus-responsive proteinaceous hydrogels" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2012
- Shur, O. (speaker), Blenner, M., and **Banta, S.** "Development of a calcium-responsive beta roll peptide as a purification tag for non-chromatographic recombinant protein purification" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2012
- Patel, T. (speaker), Swanson, E., Park, A-H A., and **Banta, S.** "Development of a whole-cell biocatalyst for permanent carbon capture and storage: Immobilization of carbonic

- anhydrase in the periplasmic space of *E. coli*" National Meeting of the American Chemical Society, San Diego, CA, Mar. 2012
- Atanassov, P., Baker, D., Minter, S., and **Banta, S.** (presenter) "3-D Enzymatic nanomaterial architectures for energy harvesting" 2011 NanoTechnology for Defense Conference, Bellevue, WA, Oct 2011
- Gao, S. Simon, M.J., Morrison III, B., and **Banta, S.** (presenter) "Selection of novel cell penetrating peptides using plasmid display" Biochemical and Molecular Engineering XVII, Seattle, WA, Jun 2011
- Campbell, E. (speaker), Meredith, M., Minter, S.D., **Banta, S.** "Engineering a thermostable dehydrogenase to utilize biomimetic cofactors to improve enzymatic biofuel cell performance" National Meeting of the American Chemical Society, Anaheim, CA, Mar. 2011
- Kim, Y.H., and **Banta, S.** (speaker), "Development of self-assembling enzymatic biomaterials for methanol oxidation to carbon dioxide in a biofuel cell" National Meeting of the American Chemical Society, Anaheim, CA, Mar. 2011
- Meredith, M. (presenter), Campbell, E., **Banta, S.**, and Shelley, S.D., "Biomimics for the replacement of NAD/NADH mediators in biofuel cells" National Meeting of the American Chemical Society, Anaheim, CA, Mar. 2011
- Shur, O. (speaker), Szilvay, G.R., Blenner, M.A., Crokek, D.M., and **Banta, S.** "Beta roll motifs as a novel scaffold for engineering biomolecular recognition" National Meeting of the American Chemical Society, Anaheim, CA, Mar. 2011
- Sahin, A. (speaker), Khunjar, W.O., Chandran, K., West, A.C., and **Banta, S.** "Biofuels from CO₂ using ammonia-oxidizing bacteria in a reverse microbial fuel cell" National Meeting of the American Chemical Society, Anaheim, CA, Mar. 2011
- Gao, S., Simon, M.J., Morrison III, B., and **Banta, S.** (speaker) "A Plasmid Display Platform for the Identification of New Functional Cell Penetrating Peptides" Society for Biological Engineering, 3rd International Conference on Biomolecular Engineering, San Francisco CA, Jan. 2011.
- Shur, O. (speaker), Szilvay, G., Blenner, M.A., Crokek, D.M. and **Banta S.** "Directed Evolution of the Intrinsically Disordered and Allosterically Regulated Beta Roll Subdomain for Biomolecular Recognition" AIChE Annual Meeting, Salt Lake City, UT, Nov. 2010
- Felsovalyi, F. (speaker), Mangiagalli, P., Bureau, C., Kumar, S.K, and **Banta S.** "Evaluating the Role of Solid Surfaces in Inducing Conformational Changes of Adsorbed and Desorbed Proteins" AIChE Annual Meeting, Salt Lake City, UT, Nov. 2010
- Campbell, E. (speaker) and **Banta S.** "Protein Engineering of a Thermostable Alcohol Dehydrogenase to Improve Activity with Biomimetic Cofactors and Alternate Substrates" AIChE Annual Meeting, Salt Lake City, UT, Nov. 2010
- Wu, J., Crokek, D.M. (speaker), West, A.C., and **Banta S.** "Quartz Crystal Balance (QCM) and Electrochemical Impedance Detection of the Protein Biomarker Troponin I Using Peptides Obtained From the Biopanning of a Phage-Display Library" AIChE Annual Meeting, Salt Lake City, UT, Nov. 2010
- Sahin, A. (speaker), Crokek, D.M. West, A.C., and **Banta S.** "Dual Enzyme Biosensor for Detection of Organophosphorus Compounds Using Organophosphorus Hydrolase and Horseradish Peroxidase" AIChE Annual Meeting, Salt Lake City, UT, Nov. 2010

