Miguel A. Modestino

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SUMMARY OF CAREER HIGHLIGHTS

- Advised 50 students and researchers, including 4 postdoctoral researchers, 6 Ph.D. students, 7 M.S. students, 24 B.S. students, and 9 K-12 students at NYU.
- National Science Foundation CAREER Award 2019.
- Named MIT Technology Review Innovator Under 35 in Latin America and Globally, won Doctoral New Investigator ACS Petroleum Research Fund Award, H&M Foundation Global Change Award, and Energy and Environmental Science Reader's Choice Award.
- Received inaugural NYU Tandon Junior Faculty Research Award and NYU Goddard Junior Faculty Fellowship Award.
- Raised $1.7M in funding from national and international foundations, companies, and government agencies for my research group, as part of a total of $3.9M in funded projects, including collaborations.
- Authored 49 publications in peer-reviewed scientific journals, including 23 as faculty at NYU and 22 as a corresponding author. Articles were published in leading journals in Energy (Energy and Environmental Science), Polymers (Macromolecules/ACS Macro Letters), Reaction Engineering (Reaction Chemistry and Engineering/Lab on a Chip), and Interdisciplinary Journals (Proceedings of the National Academy of Science/Angew. Chem./JACS/Nature). Articles include three invited reviews on electrochemical energy conversion and an invited perspective in organic electrosynthesis.
- Presented 47 invited lectures and authored 37 contributed presentations in national and international conferences, universities, and research institutions.
- Co-inventor in 6 patent applications and 1 granted patent.
- Co-founder and technical advisor of NYU spin-off company, Sunthetics Inc. Awarded the first prize at the NYU 300K Entrepreneurship Challenge Technology Venture Competition, the first prize in the University Startup Worldcup Green Tech Track, and a Powerbridge NY Grant. The company has raised >$900K in funding for technical development and was highlighted in the documentary "Own the Room" by National Geographic for Disney+.
- Work featured in >44 press releases in national and international media outlets including Brooklyn Daily Eagle, PBS, Forbes, and Vogue.
- Co-organizer of an international conference on Pathways for Solar-Hydrogen Technologies and AIChE Battery & Energy Storage Conference. Served as reviewer for US Department of Energy, US National Science Foundation, the Netherlands Organization for Scientific Research and the Swiss National Science Foundation.

EDUCATION

University of California, Berkeley, CA
Ph.D. in Chemical Engineering (2013).
Ph.D. Advisor: Prof. Rachel A. Segalman.
Management of Technology Certificate.

Massachusetts Institute of Technology, Cambridge, MA
Master in Science in Chemical Engineering Practice (2008).
Bachelor of Science in Chemical Engineering (2007), Minors in Chemistry and Economics.

EMPLOYMENT HISTORY

New York University, New York, NY, USA (January 2017 – current)

- Assistant Professor of Chemical and Biomolecular Engineering (January 2017 – current).

Sunthetics Inc, New York, NY, USA (Summer 2018 – current)

- Co-founder and Technology Advisor of NYU spin-off company focused on developing sustainable electrochemical manufacturing processes and equipment. (Company currently active and has raised >$900k in pre-seed funding)

ReactPower Inc, New York, NY, USA (Spring 2019 – Summer 2019)

- Co-founder and Technology Advisor of NYU spin-off company focused on developing Aluminum-based nanomaterial for thermal enhanced oil recovery. (Company no longer in operation)

École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland (Summer 2013 – Fall 2016)

- Postdoctoral Researcher at the Laboratory of Optics (Prof. Demetri Psaltis) and Laboratory of Applied Photonics Devices (Prof. Christophe Moser). Project manager of the Nanotera – SHINE project (http://shine.epfl.ch).

University of California and Lawrence Berkeley National Laboratory, Berkeley, CA, USA (Fall 2008-Spring 2013)

- Graduate student research assistant under the supervision of Prof. Rachel Segalman. Work on the self-assembly of nanocrystal in polymer matrices and characterization of transport and structural properties of hybrid inorganic/polymer membranes for solar-fuels applications.
- Teaching Assistant for Chemical Kinetics and Reactor Design (Spring 2010) and Polymer Science and Technology (Fall 2011).

Massachusetts Institute of Technology, Cambridge, MA, USA (Fall 2003-Spring 2008)

- Teaching Assistant in the Chemical Engineering Department for Chemical Engineering Projects Laboratory. (Spring 2008)
- Research Assistant in the Department of Chemical Engineering, under the supervision of Prof. Paula Hammond. Work related with the application of layer-by-layer film assembly

method to build novel materials for optical, catalytic, and biomedical applications. (Fall 2003-Spring 2007).
- Teaching Assistant in the Chemistry Department for Organic Chemistry (Fall 2006).
- Tutor in the Chemical Engineering Department for Introduction to Chemical Engineering (Fall 2005).

TechActivator, Berkeley, CA, USA (Spring 2011-Fall 2012)
- Co-founder and director of this start-up in UC Berkeley that focuses on accelerating the commercialization of technology developed in top research institutions.

British Petroleum Company, Naperville, IL, USA (Summer 2008)
- One-month internship as part of the David H. Koch School of Chemical Engineering Practice. Worked in small teams to develop thermodynamic models to predict the stability of fuel formulations.

Novartis Pharma AG, Basel, Switzerland (Summer 2008)
- Two-month internship as part of the David H. Koch School of Chemical Engineering Practice. Worked in small teams to analyze potential avenues for optimizing Novartis packaging strategy and perform technical and economic feasibility analyses of continuous manufacturing processes within the company.

AWARDS AND HONORS

1. MIT Technology Review Innovators Under 35 Award, Global List (2020).
2. NYU Tandon Junior Faculty Research Award (2020).
3. NYU Goddard Junior Faculty Fellowship Award (2020).
4. National Science Foundation, CAREER Award (2019).
5. Doctoral New Investigator Award, ACS Petroleum Research Fund (2018).
6. MIT Technology Review Innovators Under 35 Award, Latin America (2017).
7. Global Change Award (2016). Awarded by the H&M Foundation for game-changing ideas that can make the fashion industry circular.
8. Energy and Environmental Science Readers' Choice Lectureship award (2015). This prize is awarded annually to an outstanding young scientist (within 10 years of receiving their PhD) who has published in the journal.
9. Arkema Graduate Fellowship to outstanding graduate students with high promise in the polymer field (2010).
10. Power Top-Off Award to the most competitive prospective student from the Dept. of Chemical Engineering, UC Berkeley (2008).
11. Jose Felix Ribas Order - Highest academic honor from the Venezuelan Government for young people (2002).
12. Silver Medal on the 35th International Chemistry Olympiad (Greece, 2003).
13. Bronze Medal on the 34th International Chemistry Olympiad (Netherlands, 2002).
14. Silver Medal on the VII Iberoamerican Chemistry Olympiad (Argentina, 2002).

SCHOLARLY WORK

Citation Metrics (as of 07/05/2021): 2197 citations, h-index = 25. (updated metrics available at google scholar profile: https://scholar.google.ch/citations?user=0zfdancAAAAJ&hl=en)

*Journal publications at NYU (‡ co-first authorship, *corresponding author, and names of students from my group at NYU in **bold**):*

1. Jaemin Kong, Yongwoo Shin, Jason A. Röhr, Hang Wang, Juan Meng, Yueshen Wu, **Adlai Katzenberg**, Geunjin Kim, Dong Young Kim, Tai-De Li, Edward Chau, Francisco Antonio, **Tana Siboonruang**, Sooncheol Kwon, Kwanghee Lee, Jin Ryoun Kim, Miguel A. Modestino, Hailiang Wang and André D. Taylor*. CO_2 doping of organic interlayers for perovskite solar cells. *Nature*, 2021, **594,** 51–56, (June 2021), DOI: https://doi.org/10.1038/s41586-021-03518-y. (IF = 49.962)

    - Contributions: This work was led by Prof. André Taylor. My group contributed to the conductivity, preliminary gas composition measurements, and manuscript preparation.

2. **Adlai Katzenberg**, **Andrea Angulo**, Ahmet Kusoglu*, and Miguel Modestino*. Impacts of Organic Sorbates on Ionic Conductivity and Nanostructure of Perfluorinated Sulfonic-Acid Ionomers. *Macromolecules*, 2021, **54,** 5187-5195, (May 2021), DOI: https://doi.org/10.1021/acs.macromol.1c00494. (IF = 5.985)

    - Contributions: My group contributed to the conception, direction of the project, and most of the experimental work and analysis presented. We collaborated with Dr. Kusoglu to obtain Small-angle X-ray Scattering Data at the Advance Light Source and their analysis.

3. **Daniela E. Blanco**, Ratsha Atwi, **Sandya Sethuraman, Anne Lasri, Julian Morales**, Nav Nidhi Rajput and Miguel A. Modestino*. Effect of Electrolyte Cations on Organic Electrosynthesis: The Case of Adiponitrile Electrochemical Production. *Journal of The Electrochemical Society*, 2020, **167**, 155526, (November 2020), (Invited Article, Focus Issue on Organic and inorganic Molecular Electrochemistry), DOI: https://doi.org/10.1149/1945-7111/abc766. (IF = 4.316)

    - Contributions: My group contributed to the conception and direction of the project and all the experimental work presented in the paper. We collaborated with Dr. Rajput and her student, Ratsha Atwi, to perform molecular dynamics simulations of the electrical double layer, which complemented our experimental study.

4. Yury Dvorkin, **Miguel A. Modestino**, and Andrea I. Silverman. Engineering an Interdisciplinary Connection: Bridging Gaps between Chemical, Electrical, and Environmental Engineers. *iScience*, 2020, **23,** 101337, (July 2020), (Backstory Article), DOI: https://doi.org/10.1016/j.isci.2020.101337. (IF = 4.447)

    - Contributions: This article highlighted the collaborations between my group on electrochemical engineering and the groups of Prof. Silverman on Environmental Engineering and Prof. Dvorkin on power systems.

5. **Daniel Frey**, Jip Kim, Yury Dvorkin and Miguel A. Modestino*. Spatiotemporal Decoupling of Water Electrolysis for Dual-Use Grid Energy Storage and Hydrogen Generation. *Cell Reports Physical Science*, 2020, **1**, 100226, (October 2020), DOI: https://doi.org/10.1016/j.xcrp.2020.100226. (IF = N/A)

    - Contributions: My group contributed to the conception and direction of the project, all the experimental work, and technoeconomic analysis of the electrochemical technology. We collaborated with Prof. Dvorkin and his student, Jip Kim, to perform an analysis and optimization of the integration of electrochemical devices with the electrical grid.

6. Elizabeth J. Biddinger* and Miguel A. Modestino*. Electro-organic Syntheses for Green Chemical Manufacturing. *Electrochemical Society Interface*, 2020, **29**, 43-47, (September 2020), DOI: https://doi.org/10.1149/2.F06203IF. (IF = 1.21)

    - Contributions: This article was written with equal contributions from Prof. Biddinger and myself.

7. **Adlai Katzenberg, Debdyuti Mukherjee,** Peter J. Dudenas, Yoshiyuki Okamoto, Ahmet Kusoglu, and Miguel A. Modestino*. Dynamic Emergence of Nanostructure and Transport Properties in Perfluorinated Sulfonic Acid Ionomers. *Macromolecules*, 2020, **53**, 8519–8528, (September 2020), DOI: https://doi.org/10.1021/acs.macromol.0c01213. (IF = 5.985)

    - Contributions: My group contributed to the conception, direction of the project, and most of the experimental work and analysis presented. We collaborated with Dr. Kusoglu and his student, Peter Dudenas, to obtain Small-angle X-ray Scattering Data at the Advance Light Source and their analysis. Some of the polymers were synthesized in collaboration with Dr. Okamoto.

8. **Adlai Katzenberg, Cesar Muñoz Davila, Brian Chen, Tana Siboonruang**, and Miguel A. Modestino*. Acid-Doped Hydrogel Electrolytes for Electrocatalyst Interfaces. *ACS Applied Polymer Materials*, 2020, **2**, 2046–2054, (April 2020), DOI: https://doi.org/10.1021/acsapm.0c00214. (IF = 4.089)

9. **Daniela E. Blanco**, **Aaliyah Z. Dookhith** and Miguel A. Modestino*. Controlling Selectivity in the Electrocatalytic Hydrogenation of Adiponitrile through Electrolyte Design. *ACS Sustainable Chemistry & Engineering*, 2020, **8**, 9027-9034, (June 2020), DOI: https://doi.org/10.1021/acssuschemeng.0c01789. (IF = 8.198)

10. **Andrea Angulo**, Peter van der Linde, Han Gardeniers, Miguel Modestino* and David Fernández Rivas*. Influence of Bubbles on the Energy Conversion Efficiency of Electrochemical Reactors. *Joule*, 2020, **4**, 555-579, (March 2020), (Invited Review), DOI: https://doi.org/10.1016/j.joule.2020.01.005. (IF = 27.054)

    - Contributions: My group contributed to the conception and the components of this review related to electrochemical bubble evolution. We collaborated with Prof. Fernandez Rivas and his student, Peter van der Linde, who contributed to the theoretical description of non-electrochemical bubble evolution process and mechanisms for bubble mitigation.

11. **Adlai Katzenberg,** Anamika Chowdhury, Minfeng Fang, Adam Z. Weber, Yoshiyuki Okamoto, Ahmet Kusoglu, and Miguel A. Modestino*. Highly Permeable Perfluorinated Sulfonic Acid Ionomers for Improved Electrochemical Devices: Insights into Structure–Property Relationships. *Journal of the American Chemical Society*, 2020, 142, **8**, 3742–3752, (January 2020), (Journal Cover), DOI: https://doi.org/10.1021/jacs.9b09170. (IF = 15.419)

    - Contributions: My group contributed to the conception, direction of the project, and most of the experimental work and analysis presented. We collaborated with Dr. Kusoglu and Dr. Weber, and their students to obtain Small-angle X-ray Scattering Data at the Advance Light Source and preliminary fuel cell testing. Some of the polymers were synthesized in collaboration with Dr. Okamoto.

12. **Adlai Katzenberg, Akash Raman, Nicole L. Schnabel, Andrea L. Quispe**, Andrea I. Silverman and Miguel A. Modestino*. Photocatalytic hydrogels for removal of organic contaminants from aqueous solution in continuous flow reactors. *Reaction Chemistry & Engineering*. 2020. **5**, 377-386, (December 2019), DOI: https://doi.org/10.1039/C9RE00456D. (IF = 4.239)

    - Contributions: My group contributed to the conception, direction of the project, and most of the experimental work and analysis presented. We collaborated with Prof. Silverman, who provided guidance on relevant water model contaminants and treatment technologies.