- Shur, O. (speaker), Szilvay, G., Blenner, M.A., Cropek, D.M. and **Banta S.** "Structure/Function Analysis for the Optimization of the Beta Roll Motif as a Novel Scaffold for Engineering Biomolecular Recognition " AIChE Annual Meeting, Salt Lake City, UT, Nov. 2010
- Wilson, R. (speaker), Cropek, D.M. and **Banta S.** "On Chip Electrochemical Detection of Biomarkers for Detection of Water Borne Toxins" AIChE Annual Meeting, Salt Lake City, UT, Nov. 2010
- Szilvay, G.R., Li, C., Brocato, S., Lau, C., Ivnitski, D., Chi, E., Atanassov, P., and **Banta, S.** (speaker) "A Laccase Protein Engineered for Site-Specific Immobilization on Carbon Nanotube Modified Electrodes " National Meeting of the American Chemical Society, San Francisco, CA, Mar. 2010
- Sahin, A. (speaker), Lu, H.D., Wheeldon, I.R., West, A.C., and **Banta, S.** "Engineering Organophosphatase Hydrolase to Self-Assemble into Hydrogels for Use in Sensing and Decontamination Applications" National Meeting of the American Chemical Society, San Francisco, CA, Mar. 2010
- Campbell, E. (speaker) and **Banta, S.** "Protein Engineering of a Thermostable Alcohol Dehydrogenase: Rational Alteration of Substrate Specificity and Development of a Novel Selection System for Directed Evolution" National Meeting of the American Chemical Society, San Francisco, CA, Mar. 2010
- Wu, J., Park, J.P., West, A.C., Cropek, D.M., and **Banta, S.** (presenter) "Development of New Electrochemical Biosensors for Protein Biomarker Detection" National Meeting of the American Chemical Society, San Francisco, CA, Mar. 2010
- Shur, O., Szilvay, G.R., Blenner, M.A., Cropek, D.M., and **Banta, S.** (presenter) "Directed Evolution of Allosterically Regulated Beta Roll Subdomains for Biomolecular Recognition" National Meeting of the American Chemical Society, San Francisco, CA, Mar. 2010
- Banta, S.** (speaker) and Cropek, D.M. "Beta Roll Peptide Structures for Allosterically Controlled Biomolecular Recognition and Decontamination" Chemical and Biological Defense Science and Technology Conference, Dallas, TX, Nov. 2009
- Park, J.P., Wu, J., West, A.C., Cropek, D.M., and **Banta, S.** (speaker) "Identification of Troponin I Binding Peptides Using Phage Display for Biosensor Development" AIChE Annual Meeting, Nashville, TN, Nov. 2009
- Campbell, E. (speaker), Wheeldon, I.R., and **Banta, S.** "Cofactor Engineering of a Thermostable Aldo-Keto Reductase Enzyme: Altering Cofactor Specificity and Development of a Novel Directed Evolution Selection Platform" AIChE Annual Meeting, Nashville, TN, Nov. 2009
- Shur, O. (speaker), Blenner, M.A., Szilvay, G.R., Cropek, D.M., and **Banta, S.** "Directed Evolution of Allosterically Regulated Beta Roll Subdomains for Biomolecular Recognition" AIChE Annual Meeting, Nashville, TN, Nov. 2009
- Blenner, M.A., Szilvay, G.R., Shur, O. (speaker), Cropek, D.M., and **Banta, S.** "Engineering Tools for Analysis of Intrinsically Disordered Proteins: Entropic Stabilization Enables a Type I Secretion Calcium Switch" AIChE Annual Meeting, Nashville, TN, Nov. 2009
- Gao, S. (speaker) Simon, M.J., Morrison III, B., and **Banta, S.** "Directed Evolution of Novel Cell Penetrating Peptides for Delivery to the Brain" AIChE Annual Meeting, Nashville, TN, Nov. 2009
- Wilson, R. (speaker), Cropek, D.M. and **Banta S.** "On Chip Electrochemical Detection of Biomarkers From Cell Cultures On Microfluidic Reactors" AIChE Annual Meeting, Nashville, TN, Nov. 2009

- Wheeldon, I.R, Campbell, E., and **Banta, S.** (speaker) "Engineering Enzymes to Self-Assemble into Hydrogels for Bioelectrocatalysis" National Meeting of the American Chemical Society, Washington, D.C., Aug. 2009
- Campbell, E. (speaker), Wheeldon, I.R. **Banta, S.** "Towards a general dehydrogenase enzymatic platform: Engineering an alcohol dehydrogenase for self-assembly and for activity with alternative substrates" National Meeting of the American Chemical Society, Washington, D.C., Aug. 2009
- Gao, S. Simon, M.J., Morrison III, B., and **Banta, S.** (speaker) "Engineering of Targeted Cell Penetrating Peptides for Delivery to the Brain" National Meeting of the American Chemical Society, Washington, D.C., Aug. 2009
- Szilvay, G.R. (speaker), Blenner, M.A., Shur, O., Cropek, D.M., and **Banta, S.** "The Beta Roll Peptide as a Novel Allosterically-Regulated Scaffold for Biomolecular Recognition" National Meeting of the American Chemical Society, Washington, D.C., Aug. 2009
- Wheeldon, I.R, Campbell, E., and **Banta, S.** (presenter) "Engineering Enzymes to Self-Assemble into Hydrogels" Symposium of the Protein Society, Boston, MA, Jul. 2009
- Blenner, M.A., Szilvay, G.R., Shur, O., Cropek, D.M., and **Banta, S.** (presenter) "The Beta-Roll Peptide as a Novel Allosterically-Regulated Scaffold for Biomolecular Recognition" Symposium of the Protein Society, Boston, MA, Jul. 2009
- Wheeldon, I.R, Campbell, E., and **Banta, S.** (presenter) "Towards a general dehydrogenase enzymatic platform: Engineering an alcohol dehydrogenase for self-assembly and for activity with alternative substrates" Symposium of the Protein Society, Boston, MA, Jul. 2009
- Szilvay, G.R. (presenter), Blenner, M.A., Shur, O., Cropek, D.M., and **Banta, S.** "Structural studies of the calcium-dependent conformational behavior of a beta roll peptide" Symposium of the Protein Society, Boston, MA, Jul. 2009
- Banta, S.** (speaker) "The Beta Roll Peptide as a Novel Allosterically-Regulated Scaffold for Biomolecular Recognition" Biochemical Engineering XVI, Burlington, VT, Jul. 2009
- Wheeldon, I.R, Campbell, E., and **Banta, S.** (presenter) "Engineering Enzymes to Self-Assemble into Hydrogels" Biochemical Engineering XVI, Burlington, VT, Jul. 2009
- Shur, O. (presenter) Blenner, M.A., Szilvay, G.R., Cropek, D.M., and **Banta, S.** "Directed Evolution of Allosterically Regulated Beta Roll Subdomains for Molecular Recognition" 3rd Annual Advances in Biomolecular Engineering: Protein Design Meeting, New York Academy of Sciences, New York, NY, June 2009
- Gao, S. (presenter) Simon, M.J., Morrison III, B., and **Banta, S.** "Directed Evolution of Novel Cell Penetrating Peptides for Delivery to the Brain" 3rd Annual Advances in Biomolecular Engineering: Protein Design Meeting, New York Academy of Sciences, New York, NY, June 2009
- Blenner, M.A. (speaker), Szilvay, G.R., Shur, O., Cropek, D.M., and **Banta, S.** "Intrinsically Disordered RTX Motifs as Scaffolds for Engineering Allosterically Controlled Biomolecular Recognition" Chemical Biology Discussion Group Meeting, New York Academy of Sciences, New York, NY, June 2009
- Banta, S.** (speaker) "Protein Engineering of a Thermostable Alcohol Dehydrogenase for Enzymatic Biofuel Cell Applications" Multi-Enzyme Cascades for Biofuel Oxidation and Hydrogen Evolution Mini-Symposium, Virginia Polytechnic Institute, Roanoke VA, Apr. 2009.