13. Mark T. Spitler,* Miguel A. Modestino, Todd G. Deutsch, Chengxiang X. Xiang, James R. Durrant, Daniel V. Esposito, Sophia Haussener, Stephen Maldonado, Ian D. Sharp, Bruce A. Parkinson, David S. Ginley, Frances A. Houle, Thomas Hannappel, Nathan R. Neale, Daniel G. Nocera, and Paul C. McIntyre. Practical challenges in the development of photoelectrochemical solar fuels production. *Sustainable Energy & Fuels*, 2020, **4**, 985-995, (December 2019), DOI: https://doi.org/10.1039/C9SE00869A. (IF = 6.367)

    - Contributions: This paper was the product of a workshop on Practical challenges in the development of photoelectrochemical solar fuels devices. The manuscript was coordinated by Dr. Mark Spitler, and each of the authors had equal contributions. I was invited to present and contribute to the article.

14. **Daniela E. Blanco, Purnima A. Prasad, Kaylee Dunningan,** and Miguel A. Modestino*. Insights into membrane-separated organic electrosynthesis: the case of adiponitrile electrochemical production. *Reaction Chemistry & Engineering*, 2020, **5**, 136-144, (November 2019), DOI: https://doi.org/10.1039/C9RE00389D. (IF = 4.239)

15. Pablo Peñas, Peter van der Linde, Wouter Vijselaar, Devaraj van der Meer, Detlef Lohse, Jurriaan Huskens, Han Gardeniers, Miguel A. Modestino, and David Fernandez Rivas*. Decoupling gas evolution from water-splitting electrodes. *Journal of The Electrochemical Society*, 2019, **166**, H769-H776, (October 2019), DOI: https://doi.org/10.1149/2.1381914jes. (IF = 4.316)

    - Contributions: This article was led by Dr. Fernandez Rivas. My contribution was in the direction and analysis of electrochemical phenomena.

16. **Daniela. Blanco, Bryan Lee**, Miguel A. Modestino*. Optimizing Organic Electrosynthesis through Controlled Voltage Dosing and Artificial Intelligence. *PNAS*, 2019, **116**, 17683-17689, (August 2019), DOI: https://doi.org/10.1073/pnas.1909985116. (IF = 9.412)

17. E. Chinello,* M. A. Modestino, J.W. Schüttauf, L. Coulot, M. Ackermann, F. Gerlich, A. Faes, D. Psaltis and C. Moser. A comparative performance analysis of stand-alone, off-grid solar-powered sodium hypochlorite generators. *RSC Advances*, 2019, 9, 14432-14442, (May 2019), DOI: https://doi.org/10.1039/C9RA02221J. (IF = 3.361)

    - Contributions: This article was led by Dr. Enrico Chinello. My contribution was in the direction and analysis of electrochemistry experiments.

18. John Dwyer, Elizabeth Juarez Diaz, Thomas E. Webber, **Adlai Katzenberg**, Miguel Modestino and Eray Aydil*. Quantum confinement in few layer SnS nanosheets. *Nanotechnology*, 2019, **30**, 245705, (April 2019), DOI: https://doi.org/10.1088/1361-6528/ab0e3e. (IF = 3.874)

    - Contributions: This article was led by Prof. Eray Aydil. My student, Adlai Katzenberg, and I contributed by characterizing the SnS nanosheets via Atomic Force Microscopy.

19. **Daniela E. Blanco** and Miguel A. Modestino*. Organic Electrosynthesis for Sustainable Chemical Manufacturing. *Trends in Chemistry*, 2019, 1, 8-10, (February 2019), (Invited perspective in inaugural issues), DOI: https://doi.org/10.1016/j.trechm.2019.01.001. (IF = 15.37)

20. **Daniela E. Blanco**, **Aaliyah Z. Dookhith** and Miguel A. Modestino*. Enhancing selectivity and efficiency in the electrochemical synthesis of adiponitrile. *Reaction Chemistry & Engineering*, 2019, 4, 8-16, (November 2018), (Journal Cover), DOI: https://doi.org/10.1039/C8RE00262B. (IF = 4.239)

21. Shane Ardo,* David Fernandez Rivas,* Miguel Modestino,* Verena Schulze Greiving,* Fatwa F. Abdi, Esther Alarcon llado, Vincent Artero, Katherine Ayers, Corsin Battaglia, Jan-Philipp Becker, Dmytro Bederak, Alan Berger, Francesco Buda, Enrico Chinello, Bernard Dam, Valerio Di Palma, Tomas Edvinsson, Katsushi Fujii, Han Gardeniers, Hans Geerlings, S. Mohammad H. Hashemi, Sophia Haussener, Frances Houle, Jurriaan Huskens, Brian D. James, Kornelia Konrad, Pramod Patil Kunturu, Detlef Lohse, Bastian Mei, Eric L. Miller, Gary Moore, Jiri Muller, Katherine L. Orchard, Timothy E. Rosser, Fadl Saadi, Jan-Willem Schüttauf, Brian Seger, Stafford W. Sheehan, Wilson A. Smith, Joshua Spurgeon, Maureen Tang, Roel van de Krol, Peter C.K. Vesborg, and Pieter Westerik. Pathways to Electrochemical Solar-Hydrogen Technologies. *Energy & Environmental Science*, 2018, **11**, 2768-2783, (June 2018), (Journal Cover), DOI: https://doi.org/10.1039/C7EE03639F. (IF = 38.532)

    - Contributions: This paper was the product of a workshop on Pathways for Solar-Fuels Technologies that I co-organized with Dr. Schulze Greiving, Prof. Fernandez Rivas, and Prof. Ardo. The manuscript was prepared and coordinated by the co-organizers, equally, and each of the authors contributed intellectually to it.

22. P. Hadikhani, S.M.H. Hashemi, G. Balestra, M.A. Modestino, F. Gallaire, and D. Psaltis*. Inertial manipulation of bubbles in rectangular microfluidic channels. *Lab on a Chip*, 2018, **18**, 1035-1046, (March 2018), (Journal Cover), DOI: https://doi.org/10.1039/C7LC01283G. (IF = 6.799)

    - Contributions: This article was led by Prof. Psaltis. My contribution was in the project planning and analysis of results.

23. Enrico Chinello,* Miguel A. Modestino, Laurent Coulot, Mathieu Ackermann, Florian Gerlich, Demetri Psaltis, and Christophe Moser. A 25.1% efficient stand-alone solar chlor-alkali generator employing a micro-tracking solar concentrator. *Global Challenges*, 2017, **1**, 1700095, (November 2017), DOI: https://doi.org/10.1002/gch2.201700095. (IF = 4.306)

    - Contributions: This article was led by Dr. Enrico Chinello. My contribution was in the direction and analysis of electrochemistry experiments.

Journal publications prior to NYU:

24. Seyyed Mohammad Hosseini Hashemi,* Matthias Neuenschwander, Pooria Hadikhani, Miguel Modestino, and Demetri Psaltis. Membrane-less micro fuel cell based on two phase flow. *Journal of Power Sources*, 2017, **348**, 212–218, (April 2017), DOI: https://doi.org/10.1016/j.jpowsour.2017.02.079. (IF = 8.247)

25. Miguel A. Modestino,* David Fernandez-Rivas,* Mohammad Hashemi, Han Gardeniers, and Demetri Psaltis. The potential for microfluidics in electrochemical energy systems. *Energy & Environmental Science*, 2016, **9**, 3381-3391, (September 2016), DOI: https://doi.org/10.1039/C6EE01884J. (IF = 38.532)

26. J.W. Schüttauf,‡* M.A. Modestino,‡* E. Chinello, D. Lambelet, D. Dominé, A. Faes, M. Despeisse, J. Bailat, D. Psaltis, C. Moser, C. Ballif. Solar-to-hydrogen production at 14.2% efficiency with silicon photovoltaics and earth abundant electrocatalysts. *Journal of Electrochemical Society*, 2016, **163**, F1177-F1181, (August 2016), DOI: https://doi.org/10.1149/2.0541610jes. (IF = 4.316)