- Banta, S.** (speaker) “Enzymatic and Bioactive Hydrogels from Proteinaceous Bifunctional Building Blocks” Society for Biological Engineering, 2nd International Conference on Biomolecular Engineering, Santa Barbara CA, Jan. 2009.
- Blenner, M.A. (presenter), Szilvay, G.R., Shur, O., Cropek, D.M., and **Banta, S.** “The Beta Roll Peptide as a Reversible, Calcium Sensitive, and Modular Scaffold for Engineering Allosteric Control over Biomolecular Recognition” Society for Biological Engineering, 2nd International Conference on Biomolecular Engineering, Santa Barbara CA, Jan. 2009.
- Campbell, E., Wheeldon, I.R. **Banta, S.** (presenter) “Protein Engineering of a Thermostable Alcohol Dehydrogenase to Alter Cofactor and Substrate Specificities” Society for Biological Engineering, 2nd International Conference on Biomolecular Engineering, Santa Barbara CA, Jan. 2009.
- Cropek, D. (speaker), **Banta, S.**, Blenner, M.A., Szilvay, G., Shur, O. “Beta Roll Peptide Structures for Allosterically Controlled Biomolecular Recognition and Decontamination” Chemical and Biological Defense Physical Science and Technology Conference, New Orleans, LA, Nov. 2008
- Glykys, D.J. (speaker), Szilvay, G., Tortosa, P., Suarez, M., Jaramillo, A., and **Banta, S.** “Expression and Characterization of a Computationally Designed Laccase-Like Enzyme” AIChE Annual Meeting, Philadelphia, PA, Nov. 2008
- Wheeldon, I.R. (speaker), Joshua Gallaway, Scott Calabrese Barton and **Banta, S.** “Self-Assembling Bi-functional Proteins for Bioelectrocatalytic Hydrogels: A Protein Engineering Approach to Advanced Materials Design” AIChE Annual Meeting, Philadelphia, PA, Nov. 2008
- Campbell, E. (speaker) and **Banta, S.** “Protein Engineering of a Thermostable Alcohol Dehydrogenase to Alter Cofactor and Substrate Specificities” AIChE Annual Meeting, Philadelphia, PA, Nov. 2008
- Gao, S. (speaker), Simon, M.J., Morrison III, B., and **Banta, S.** “DNA Delivery to Neuronal-Like Cells Using Designed Recombinant Fusion Proteins” AIChE Annual Meeting, Philadelphia, PA, Nov. 2008
- Blenner, M.A. (presenter), Szilvay, G.R., Shur, O., Cropek, D.M., and **Banta, S.** “The Beta Roll as a Reversible, Calcium Sensitive, and Modular Scaffold for the Engineering of Biomolecular Recognition” AIChE Annual Meeting, Philadelphia, PA, Nov. 2008
- Wheeldon, I.R. (speaker) and **Banta, S.** “Enzymatic Hydrogels from Proteinaceous Bi-functional Building Blocks” AIChE Annual Meeting, Philadelphia, PA, Nov. 2008
- Gao, S. (presenter), Simon, M.J., Morrison III, B., and **Banta, S.** “Engineering a Plasmid Display System for the Directed Evolution of Targeted Cell Penetrating Peptides” National Meeting of the American Chemical Society, Philadelphia, PA, Aug. 2008
- Wheeldon, I.R. (speaker) and **Banta, S.** “Hydrogel forming enzymes: bifunctional proteins with enzymatic and cross-linking functionalities” National Meeting of the American Chemical Society, Philadelphia, PA, Aug. 2008
- Szilvay, G. (presenter) Glykys, D., Tortosa, P., Suarez, M., Jaramillo, J., and **Banta, S.** “Expression and Characterization of a Computationally Designed Laccase-Like Enzyme” Symposium of the Protein Society, San Diego, CA, Jul. 2008
- Wheeldon, I.R., and **Banta, S.** (speaker) “Self-assembling enzymatic and bioactive protein-based hydrogels” New York State pavilion, BIO 2008 International Meeting, San Diego, CA Jun. 2008

- Gao, S. (presenter), Simon, M.J., Morrison III, B., and **Banta, S.** "Engineering of a Plasmid Display System for the Directed Evolution of Targeted Cell Penetrating Peptides" American Society for Microbiology General Meeting, Boston, MA, Jun. 2008
- Wheeldon, I.R., Calabrese Barton, S., and **Banta, S.** (speaker) "Enzymatic and Bioactive proteinaceous hydrogels from bifunctional building blocks" Electrochemical Society Meeting, Phoenix, AZ, May 2008
- Holland, J.T. (speaker), **Banta, S.**, Dolan, P., Arango, D., Manginell, M., Apblett, C., Harper, J., and Brozik, S. "Improving Glucose Oxidase Function in Fuel Cells" Electrochemical Society Meeting, Phoenix, AZ, May 2008
- Wheeldon, I.R. (speaker), Calabrese Barton, S., and **Banta, S.** "Electron-Conducting Hydrogels from Bifunctional Metallo-Polypeptides" Electrochemical Society Meeting, Phoenix, AZ, May 2008
- Cropek D.M., Chen, X.J. (presenter) West, A.C., and **Banta, S.** "Cytochrome c and superoxide dismutase based superoxide biosensors" Pittcon Conference and Expo, New Orleans, LA, Mar. 2008
- Gao, S. (speaker), Simon, M., Morrison III, B., and **Banta, S.** "Engineering of peptides for the targeted delivery of proteins and DNA into brain cells" AIChE Annual Meeting, Salt Lake City UT, Nov. 2007
- Chockalingam, K. (speaker) and **Banta, S.** "A Selection System for Engineering Structured Peptides" AIChE Annual Meeting, Salt Lake City UT, Nov. 2007
- Blenner, M.A. (speaker) and **Banta, S.** "Single-Chain Antibody Based Peptide Conformational Change Sensor: A Tool for the Directed Evolution of Stimulus Responsive Peptides " AIChE Annual Meeting, Salt Lake City UT, Nov. 2007
- Glykys, D.J. (speaker) and **Banta, S.** "Metabolic Control Analysis for the Optimization of Biofuel Cell Kinetic Performance" AIChE Annual Meeting, Salt Lake City UT, Nov. 2007
- Wheeldon, I.R. (speaker), Calabrese Barton, S., and **Banta, S.** "Self-assembling bioactive protein-based hydrogels with tunable structural properties" AIChE Annual Meeting, Salt Lake City UT, Nov. 2007
- Blenner, M., Chockalingam, K., and **Banta, S.** (speaker) "Directed Evolution of Conformational Changes in Peptides" National Meeting of the American Chemical Society, Boston, MA, Aug. 2007
- Wheeldon, I. R., Calabrese Barton, S., and **Banta, S.** (presenter) "Bioactive protein-based hydrogels for functional bioelectrode construction" National Meeting of the American Chemical Society, Boston, MA, Aug. 2007
- Gao, S. (presenter), Simon, M., Morrison III, B., and **Banta, S.** "Directed Evolution of Targeted Cell Penetrating Peptides for Trans-BBB Delivery" National Meeting of the American Chemical Society, Boston, MA, Aug. 2007
- Simon, M. (presenter), Gao, S., **Banta, S.**, and Morrison III, B. "Protein delivery in brain cells using cell-penetrating peptides" National Neurotrauma Society Symposium, Kansas City, MO, Jul. 2007
- Gao, S., Simon, M., Morrison III, B., and **Banta, S.** (presenter) "Directed Evolution of Targeted Cell Penetrating Peptides for Trans-BBB Delivery" Symposium of the Protein Society, Boston, MA, Jul. 2007

- Blenner, M., Chockalingam, K., and **Banta, S.** (presenter) "Directed Evolution of Conformational Changes in Peptides" Symposium of the Protein Society, Boston, MA, Jul. 2007
- Wheeldon, I. R., Calabrese Barton, S., and **Banta, S.** (presenter) "Bioactive protein-based hydrogels for functional bioelectrode construction" Symposium of the Protein Society, Boston, MA, Jul. 2007
- Blenner, M., Chockalingam, K., and **Banta, S.** (presenter) "Directed Evolution of Conformational Changes in Peptides" Biochemical Engineering XV, Quebec City, Canada, Jul. 2007
- Wheeldon, I. R., Calabrese Barton, S., and **Banta, S.** (presenter) "Bioactive protein-based hydrogels for functional bioelectrode construction" Biochemical Engineering XV, Quebec City, Canada, Jul. 2007
- Gao, S., Simon, M., Morrison III, B., and **Banta, S.** (presenter) "Directed Evolution of Targeted Cell Penetrating Peptides for Trans-BBB Delivery" Biochemical Engineering XV, Quebec City, Canada, Jul. 2007
- Gao, S., Simon, M., Morrison III, B., and **Banta, S.** (speaker) "Directed Evolution of Cell Penetrating Peptides for Delivery Across the Blood Brain Barrier to Specific Cellular Targets" Invited research seminar, 7th Annual Packard Center for ALS Research Symposium, Baltimore, MD, Apr. 2007
- Blenner, M., Chockalingam, K., and **Banta, S.** (presenter) "Directed Evolution of Peptide Conformational Changes" Society for Biological Engineering, International Conference on Biomolecular Engineering, San Diego CA, Jan. 2007.
- Gao, S., Simon, M., Morrison III, B., and **Banta, S.** (presenter) "Directed Evolution of Targeted Cell Penetrating Peptides for Trans-BBB Delivery" Society for Biological Engineering, International Conference on Biomolecular Engineering, San Diego CA, Jan. 2007.
- Blenner, M., Chockalingam, K., and **Banta, S.** (presenter) "Directed Evolution of Peptide Conformational Changes" AIChE Annual Meeting, San Francisco CA, Nov. 2006.
- Gao, S., Simon, M., Morrison III, B., and **Banta, S.** (speaker) "Directed Evolution of Cell Penetrating Peptides for Delivery Across the Blood Brain Barrier to Specific Cellular Targets" Invited research seminar, 6th Annual Packard Center for ALS Research Symposium, Baltimore, MD, Apr. 2006

SELECTED OTHER PRESENTATIONS (1998-2004)

- Banta, S.** (speaker), Casali, M., Kelly, Z, Mavroidis, C., and Yarmush, M. "Site-directed mutagenesis of a peptide from the hemagglutinin protein of the influenza virus: potential application for nanorobotics" AIChE Annual Meeting, Austin TX, Nov. 2004.
- Banta, S.** (presenter), Casali, M., Kelly, Z, Mavroidis, C., and Yarmush, M. "Site-directed mutagenesis of a peptide from the hemagglutinin protein of the influenza virus: potential application for nanorobotics" Symposium of the Protein Society, San Diego CA, Aug. 2004.
- Banta, S.** (speaker), Yokoyama, T., Berthiaume, F., and Yarmush, M. "Attenuation of Post-Burn Hypermetabolism: A Clinical Intervention Characterized by Metabolic Flux Analysis" AIChE Annual Meeting, San Francisco CA, Nov. 2003.
- Banta, S.** (presenter), Yokoyama, T., Berthiaume, F., and Yarmush, M. "Metabolic Flux Analysis of the perfused rat hindquarter: Effects of thermal injury with and without insulin" AIChE Annual Meeting, San Francisco CA, Nov. 2003.

- Banta, S.** (presenter), Yokoyama, T., Berthiaume, F., and Yarmush, M. "Metabolic Flux Analysis of the perfused rat hindquarter: Effects of thermal injury with and without insulin" BMES Annual Meeting, Nashville TN, Oct. 2003.
- Banta, S.** (speaker) "Metabolic Engineering: Advances in Modeling and Intervention in Health and Disease" Center for Engineering and Medicine Summer Mini-symposium, Boston MA, Aug. 2003.
- Banta, S.** (speaker), Yokoyama, T., Berthiaume, F., and Yarmush, M. "Metabolic flux analysis of skeletal muscle in post-burn hypermetabolism" AIChE Annual Meeting, Indianapolis IN, Nov. 2002.
- Banta, S.** (speaker) and Anderson, S. "Engineering the cofactor specificity of *Corynebacterium* 2,5-diketo-D-gluconic acid reductase for use in vitamin C biosynthesis" AIChE Annual Meeting, Reno NV, Oct. 2001.
- Banta, S.** (presenter) and Anderson, S. "Site-Directed Mutagenesis of 2,5-diketo-D-Gluconic Acid Reductase for Use in Vitamin C Biosynthesis in a Metabolically Engineered Organism" AIChE Annual Meeting, Miami FL, Nov. 1998.