27. Paul Delrot,* Miguel A. Modestino, François Gallaire, Demetri Psaltis and Christophe Moser. Inkjet printing of viscous monodisperse micro-droplets by laser-induced flow focusing. *Physical Review Applied*, 2016, **6**, 024003, (August 2016), (Editor's selection article), DOI: http://dx.doi.org/10.1103/PhysRevApplied.6.024003. (IF = 4.985)

28. Miguel A. Modestino,* Mohammad Hashemi, Sophia Haussener. Mass transport aspects of electrochemical solar-hydrogen generation. *Energy & Environmental Science*, 2016, **9**, 1533-1551, (March 2016), DOI: https://doi.org/10.1039/C5EE03698D. (IF = 38.532)

29. Adam Weber,* Chengxiang Xiang, Miguel Modestino, Shane Ardo, Sophia Haussener, Kate Fountain, John Stevens, Meenesh Singh, Katie Chen, Shu Hu, Matthew Shaner. Modeling, Simulation, and Implementation of Solar-Driven Water-Splitting Devices. *Angewandte Chemie*, 2016, **128**, 13168-13183, (October 2016), DOI: https://doi.org/10.1002/anie.201510463. (IF = 15.336)

30. Marcin S. Zielinski, Jae-Woo Choi, Thomas LaGrange, Miguel A. Modestino, S. Mohammad H. Hashemi, Ye Pu, Susanne Birkhold, Jeffrey A. Hubbell, and Demetri

Psaltis*. Hollow Mesoporous Plasmonic Nanoshells Enhancing Solar Vapor Generation. *Nano Letters*, 2016, **16**, 2159-2167, (February 2016), DOI: https://doi.org/10.1021/acs.nanolett.5b03901. (IF = 11.189)

31. Miguel A. Modestino*, Mikael Dumortier, Mohammad Hashemi, Sophia Haussener, Demetri Psaltis, Christophe Moser. Vapor-fed microfluidic hydrogen generator. *Lab on a Chip*, 2015, **15**, 2287-2296, (April 2015), DOI: https://doi.org/10.1039/C5LC00259A. (IF = 6.799)

32. Mohammad Hashemi, Miguel A. Modestino, Demetri Psaltis*. A membrane-less electrolyzer for hydrogen production across the pH scale. *Energy & Environmental Science*, 2015, **8**, 2003-2009, (April 2015), (Invited cover and top scoring article in Energy and Environmental Science), DOI: https://doi.org/10.1039/C5EE00083A. (IF = 38.532)

33. Claudia A. Rodriguez, ‡ Miguel A. Modestino*, ‡ Demetri Psaltis, Christophe Moser. Design and cost considerations of practical solar-hydrogen generators. *Energy & Environmental Science*, 2014, **7**, 3828-3835, (April 2015), (EES Readers' Choice Award), DOI: https://doi.org/10.1039/C4EE01453G. (IF = 38.532)

34. Miguel A. Modestino*, Sophia Haussener*. An Integrated Device View on Photo-Electrochemical Solar-Hydrogen Generation. *Annual Review of Chemical & Biomolecular Engineering*, 2015, **6**, 13-34, (January 2015), (Invited Review), DOI: https://doi.org/10.1146/annurev-chembioeng-061114-123357. (IF = 9.561)

35. Frances Allen, Luis Comolli, Ahmet Kusoglu, Miguel A. Modestino, Andrew Minor, Adam Weber*. Morphology of Hydrated As-Cast Nafion Revealed through Cryo Electron Tomography. *ACS Macro Letters*, 2015, **4**, 1–5, (December 2014), (Journal Cover), DOI: https://doi.org/10.1021/mz500606h. (IF = 6.903)

36. Eun Cho, Christopher M. Evans, Emily C. Davidson, Megan L. Hoarfrost, Miguel A. Modestino, Rachel A. Segalman, and Jeffrey J. Urban*. Enhanced Water Vapor Blocking in Transparent Hybrid Polymer–Nanocrystal Films. *ACS Macro Letters*, 2015, **4**, 70–74, (December 2014), DOI: https://doi.org/10.1021/mz500765y. (IF = 6.903)

37. Pepa Cotanda, Guillaume Sudre, Miguel A. Modestino, Xi Chen, Balsara, Nitash*. High Anion Conductivity and Low Water Uptake of Phosphonium Containing Diblock Copolymer Membranes. *Macromolecules*, 2014, **47**, 7540–7547, (October 2014), DOI: https://doi.org/10.1021/ma501744w. (IF = 5.985)

38. Miguel A. Modestino, Karl A. Walczak, Alan Berger, Christopher Evans, Sophia Haussener, Carl Koval, John S. Newman, Joel Ager, Rachel A. Segalman*. Robust production of purified H_2 in a stable, self-regulating, and continuously operating solar fuel generator. *Energy & Environmental Science*, 2014, **7**, 297-301, (November 2013), DOI: https://doi.org/10.1039/C3EE43214A. (IF = 38.532)

39. Miguel A. Modestino, Rachel A. Segalman*. Artificial Solar Fuel Generators. *Winter Issue of The Bridge on Frontiers of Engineering - National Academy of Engineering*, 2013, **43**, 23-30, (December 2013). DOI: https://doi.org/10.17226/885. (IF = N/A)

40. Miguel A. Modestino, ‡ Camilo Diaz-Botia, ‡ Tyler S. Matthews, Rafael Gomez-Sjoberg, Joel Ager*, Rachel A. Segalman*. Integrated microfluidic test-bed for energy conversion

devices. *Physical Chemistry Chemical Physics*, 2013, **15**, 7050-7054, (March 2013), DOI: https://doi.org/10.1039/C3CP51302E. (IF = 3.676)

41. Miguel A. Modestino,* Frances I. Allen, Devproshad K. Paul, Shudipto Dishari, Stephanie A. Petrina, Michael A. Hickner, Kunal Karan, Andy M. Minor, Adam Z. Weber and Rachel A. Segalman. Self-Assembly and Transport Limitations in Confined Nafion Films. *Macromolecules*, 2013, **46**, 867–873, (January 2013), DOI: https://doi.org/10.1021/ma301999a. (IF = 5.985)

42. Yanika Schneider, Miguel A. Modestino, Robert W. Hess, Bryan McCulloch, Rachel A. Segalman*. Ionic Conduction in Nanostructured Membranes based on Polymerized Protic Ionic Liquids. *Macromolecules*, 2013, **46**, 1543–1548, (February 2013), DOI: https://doi.org/10.1021/ma3024624. (IF = 5.985)

43. Frances I. Allen, Peter Ercius, Miguel A. Modestino, Rachel A. Segalman, Nitash P. Balsara, Andrew M. Minor*. Deciphering the three-dimensional morphology of free-standing block copolymer thin films by transmission electron microscopy. *Micron*, 2013, **44**, 442-450, (January 2013), DOI: https://doi.org/10.1016/j.micron.2012.09.010. (IF = 1.726)

44. Miguel A. Modestino,‡ Ahmet Kusoglu,‡ Alexander Hexemer, Adam Z. Weber*, Rachel A. Segalman*. Controlling Nafion Structure and Properties via Wetting Interactions. *Macromolecules*, 2012, **45**, 4681–4688, (May 2012), DOI: https://doi.org/10.1021/ma300212f. (IF = 5.985)