ACADEMIC SERVICE

Member Morningside Faculty Leadership Council	2024-present
Department Chair, Columbia	2022-present
Department Vice Chair, Columbia	2019-22
Chair Masters Committee, Dept. of Chem Engineering, Columbia	2016-22
Chair Undergraduate Committee, Dept. of Chem Engineering, Columbia	2013-16
Undergraduate Committee, Dept. of Chemical Engineering, Columbia	2007-16
Faculty Search Committee, Dept. of Chem Eng, Columbia	2006, '08, '10, 2014-'18, '24-'25
Safety Officer, Dept. of Chemical Engineering, Columbia	2004-08
Graduate Committee, Dept. of Chemical Engineering, Columbia	2004-07

PROFESSIONAL SERVICE

PROFESSION ORGANIZATION LEADERSHIP

- Long Range Program Coordinator, Biochemical Technologies Division (BIOT), American Chemical Society, 2017-2022
- Past Chair, Biochemical Technologies Division (BIOT), American Chemical Society, 2015
- Chair, Biochemical Technologies Division (BIOT), American Chemical Society, 2014
- Chair Elect, Biochemical Technologies Division (BIOT), American Chemical Society, 2013

NATIONAL AND REGIONAL MEETING ORGANIZATION

- Co-Organizer, ACS Polymeric Materials: Science and Engineering Division (PMSE) Symposium, "Recombinant Type Materials", National Meeting of the American Chemical Society, Washington D.C., Aug. 2017.
- Scientific Committee Member, 3rd European Congress of Applied Biotechnology (ECAB3), Nice, France, Sept. 2015.
- Co-Organizer, ACS Biochemical Technologies Division (BIOT) Regional Networking Meeting, Columbia University, New York, NY Jan. 2015

Academic Program Chair, Biochemical Technologies Division (BIOT), American Chemical Society Annual Meeting, Anaheim, CA Mar. 2011
Division 15C Program Chair, American Institute of Chemical Engineers Annual Meeting, Salt Lake City UT, Nov. 2010.
Area Coordinator for Emerging Technologies, Biochemical Technologies Division (BIOT), American Chemical Society Annual Meeting, San Francisco, CA Mar. 2010
Division 15C Vice Program Chair, American Institute of Chemical Engineers Annual Meeting, Nashville TN, Nov. 2009.

NATIONAL MEETING SESSION ORGANIZATION

Co-Convener for "Sustainable biological production of inorganic materials" Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Boston, MA Aug 2024.
Co-Convener for "Microbial Metal Recovery from All Industrial Wastes and Co-Products" Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Minneapolis, MN Jul 2023.
Co-Convener for "Microbial Metal Recovery from All Industrial Wastes and Co-Products" Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, San Francisco, CA Aug 2022.
Co-Convener for "Extremophilic Enzymes" Society of Industrial Microbiology and Biotechnology (SIMB) Annual Meeting, Chicago, IL Aug 2018.
Chair for "Biocatalysis and Biotransformation" 3rd European Congress of Applied Biotechnology (ECAB3), Nice, France, Sept 2015.
Co-Chair for "Biomolecular Engineering" Northeast BioEngineering Conference (NEBEC), Boston, MA Apr. 2014.
Chair for "Advances in Electrofuels III" Society for Biological Engineering's Conference of Electrofuels Research, Providence, RI, Nov. 2011.
Co-Chair for "Design of Biomolecular Structures" Biochemical and Molecular Engineering XVII, Seattle, WA, Jun. 2011.
Chair for "Evolutionary Engineering of Proteins" Society for Biological Engineering's 3rd International Conference on Biomolecular Engineering, San Francisco CA, Jan. 2011.
Chair for "Protein Engineering I" American Institute of Chemical Engineers Annual Meeting, Nashville TN, Nov. 2009.
Co-Chair for "Advances in Metabolic Engineering I & II" American Chemical Society National Meeting, Washington, D.C., Aug. 2009.
Co-Chair for "Engineering Pathways and Complex Phenotypes" Society of Biological Engineering, 2nd International Conference on Biomolecular Engineering, Santa Barbara, CA, Jan. 2009.
Chair for "Protein Engineering I" American Institute of Chemical Engineers Annual Meeting, Philadelphia PA, Nov. 2008.
Vice-Chair for "Advances in Biocatalysis I & II" American Institute of Chemical Engineers Annual Meeting, Philadelphia PA, Nov. 2008.
Chair for "In Honor of Ed Leonard on the Occasion of his 75th Birthday" American Institute of Chemical Engineers Annual Meeting, Salt Lake City UT, Nov. 2007.
Vice-Chair for "Protein Engineering" American Institute of Chemical Engineers Annual Meeting, San Francisco CA, Nov. 2006.

Vice-Chair for “Intracellular Processes” American Institute of Chemical Engineers Annual Meeting, San Francisco CA, Nov. 2006.

Co-Chair for “Cellular and Functional Tissue Engineering: Metabolic Engineering” IEEE-Engineering in Medicine and Biology Society, New York NY, Aug. 2006.

Vice-Chair for “Systems Engineering Approaches in Biology” American Institute of Chemical Engineers Annual Meeting, Cincinnati OH, Oct. 2005.

ACADEMIC DEPARTMENT ADVISORY BOARDS:

Department of Chemical, Biochemical, and Environmental Engineering, University of Maryland, Baltimore County 2017-present

PROPOSAL REVIEWS:

Air Force Office of Scientific Research; US Army Research Office; US Department of Energy; ARPA-E; National Institutes of Health; National Science Foundation

AD HOC MANUSCRIPT PEER REVIEWS (FOR 102 DIFFERENT JOURNALS):

ACS Catalysis; ACS Chemical Biology; ACS Nano; ACS Omega; ACS Sustainable Chemistry & Engineering; ACS Synthetic Biology; Acta Biomaterialia; Advanced Functional Materials; Advanced Healthcare Materials; Advanced Materials; Advanced Science Focus; AIChE Journal; Analyst; Analytical Chemistry; Angewandte Chemie International Edition; Annals of Biomedical Engineering; Applied Biochemistry & Biotechnology; Applied & Environmental Microbiology; Applied Microbiology & Biotechnology; Biochemical Engineering Journal; Biochemistry; Bioconjugate Chemistry; Bioinformatics; Biomacromolecules; Bioorganic & Medicinal Chemistry Letters; Biophysical Journal; Bioprocess and Biosystems Engineering; Bioresource Technology; Biosensors & Bioelectronics; Biotechnology & Bioengineering; Biotechnology Journal; Biotechnology Progress; BMC Systems Biology; Cancer Letters; ChemBioChem; ChemElectroChem; Chemical Reviews; Chemical Science; Chemistry & Biology; Communications Biology; Current Opinion in Biotechnology; Current Opinion in Chemical Engineering; Cytokine; Drug Discovery Today; Electroanalysis; Electrochemistry Communications; Electrochimica Acta; eLife; Energy & Environmental Science; Energy Sources A; Environmental Science & Technology; Enzyme & Microbial Technology; Expert Opinion on Drug Delivery; Extremophiles; FASEB Journal; FEBS Letters; Genes; Gene Therapy; Industrial Biotechnology; Industrial & Engineering Chemistry Research; Journal of Applied Biochemistry and Biotechnology; Journal of the American Chemical Society; Journal of Biological Engineering; Journal of Biotechnology; Journal of Electroanalytical Chemistry; Journal of the Electrochemical Society; Journal of Molecular Biology; Journal of Molecular Catalysis A, Chemical; Journal of Molecular Recognition; Journal of Pharmacology and Experimental Therapeutics; Journal of Physical Chemistry; Langmuir; Macromolecules; Metabolic Engineering; Methods & Protocols; Microgravity; Microorganisms; Molecular BioSystems; Molecular Pharmaceutics; Nature; Nature Catalysis; Nature Chemical Biology; Nature Communications; Nature Materials; Organic & Biomolecular Chemistry; PLoS ONE; Proceedings of the National Academy of Sciences of the U.S.A.; Protein Engineering, Design & Selection; The Protein Journal; Protein Science; Pure & Applied Chemistry; Science; Science Advances; Scientific Data; Scientific Reports; Sensors & Actuators; Separation and Purification Technology; Small; Structure; Synthetic Biology; Trends in Microbiology

STUDENT SUPERVISION

SPONSORED PHD STUDENTS (22 TOTAL)

- Farid Khoury (NSF Fellow, PhD 2025) “Characterization and engineering of calcium-binding proteins for recovery and separation of rare earth elements” (Current Position – Postdoctoral Fellow MIT)
- Ipek Simay Gokulu (PhD 2024) “Engineering Enzymatic Modulation Platforms for Biomolecular Applications” (Current Position – Postdoctoral Fellow NYU School of Medicine)
- Salomon Vainstein (PhD 2023) “Engineering Formate Dehydrogenase Enzymatic Activity for Non-Canonical Cofactors Through Rational Design” (Current Position – Postdoctoral Fellow Children’s Hospital of Pennsylvania)
- Emma Willett (PhD 2023) “Engineering Redox Pathways: A Synthetic NAD(P)(H) Cycle for ATP Regeneration and A Designed Pathway Using Directed Evolution for DMP Synthesis” (Current Position – Postdoctoral Researcher Genentech)
- Nadim Massad (PhD 2022) “Engineering Enzymes for Cofactor Recycling and Carbon Fixation” (Current Position – Scientist, Alexion, AstraZeneca Rare Disease)
- Yuta Inaba (PhD 2020) “Engineering *Acidithiobacillus ferrooxidans* for metal corrosion and recovery” (Current Position – Principal Scientist, GSK)
- Walaa Abdallah (PhD 2018) “Engineering approaches to control activity and selectivity of enzymes for multi-step catalysis” (Current Position – Assistant Professor, Manhattan College)
- Harun Ozbakir (PhD 2017) “Engineering Electron Transfer Processes in Oxidoreductases: Applications in Biocatalysis” (Current Position – Principal Scientist, Amgen)
- Kristen Garcia (PhD 2016) “Artificial Metabolons: Design of Self-Assembled Bio-Complexes” (Current Position – Science Teacher, Drew High School)
- Beyza Bulutoglu (PhD 2016) “Engineering Biomolecular Interfaces for Applications in Biotechnology” (Current Position – Senior Principal Scientist, Research Group Head, Genentech)
- Timothy Kernan (Dept of Cellular and Molecular Physiology & Biophysics, PhD 2016) “Tools and Methods to Engineer the Industrial Microorganism *Acidithiobacillus ferrooxidans*” (Current Position – Math Teacher, Millbrook School)
- Xiaozheng Li (Co-mentored with A. West, PhD 2015) “Engineering and Characterization of *Acidithiobacillus ferrooxidans* for Biotechnological Applications” (Current Position – Assistant Professor, College of Life Sciences and Oceanography, Shenzhen University)
- Kevin Dooley (PhD 2014) “Engineering a Repeats-in-Toxin Scaffold for Stimulus-Responsive Biotechnology Applications” (Current Position – Director, RNAi Delivery at Alnylam Pharmaceuticals)
- Tushar Patel (PhD 2013) “Engineering heterogeneous biocatalysts” (Current Position – Director, Analytical CMC Strategy at Vertex Pharmaceuticals)
- Oren Shur (PhD 2012) “Engineering the repeats-in-toxin domain for biotechnology applications” (Current Position – Senior Director, Compound Development Team Leader, Immunology, Janssen (Johnson & Johnson))