45. Gang Chen, Miguel A. Modestino, Billy K. Poon, Andre Schrotzek, Stefano Marchesini, Rachel A. Segalman*, Alexander Hexemer, Peter H. Zwart. Structure Determination of Pt-coated Au Dumbbells via Fluctuation X-ray Scattering. *Journal of Synchrotron Radiation*, 2012, **19**, 695-700, (September 2012), DOI: https://doi.org/10.1107/S0909049512023801. (IF = 2.251)

46. Ahmet Kusoglu,‡ Miguel A. Modestino,‡ Alexander Hexemer, Adam Z. Weber*, Rachel A. Segalman*. Subsecond Morphological Changes in Nafion during Water Uptake Detected by Small-Angle X-ray Scattering. *ACS Macro Letters*, 2012, **1**, 33–36, (November 2011), DOI: https://doi.org/10.1021/mz200015c. (IF = 6.903)

47. Miguel A. Modestino, Elaine R. Chan, Alexander Hexemer, Jeff J. Urban, Rachel A. Segalman*. Controlling Nanorod Self-Assembly in Polymer Thin Films. *Macromolecules*, 2011, **44**, 7364–7371, (September 2011), DOI: https://doi.org/10.1021/ma201252d. (IF = 5.985)

48. Nicole S. Zacharia, Miguel A. Modestino, Paula T. Hammond*. Factors Influencing the Interdiffusion of Weak Polycations in Multilayers. *Macromolecules*, 2007, **40**, 9523–9528, (November 2007), DOI: https://doi.org/10.1021/ma071828+. (IF = 5.985)

49. Nicole S. Zacharia, Dean M. DeLongchamp, Miguel A. Modestino, Paula T. Hammond*. Controlling Diffusion and Exchange in Layer-by-Layer Assemblies. *Macromolecules*, 2007, **40**, 1598–1603, (February 2007), DOI: https://doi.org/10.1021/ma061080f. (IF = 5.985)

PATENTS

Patent applications at NYU:

1. Miguel A. Modestino, Aaliyah Dookhit, Daniela E. Blanco. *Electrohydrogenation of Nitriles*. Patent pending, NYU, 2020. (US 63/023,173)
2. Miguel A. Modestino, Daniela E. Blanco. *Electrohydrodimerization of Aliphatic Olefins with Electrochemical Potential Pulses*. Patent pending, NYU, 2019. (US 62/827,021)
3. Miguel A. Modestino, Daniel Frey, Daniela Blanco, Yury Dvorkin. *Methods and electrochemical cells for redox mediated hydrogen production.* Patent pending, NYU, 2019. (US 62/809,429)
4. S. Ardo, E. Schwartz, J. Liu, J. Cardon, W. White, K. Tkacz, L. Renna, M. Modestino, D. Blanco. *Systems and methods for integrated solar photodialysis.* UC Irvine/NYU, 2018. (US20190217255A1)
    - Contributions: This patent application was led by Prof. Ardo at UCI. My group's contribution was on the design and development for devices to implement photodyalisis membranes developed by Prof. Ardo's group.
5. Miguel A. Modestino, Sophia Haussener. *Solar production of Nylon polymers and precursors for Nylon production*. Patent pending, NYU/EPFL, 2018. (PCT/IB2018/051852)
    - Contributions: I led this patent application. Prof. Haussener contributed to the conceptualization of a solar-thermal hydrogenation process.

Patent applications prior to NYU:

6. S. Mohammad H. Hashemi, Miguel A. Modestino, Jae-Woo Choi, Demetri Psaltis. *Membraneless electrolyzer*. Patent granted, EPFL, 2015. (US10907262B2)
7. Miguel A. Modestino, S. Mohammad H. Hashemi, Christophe Moser, Demetri Psaltis. *Vapor-Fed Microelectrolysis Cells*. Patent application, EPFL, 2014. (US20160289848A1)

GRANTS AND CONTRACTS

Funded Projects:

1. **Sloan Foundation**
   Title: Center for Decarbonizing Chemical Manufacturing via Sustainable Electrification
   Total Funds Granted: $700,000 (my share = $93,442, Tandon's share = $456,000, other institutions share = $246,000)
   Dates: 09/01/2021 – 08/31/2023
   Role: Co-PI in collaboration with Andre Taylor (NYU Tandon), Eray Aydil (NYU Tandon), Yury Dvorkin (NYU Tandon), Ryan Hartman (NYU Tandon), Elizabeth Biddinger (CCNY), Daniel Esposito (Columbia University), Yushan Yan (University of Deleware), Mike Harold (University of Houston), Lars Grabow (University of Houston), Vincent Donelly (University of Houston), Bri-Mathias Hodge (Colorado University, Boulder), Kyri Baker (Colorado University, Boulder).
   Contribution: As research co-director for the center, I coordinated the write-up of this proposal, led the preparation of the proposed thrust on electrochemical manufacturing, will lead experimental work on high-throughput screening of electrolytes for electrochemical

production of ethylene from propionic acid, and will work with the managing director in center forming activities with the aim to develop a self-supporting center that will contribute towards the electrification of chemical manufacturing.

2. **National Science Foundation**
   Title: CAREER: Understanding Multiscale Mass Transport in Organic Electrosynthesis: Towards a Sustainable Pathway to Nylon Precursors
   Funds Granted: $ 499,329
   Dates: 04/01/2020 – 03/31/2025
   Role: Single PI

3. **National Science Foundation**
   Title: Planning Grant: Engineering Research Center for the Electrification of the Chemical Industry (CECI)
   Funds Granted: $90,457 (my share = $22,614, Tandon's share = $90,457)
   Dates: 11/01/2019 – 10/31/2020
   Role: Co-PI in collaboration with Eray Aydil (NYU Tandon), Yury Dvorkin (NYU Tandon), and Sanat Kumar (Columbia University)

4. **PowerBridge New York:**
   Title: Improved manufacturing process for adiponitrile
   Funds Granted: $150,000
   Dates: 05/01/2019 – 05/14/2020
   Role: Single PI

5. **University Research Challenge Fund, NYU:**
   Title: Hybrid photocatalytic materials for light-driven water treatment.
   Funds Granted: $15,000.
   Dates: 6/01/2019-11/30/2019
   Role: Lead-PI in collaboration with Andrea Silverman (NYU Tandon)
   Contribution: Led the proposal write-up and my group performed all the experimental work.

6. **Empire State Development, NYSTAR Technology Transfer Program:**
   Title: Scale-up and Optimization of Adiponitrile Electrosynthesis Reactors.
   Funds Granted: $62,500
   Dates: 06/01/2019 – 12/31/2020
   Role: Single PI

7. **ACS Petroleum Research Fund, Doctoral New Investigator Award**:
   Title: Ionic Liquid-Polymer Gel Electrolytes for Electrochemical Olefin Separations.
   Funds Granted: $110,000.
   Dates: 09/01/2019 – 08/31/2021
   Role: Single PI

8. **VentureWell:**
   Title: Sunthetics.
   Funds Granted: $25,000.
   Dates: 03/01/2018 – 12/31/2019
   Role: Single PI

9. **MD5 Launch:**
   Title: H2POWdER Project.
   Funds Granted: $190,000.
   Dates: 05/01/2018 – 04/31/2019
   Role: Single PI (Part of the NYU MD5 Program to develop and commercialize a nanostructured Aluminum powder technology for hydrogen production)

10. **ExxonMobile:**
    Title: N/A (Unrestricted Research Grant)
    Funds Granted: $20,000
    Dates: 01/09/2018 – Indefinite
    Role: Single PI

11. **Swiss National Science Foundation**:
    Title: Multiphase Flow Electrochemical Reactors
    Funds Granted: $1,645,000 (my share: $256,937)
    Dates: 01/01/2018 – 12/31/2021
    Role: Co-PI in collaboration with Demetri Psaltis (EPFL) and Petros Koumatsakos (ETHZ)
    Contribution: Contributed to the preparation of the proposal write-up, led the electrochemical engineering component of it, and my group performed all the microfluidic electrochemical experiments of the project.