- Flora Felsovalyi (Co-mentored with S. Kumar, PhD 2012) “Mechanistic Study of the Adsorption and Desorption of Proteins on Silica” (Current Position – Associate Director, Head of Pharmaceutical Services, Lonza Basel)
- Asli Sahin (Co-mentored with A. West, PhD 2012) “Development of electrochemical methods for detection of pesticides and biofuel production” (Current Position – Senior Manager, Silicon Photonics FEOL Integration)
- Elliot Campbell (PhD 2011) “Towards a general dehydrogenase enzymatic scaffold for industrial biocatalysis” (Current Position – Research Assistant Professor, Center for Advanced Biotechnology and Medicine, Rutgers University, Co-Founder and CSO Macrotope, Inc.)
- Doris (Glykys) Neville (PhD 2010) “Modeling and engineering of oxidoreductase proteins for miniaturized energy applications” (Current Position – Head of Engineering and Commercialization, Praxis Precision Medicines)
- Shan Gao (PhD 2009) “Characterization of the TAT cell penetrating peptide and directed evolution of new cell penetrating peptides for protein and nucleotide delivery to neuronal-like cells (Current Position – Senior Scientist, Fujifilm Irvine Scientific)
- Mark Blenner (PhD 2009) “Tools for the design and engineering of stimulus responsive peptides and intrinsically disordered peptide scaffolds (Current Position – Associate Professor, Department of Chemical and Biomolecular Engineering, University of Delaware)
- Ian Wheeldon (PhD 2009) “Bifunctional protein building blocks for functional hydrogel assembly” (Award of Distinction) (Current Position – Professor, Department of Chemical and Environmental Engineering, University of California, Riverside)

PREVIOUS POSTDOCTORAL FELLOWS (16 TOTAL)

- Dr. Hannah Zurier (2022-2025) (PhD 2022 from Cornell University, Current Position – Scientist at Fork & Good)
- Dr. Samuel Lim (2024-2025) (PhD 2019 from UC Berkeley, Current Position – Assistant Professor, Department of Chemical and Biomolecular Engineering, Yonsei University, Korea)
- Dr. Zihang Su (2021-2024) (PhD 2021 from Case Western Reserve University, Current Position – Postdoc at UCLA)
- Dr. Heejung Jung (2020-2024) (PhD 2020 from UNIST South Korea, Current Position – Nature Publishing Group)
- Dr. Indrani Banerjee (2015-2017), (PhD 2012 from Rensselaer Polytechnic Institute, Current Position – Principal Scientist, Colgate-Palmolive)
- Dr. Kusum Solanki (2015-2016), (PhD 2011 from IIT Delhi, Current Position – Senior Scientist CMC Tech Ops, Generate Biomedicines)
- Dr. Jennifer Haughpanah (2012-2015), (PhD 2012 from NYU-Poly, Current Position- Associate Research Fellow, Estee Lauder)
- Dr. Sudipta Majumdar (2012-2014), (PhD 2008 from Wesleyan University, Current Position- Associate Professor, Department of Chemistry, Indiana University of Pennsylvania)

- Dr. Yang Hee Kim (2009-2011), (PhD 2009 from Seoul National University, Korea, Current Position – Research Engineer, CJ Corporation, Korea)
- Dr. Matthew Lluís (2010-2011), (PhD 2009 from University of Texas, Current Position – Web Developer, American Botanical Council)
- Dr. Jun Wu (2009-2010), (PhD 2006 from Case Western Reserve University, Current Position – Senior Scientist at BASF)
- Dr. Geza Szilvay (2008-10), (PhD 2007 from University of Helsinki, Finland, Current Position – Senior Scientist, VTT Technical Research Centre, Finland)
- Dr. Jong Pil Park (2008-2009), (PhD 2004 from KAIST, South Korea, Current Position – Associate Professor, Department of Food Science and Technology, Chung-Ang University, Korea)
- Dr. J. Todd Holland (2007-2009), (PhD 2007 from University of Illinois, Urbana-Champaign, Current Position – Psychiatrist, Amen Clinics, Inc.)
- Dr. Xiaojun Chen (2007-2008), (PhD 2003 from Nanyang Technological University, Singapore, Current Position - Senior Scientist II at Institute of Materials Research and Engineering, Singapore)
- Dr. Karuppiiah Chockalingam (2006-2008), (PhD 2006 from University of Illinois, Urbana-Champaign, Current Position - Research Assistant Professor, Texas A&M University)

CURRENT POSTDOCTORAL FELLOWS (1 TOTAL)

Sameera Abeyrathna (PhD 2021 from University of Texas, Dallas)

CURRENT PHD STUDENTS (6 TOTAL)

Lauren Murray (PhD Expected 2029)

Zhujin Xia (PhD Expected 2028)

Piyush Kumar (PhD Expected 2027)

Daniel Dailey (NSF Fellow, PhD Expected 2027)

Mallori Herishko (PhD Expected 2026)

Wei Wang (PhD Expected 2026)

PHD THESIS COMMITTEES (46 TOTAL)

Beatriz Salas Valenzuela (2025) “Characterization of the Effects Exerted by Diffusible Signal Factor (DSF)-like Signaling in Acidophilic Bioleaching Species” (Mario Vera Advisor, School of Engineering, Pontificia Universidad Católica de Chile)

Aaron Kidane (2025) “Discerning the Influence of Cationic and Aromatic Amino Acid Identity on Biomolecular Condensates” (Allie Obermeyer Advisor)

Do Young Maeng (2023) “Indoor Air Quality: Impacts of Synthetic Ester Hydrolysis and Ventilation” (V. Faye McNeill Advisor)

Yan Xiong (2022) “DNA-programmed nanomaterials and exploration of their chemical activities” (Oleg Gang Advisor)

Justin Horn (2022) “Engineering Stimuli-Responsive Protein Phase Separations for Protein Stabilization, Modulation of Protein Activity, and Intracellular Protein Delivery” (Allie Obermeyer Advisor)

- Vivian Yeong (2021) "Engineering protein electrostatics for phase separated synthetic organelles" (Allie Obermeyer Advisor)
- Rachel Kapelner (2021) "Effect of protein charge and charge distribution on protein-based complex coacervates" (Allie Obermeyer Advisor)
- Jon Vardner (2020) "Exploring the Reductive Pathway for the Hydrometallurgical Production of Copper from Chalcopyrite" (Alan West Advisor)
- Alison Fankhauser (2019) "Formation and Degradation of Secondary Organic Aerosol Material" (V. Faye McNeill Advisor)
- Emily Hsu (2019) "Sustainable Transformation and Recovery of Unconventional Resources in Natural and Waste Systems Utilizing CO₂" (A.-H. Alissa Park and Alan West Advisors)
- Peter Schnatz (2018) "Supercharged Models of Intrinsically Disordered Proteins and Their Utility in Sensing" (Ronald Koder Advisor, Dept of Physics, City College of New York)
- Ece Erturk (2018) "Photochemical and Enzymatic Method for DNA Methylation Profiling and Walking Approach for Increasing Read Length of DNA Sequencing by Synthesis" (Jingyue Ju Advisor)
- Gabriella Sanguineti (2016) "Novel Methods for the Ribosomal Incorporation of β -Amino Acids" (Virginia Cornish Advisor, Dept of Chemistry)
- Caroline Patenode (2016) "Developing New Strategies for Engineering Novel Natural Product Metabolic Pathways" (Virginia Cornish Advisor, Dept of Chemistry)
- Marie Harton (2015) "Harnessing Growth Selections in *Saccharomyces cerevisiae* for Biological Engineering" (Virginia Cornish Advisor, Dept of Chemistry)
- Xiaoxuan Sun (2015) "Electrodeposition and electroless deposition of copper in interconnect technology and biotechnology related applications" (Alan West Advisor)
- Wenjing Guo (2015) "Design and synthesis of novel nucleotide analogs and protein conjugates for DNA sequencing" (Jingyue Ju Advisor)
- Feng Qiao (2014) "Investigation of copper electrodeposition: Impact of inorganics and lab-scale tool design" (Alan West Advisor)
- Mithun Radhakrishna (2014) "Effect of surface curvature and chemistry on protein stability, adsorption and aggregation" (Sanat Kumar Advisor)
- Edward Swanson (2014) "Catalytic enhancement of mineral weathering for the capture and storage of carbon dioxide" (A.-H. Alissa Park Advisor, Dept of Earth and Environmental Engineering)
- Joseph Lai-man Woo (2013) "Gas-aerosol model for mechanism analysis: Kinetic prediction of gas- and aqueous-phase chemistry of atmospheric aerosols" (V. Faye McNeill Advisor)
- Yanir Maidenbergl (2013) "Directed Self-Assembly of Polymer-Decorated Nanoparticles" (Jeff Koberstein Advisor)
- Allison Schwier (2012) "Surfactant Behavior in Atmospheric Aerosols" (V. Faye McNeill Advisor)
- John Cacciatore (2012) "The Engineering of Chinese Hamster Ovary Cells to Achieve More Efficient Gene Amplification for Improving Biopharmaceutical Development" (Edward Leonard Advisor)

- Oya Okman (2012) "Fabrication and Applications of Nanoporous Gold" (Jeff Kaiser Advisor, Department of Mechanical Engineering)
- Neha Sareen (2012) "Sources and chemistry of secondary organic aerosols formed from carbonyl compounds" (V. Faye McNeill Advisor)
- Vikas Jain (2011) "Dynamics in Peptide Folding, Surface Activity, and Self-Assembly" (Raymond Tu Advisor, Dept of Chem Eng, City College of New York)
- Cherry Chen (2011) "Engineering Microbubbles with the Buried-Ligand Architecture for Targeted Ultrasound Molecular Imaging" (Mark Borden Advisor)
- Zhengwei Liu (2011) "Studies of Cobalt Hard Gold Electroplating: Experiment and Simulation" (Alan West Advisor)
- Roland Stefandl (2010) "Polymerization in Confined Space" (Carl Gryte Advisor)
- Jason Warner (2010) "Biophysical Mechanisms on the Pathway to Membrane Fusion" (Ben O'Shaughnessy Advisor)
- Melissa Simon (2010) "Evaluation and Development of Cell Penetrating Peptides for Brain Cell Delivery" (Barclay Morrison III Advisor, Dept of Biomed Eng)
- Sumit Sharma (2010) "Conformational Changes in Proteins Upon Adsorption to Surfaces" (Sanat Kumar Advisor)
- Ugur Emekli (2010) "Initial Stages of Direct Copper Electrodeposition: Simulation and Experiment" (Alan West Advisor)
- Napoleon Tercero (2010) "Characterization and Application of Morpholino Monolayers in Nucleic Acid Diagnostics" (Rastislav Levicky Advisor)
- Kristin Shattuck McKenzie (2010) "An Electrochemical Investigation of the Removal and Planarization of Copper and Ruthenium" (Alan West Advisor)
- Adam Whalley (2009) "Carbon Nanotubes: Single Molecule Electronics and Progress Towards End Cap Synthesis" (Colin Nuckolls Advisor, Dept of Chemistry)
- Owen Crowther (2009) "*In situ* Observations of Lithium Dendrite Growth" (Alan West Advisor)
- Ensing Lin (2009) "Mathematical Modeling and Simulation of a Cylindrical Nickel Metal Hydride Battery" (Huk Cheh Advisor)
- Hongjun Liu (2009) "Computer Simulation of Self-assembly of Complex Systems: Application to Globular Proteins and Grafted Nanoparticles" (Sanat Kumar Advisor)
- Robert Bozic (2008) "Developing Methods for the Detection of Ordnance Related Compounds" (Alan West Advisor)
- Mona Larsen (2007) "Understanding Particulate Flow in Microfluidics and Novel Designs of Biopolymer Nanoparticles" (Nina Shapley Advisor)
- Joshua Gallaway (2007) "Redox Polymer Mediation for Enzymatic Biofuel Cells" (Scott Calabrese-Barton Advisor)
- Yuhao Sun (2006) "Electrodes for Biocatalytic Fuel Cells" (Scott Calabrese-Barton Advisor)
- Gang Shan (2005) "DNA Monolayers: Precipitation and Electrochemical Characterization" (Rastislav Levicky Advisor)
- Hameer Ruparel (2005) "Novel DNA Sequencing and Genotyping Approaches Using Modified Nucleotide Analogues" (Jingyue Ju Advisor)

PROFESSIONAL MEMBERSHIPS

American Institute of Chemical Engineers (AIChE)
American Association for the Advancement of Science (AAAS)
American Chemical Society (ACS)
American Society for Biochemistry and Molecular Biology (ASBMB)
American Society for Microbiology (ASM)
The Protein Society
Society for Industrial Microbiology and Biotechnology (SIMB)
Society for Biological Engineering (SBE)