12. **National Science Foundation:**
    Title: RAPID: Transportable Energy Storage for Enhancing Power Grid Resiliency to Natural Disasters
    Funds Granted: $61,902 (my share = $30,951).
    Dates: 10/01/2017 – 09/30/2018
    Role: Co-PI in collaboration with Yury Dvorkin (NYU Tandon)
    Contribution: Contributed to the preparation of the proposal write-up, led the electrochemical engineering component of it, and my group performed all the experimental work of the project.

13. **H&M Foundation, Global Change Award:**
    Title: SolarTextiles.
    Funds Granted: $310,000 (my share = $155,000)
    Dates: 07/01/2017 – Indefinite.
    Role: Lead-PI in collaboration with Sophia Haussener (EPFL).
    Contribution: Led the write-up of the proposal and my group performed all the electrochemical engineering work of the project.

Pending Proposals:

1. **Invista (Koch Industries)**
   Title: A Hybrid Plasma-Electrochemical Process for Enhanced Production of Adiponitrile
   Pending Funds: $155,000 (my share = $77,500)
   Dates: 09/01/2021 – 08/31/2022
   Role: Lead-PI in collaboration with Eray Aydil (NYU Tandon)
   Contribution: Built the relationship with the company, the write-up of the electrochemical component of the proposal, and my group will perform all the electrochemical experiments.
   Notes: Likely to be funded. Under final IP management plan review.

2. **National Science Foundation & German Research Foundation (DFG)**
   Title: Electrolysis Devices for the Production of Valuable Chemicals from CO_2 and Biomass Waste
   Pending Funds: $684,471 (my share: $300,000 from NSF, German collaborators share: EUR 324,468 from DFG)
   Dates: 09/01/2021 – 08/31/2024
   Role: Co-PI in collaboration with Fatwa Abdi (Helmholtz Institute Berlin) and Ulf-Peter Apfel (Ruhr-Universität Bochum)
   Contribution: Contributed to the write-up of the proposal, led the electrosynthesis component of it, and, if granted, will perform experiments on electrochemical conversion of glycerol.

PRESENTATIONS

Invited presentations after joining NYU:

1. Miguel A. Modestino. Challenges and Opportunities in Electrochemical Reactor Design and Scale-up. DOE Advanced Manufacturing Office Workshop on Electrochemical Manufacturing. June 29th, 2021. (Virtual)
2. Miguel A. Modestino, Controlling Transport Processes in Multiphase Flow Electrochemical Devices. Microfluidics & Energy Symposium. University of Toronto, April 30th, 2021. (Virtual)
3. Miguel A. Modestino, Optimizing Organic Electrosynthesis Through Electrochemical Engineering Approaches and Bayesian Machine Learning. MRS Virtual Spring Meeting, April 22th, 2021. (Virtual)
4. Miguel A. Modestino. Designing Organic Electrosynthesis Processes for Sustainable Chemical Manufacturing. Chemical Engineering Seminar at University of California, Santa Barbara, USA. April 14th, 2021. (Virtual) (Departmental Colloquium)
5. Miguel A. Modestino. Designing Electrochemical Processes for Sustainable Chemical Manufacturing. Center for Catalytic Science and Technology, Chemical and Biomolecular Engineering Seminar at University of Delaware, USA. March 10th, 2021. (Virtual) (Departmental Colloquium)
6. Miguel A. Modestino. Designing Electrochemical Processes for Sustainable Chemical Manufacturing. Chemical Engineering Seminar at University of Texas, Austin, USA. November 10th, 2020. (Virtual) (Departmental Colloquium)

7. Miguel A. Modestino. Designing Electrochemical Processes for Sustainable Chemical Manufacturing. Chemical Engineering Seminar at Colorado University, Boulder, USA. October 27th, 2020. (Virtual) (Departmental Colloquium)
8. Miguel A. Modestino. Decarbonizing Chemical Manufacturing. EmTech 2020 Conference, MIT Technology Review. October 21st, 2020. (Virtual) (Keynote)
9. Miguel A. Modestino. Designing Electrochemical Processes for Sustainable Chemical Manufacturing. Chemical Engineering Seminar at University of Arizona, Tucson, USA. October 12th, 2020. (Virtual) (Departmental Colloquium)
10. Miguel A. Modestino. Designing Electrochemical Processes for Sustainable Chemical Manufacturing. Seminar at Bristol Myers Squibb, USA. July 9th, 2020. (Virtual)
11. Miguel A. Modestino. Designing Electrochemical Processes for Sustainable Chemical Manufacturing. Seminar at Lawrence Berkeley National Lab, USA. July 6th, 2020. (Virtual)
12. Miguel A. Modestino. Designing Electrochemical Materials and Processes for Clean Transportation and Sustainable Chemical Manufacturing. Seminar at Technical University of Eindhoven, The Netherlands. April 23rd, 2020. (Virtual)
13. Miguel A. Modestino. Designing Electrochemical Materials and Processes for Clean Transportation and Sustainable Chemical Manufacturing. Seminar at Center for Nanofunctional Materials, Brookhaven National Laboratory, USA. February 3rd, 2020. (Departmental Colloquium)
14. Miguel A. Modestino. Designing Electrochemical Materials and Processes for Clean Transportation and Sustainable Chemical Manufacturing. Chemical Engineering Department Seminar, Stevens Institute of Technology, Hoboken, NJ, USA. January 31st, 2020. (Departmental Colloquium)
15. Miguel A. Modestino. Designing Electrochemical Materials and Processes for Clean Transportation and Sustainable Chemical Manufacturing. Seminar at Solar Fuels Institute, Helmholtz Zentrum Berlin, Germany. January 8th, 2020. (Departmental Colloquium)
16. Miguel A. Modestino. Engineering Electrochemical Manufacturing: From High-Performing Reactors to Separation Processes. Advances, Challenges, and Long-term Opportunities for Electrochemistry. Chemical Science Roundtable Workshop, National Academy of Science, Washington, DC, USA. November 19th, 2019.
17. Miguel A. Modestino. Artificial Photosynthesis Engineering: Designing solar-driven electrochemical reactors for the production of clean fuels and high-value materials. Chemical Engineering Department Seminar, City College of New York, NY, USA. November 4th, 2019. (Departmental Colloquium)
18. Miguel A. Modestino, Daniela E. Blanco. Engineering Organic Electrosynthesis: The Case of Nylon Precursors. Seminar at Invista/Koch Industries. Orange, TX, USA. August 13th, 2019.
19. Miguel A. Modestino. Design considerations of sunlight-driven organic electrosynthetic processes. ACS Spring Meeting, Orlando, FL, USA. April 3rd, 2019.
20. Miguel A. Modestino. Advice for Pursuing Traditional and Nontraditional Careers in Science (Panelist). Energy Nanomaterials, Gordon Research Seminar, Ventura, CA, USA. February 24th, 2019.

21. Miguel A. Modestino. The potential of solar-chemical manufacturing: from clean fuels to fast fashion. University of Oxford's Energy Society, Oxford, UK. November 20th, 2018.
22. Miguel A. Modestino. Engineering a sustainable chemical industry. University of Oxford's Climate Society, Oxford, UK. November 19th, 2018.
23. Miguel A. Modestino. Novel ionomer materials for electrochemical energy conversion devices. Center for Soft Matter Research, Department of Physics, New York University, New York, NY, USA. November 14th, 2018.
24. Miguel A. Modestino. How can startups and corporates collaborate (Panelist). Innovate 46, Swedish Chamber of Commerce. New York, NY, USA. October 10th, 2018.
25. Miguel A. Modestino. Controlling mass transport at electrocatalytic interfaces: Towards air-based water splitting devices. ACS Fall Meeting, Boston, MA, USA. August 22nd, 2018.
26. Miguel A. Modestino. Solar-Fuels Analytical Facility: Required Prototype Formats. Workshop on Photoelectrochemical Solar Fuels Production. Gerischer Electrochemistry Today. Boulder, CO. August 13th, 2018.
27. Miguel A. Modestino. SolarTextiles: Manufacturing textiles with energy from the sun. MIT Technology Review EmTech Caribbean 2018. Santo Domingo, Dominican Republic. May 11th, 2018. (Keynote)
28. Miguel A. Modestino. Controlling Self Assembly and Mass Transport in Artificial Photosynthesis Materials and Devices. University of Oxford's Department of Materials Colloquium, Oxford, UK. April 26th, 2018. (Departmental Colloquium)
29. Miguel A. Modestino. Artificial Photosynthesis Engineering: Towards Solar-Chemical Reactors. Chemical Engineering Department Seminar, New Jersey Institute of Technology, NJ, USA. April 2nd, 2018. (Departmental Colloquium)
30. Miguel A. Modestino. Artificial Photosynthesis Engineering: Towards Solar-Chemical Reactors. Chemistry Department Seminar, Lehman College, Bronx, NY, USA. February 21th, 2018. (Departmental Colloquium)
31. Miguel A. Modestino. Artificial Photosynthesis Engineering: Towards Solar-Chemical Reactors. New York Nanoscience Discussion Group. Department of Chemistry, New York University, New York, NY, USA. January 30th, 2018.
32. Miguel A. Modestino. SolarTextiles: Manufacturing textiles with energy from the sun. MIT Technology Review Innovators under 35 LATAM 2017. November 16th, Mexico City, Mexico. (Keynote)
33. Miguel A. Modestino. SolarTextiles: Harvesting the sun's energy to make textiles and clean the environment, all at once. Fashion Now and Then Conference, October 20th, 2017, LIM College, New York, NY, USA.
34. Miguel A. Modestino. Artificial Photosynthesis Engineering: Towards Solar-Chemical Reactors. MRS Stevens Chapter Guest Lecture. Department of Chemical Engineering, Stevens Institute of Technology, Hoboken, NJ. April 26th, 2017. (Departmental Colloquium)

Invited presentations prior to joining NYU:

1. Miguel A. Modestino. Unconventional water splitting approaches towards scalable solar-hydrogen generators. Laboratory for Chemical Technology Seminar. Gent University, Gent, Belgium. September 30th, 2016. (Departmental Colloquium)
2. Miguel A. Modestino. Unconventional water splitting approaches towards scalable solar-hydrogen generators. EPFL Valais Seminar. Sion, Switzerland. April 12th, 2016.
3. Miguel A. Modestino. Unconventional water splitting approaches towards scalable solar-hydrogen generators. Chemical and Biomolecular Engineering Seminar. New York University, Brooklyn, NY, USA. February 22nd, 2016. (Departmental Colloquium)
4. Miguel A. Modestino. Self-Assembly and Transport in Artificial Photosynthesis Membranes. Symposium on the Future of Polymer Nanotechnology. University of Applied Sciences and Arts of Northwestern Switzerland and Paul Scherrer Institute, Windisch, Switzerland. December 18th, 2015. (Departmental Colloquium)
5. Miguel A. Modestino. Unconventional water splitting approaches towards scalable solar-hydrogen generators. Energy and Environmental Science Readers' Choice Award Lecture. International Symposium on Energy Conversion and Storage. Beijing, China. June 1st, 2015. (Distinguished Seminar)
6. Miguel A. Modestino. Artificial Photosynthesis Engineering. Process Intensification Seminar at ETH, Zurich, Switzerland. March 24th, 2015. (Departmental Colloquium)
7. Miguel A. Modestino, Claudia A. Rodriguez, Demetri Psaltis, Christophe Moser. Design Principles of Deployable Solar-Hydrogen Generators. IEEE Photonics Conference, San Diego, CA. October 15th, 2014.
8. Miguel A. Modestino. Self-Assembly and Mass Transport in Artificial Photosynthesis Systems. Seminar at Chalmers University of Technology, Göteborg, Sweden. October 2nd, 2014. (Departmental Colloquium)
9. Miguel A. Modestino. Systems engineering solutions for the development of cost effective solar-fuel generators. Seminar at University of Twente, Enschede, Netherlands. February 18th, 2014. (Departmental Colloquium)
10. Miguel A. Modestino. Self-Assembly and Mass Transport in Artificial Photosynthesis Systems. Seminar at EMPA Dübendorf. August 2013. (Departmental Colloquium)
11. Miguel A. Modestino, Augusta E. Modestino. Promoting Development from the Lab. TEDxUSB (March 2012), Universidad Simon Bolivar, Caracas, Venezuela. (http://www.youtube.com/watch?v=GDNCqosmVLA)
12. Miguel A. Modestino, Ahmet Kusoglu, Alexander Hexemer, Adam Z. Weber, and Rachel A. Segalman. Understanding Hierarchical Structure in Membranes and Assemblies for Artificial Photosynthesis. Synchrotron Radiation in Polymer Science, 2012. San Francisco, CA.
13. Miguel A. Modestino, Ahmet Kusoglu, Alexander Hexemer, Adam Z. Weber, and Rachel A. Segalman. Understanding Hierarchical Structure in Solar Fuel Membranes and Assemblies. ALS Users Meeting 2011. Lawrence Berkeley National Lab, Berkeley, CA.

Contributed presentations after joining NYU (Presenter listed as first author, and names of students from my group at NYU **bolded)***:*

1. **Daniel Frey**, Jip Kim, Yury Dvorkin, and Miguel A. Modestino. *Spatio-temporal decoupling of water electrolysis for dual-use grid energy storage and hydrogen generation.* Microfluidics and Energy Symposium, Online, April 30th, 2021. (Poster)
2. **Andrea Angulo** and Miguel A. Modestino. *Understanding bubble-induced energy losses in gas evolving electrodes.* Microfluidics & Energy Symposium, Online, April 29th, 2021. (Poster)
3. **Adlai Katzenberg**, **Debdyuti Mukherjee,** Peter Dudenas, Yoshi Okamoto, Ahmet Kusoglu and Miguel A. Modestino. *In Situ Characterization of the Dynamic Emergence of Nanostructure and Transport Properties in Perfluorinated Sulfonic Acid Ionomer Thin Films.* 2020 Virtual AIChE Annual Meeting, Online, November, 19th, 2020. (Poster)
4. **Adlai Katzenberg, Toshihiro Akashige, Debdyuti Mukherjee**, Yoshi Okamoto, Miguel Modestino. *Ionic Liquid-Polymer Gel Electrolytes for Electrochemical Olefin Separations in Gas-Diffusion Electrodes.* 2020 Virtual AIChE Annual Meeting, Online, November, 18th, 2020. (Poster)
5. **Adlai Katzenberg**, Anamika Chowdhury, Minfeng Fang, Adam Weber, Yoshi Okamoto, Ahmet Kusoglu and Miguel A. Modestino. *Elucidating Structure-Property Relationships in Highly Permeable Perfluorinated Sulfonic Acid Ionomers.* 2020 Virtual AIChE Annual Meeting, Online, November, 17th, 2020. (Oral)
6. **Daniel Frey**, Jip Kim, Yury Dvorkin, and Miguel A. Modestino. *Spatio-temporal decoupling of water electrolysis for dual-use grid energy storage and hydrogen generation*. AIChE 2nd Battery and Energy Conference, Online, October 23rd, 2020. (Poster)
7. **Adlai Katzenberg, Cesar Munoz, Brian Chen, Tana Siboonruang,** Miguel A. Modestino. *Acid-Doped Hydrogels for Robust Ion Transport in Electrochemical Catalyst Layers.* 237th ECS Meeting, Online, May, 2020. (Oral)
8. **Adlai Katzenberg**, Anamika Chowdhury, Minfeng Fang, Adam Z Weber, Yoshiyuki Okamoto, Ahmet Kusoglu, Miguel A. Modestino. *Elucidating Structure-Property Relationships in Highly Permeable Perfluorinated Sulfonic Acid Ionomers.* 237th ECS Meeting, Online, May, 2020. (Oral)
9. **Daniel Frey** and Miguel A. Modestino. *Cerium-mediated hydrogen production and energy storage system*. 237th ECS Meeting, Online, May 10th, 2020. (Oral)
10. M.A. Modestino, **D.E. Blanco**. Enhancing Organic Electrosynthesis through Artificial Intelligence: The Case of Adiponitrile Electrohydrodimerization. 2019 AIChE Annual Meeting. Orlando, FL, USA. (Poster)
11. M.A. Modestino, **A. Katzenberg**, M Fang, Y Okamoto, A Kusoglu. *Beyond Nafion: Structure-Property Relationships in Novel Perfluorinated Ionomers with Tunable Transport Properties.* ECS Fall Meeting 2019. Atlanta, GA, USA. (Oral)
12. **Daniela E. Blanco,** Miguel Modestino, Bryan Lee. *Optimizing Organic Electrosynthesis through Artificial Intelligence: the Case of Adiponitrile Production*, ECS 360th annual meeting, The Electrochemical Society, Atlanta, USA, October 14th, 2019. (Oral)
13. **Daniela E. Blanco**, Miguel Modestino**.** *Optimizing Organic Electrosynthesis: The Case of Adiponitrile Production.* AICHE, Annual Meeting. Orlando, FL, USA, November, 2019. (Oral)

14. M.A. Modestino, **D.E. Blanco**. Process Intensification Approaches to Organic Electrosynthesis: Towards Sustainable Nylon Production. ECS Fall Meeting 2019. Atlanta, GA, USA. (Oral)
15. **D.E. Blanco**, M.A. Modestino. *Enhancing Organic Electrosynthesis through Artificial Intelligence: The Case of Adiponitrile Electrohydrodimerization.* ECS Fall Meeting 2019. Atlanta, GA, USA. (Oral)
16. **Adlai Katzenberg**, Minfeng Fang, Yoshiyuki Okamoto, Ahmet Kusoglu, and Miguel A. Modestino. *Beyond Nafion®: Exploring Structure-Property Relationships in Novel Perfluorinated Ionomers with Tunable Chemical Composition.* Gordon Research Conference: Nanomaterials for Applications in Energy Technology, Ventura, CA, February 26th-27th, 2019. (Poster)
17. **Adlai Katzenberg**, Minfeng Fang, Yoshiyuki Okamoto, Ahmet Kusoglu, and Miguel A. Modestino. *Beyond Nafion®: Exploring Structure-Property Relationships in Novel Perfluorinated Ionomers with Tunable Chemical Composition.* Gordon Research Seminar: Nanomaterials for Applications in Energy Technology, Ventura, CA, February 24th, 2019. (Oral)
18. **Daniela E. Blanco**, Aaliyah Dookhith, Miguel A. Modestino. *Controlling selectivity in the electrochemical reduction of acrylonitrile: Towards a solar-driven Nylon 6,6 production process*. ECS and SMEQ Biannual Meeting, Cancun, Mexico. September 30th, 2018. (Oral)
19. **Adlai Katzenberg**, Miguel Modestino. *Electrolyte-Swollen PAA/PVA Hydrogel Thin Films for Improved Transport at Catalyst-Electrolyte Interfaces.* 17th International Conference on Organized Molecular Films, Brooklyn, NY, USA. July, 2018. (Poster)
20. **Daniela E. Blanco,** Miguel Modestino, Sophia Haussener. *Solar Textiles - Global Change Award Winner,* Circular Fashion Salon, H&M Foundation, Accenture and KTH Royal Institute of Technology, Shanghai, China. December 6th, 2017. (Oral)

Contributed presentations prior to joining NYU:

1. Miguel A. Modestino, E. Chinello, L. Coulot, M. Ackermann, F. Gerlich, C. Moser, D. Psaltis. High-Efficiency Photo-Electrochemical Chloro-Alkali Production. AIChE 2017 Meeting, October 29th, 2017, Minneapolis, MN, USA.
2. Miguel A. Modestino, S. Mohammad H. Hashemi, M. Neuenschwander, D. Gregory, C. Moser, Demetri Psaltis. *Developing Microfluidic Air-Based Solar-Hydrogen Generators*. Materials Research Society, Spring Meeting 2017, Phoenix, AZ, USA.
3. Enrico Chinello, Miguel A Modestino, Jan-Willem Schüttauf, David Lambelet, Antonio Delfino, Didier Dominé, Antonin Faes, Matthieu Despeisse, Julien Bailat, Demetri Psaltis, David Fernandez Rivas, Christophe Ballif, Christophe Moser. *SPIE Optics+ Photonics for Sustainable Energy.* November 2nd, 2016, San Diego, CA, USA.
4. Miguel A Modestino, Jan-Willem Schuettauf, Enrico Chinello, Claudia A Rodriguez, David Lambelet, Antonio Delfino, Didier Dominé, Antonin Faes, Matthieu Despeisse, Julien Bailat, Christophe Ballif, Demetri Psaltis, Christophe Moser. *Towards the Development of Practical Solar-Fuels Devices: Silicon-Based Solar-Hydrogen Generators with 14.2% Solar-to-Hydrogen Efficiency.* 230th Electrochemical Society Meeting, September, 2016. Honolulu, HI, USA.

5. Miguel A. Modestino, S. Mohammad H. Hashemi, Demetri Psaltis. *Splitting Water from Vapor Feeds: Towards Air-Based Solar-Hydrogen Generators*. 229th Electrochemical Society Meeting, Jun 2nd, 2016. San Diego, CA, USA.
6. S. Mohammad H. Hashemi, Miguel A. Modestino, Demetri Psaltis. *Towards High Efficiency Membrane-less Electrolysis*. MRS Spring Meeting. March 30th, 2016. Phoenix, AZ, USA.
7. Christophe Moser, Paul Delrot, Damien Loterie, Edgar Morales Delgado, Miguel Modestino, Demetri Psaltis. *Complex light in 3D printing.* SPIE Photonics West Conference. February 18th, 2016. San Francisco, CA, USA.
8. Paul Delrot, Miguel A. Modestino, Demetri Psaltis, Christophe Moser. *Laser-assisted inkjet printing of highly viscous fluids with sub-nozzle resolution*. SPIE Photonics West Conference. February 15th, 2016. San Francisco, CA, USA.
9. Miguel A. Modestino, Mohammad Hashemi, Christophe Moser, Demetri Psaltis. *Next-generation microstructured water-splitting devices*. AIChE 2015 Meeting, November 10th, 2015, Salt Lake City, UT, USA.
10. Miguel A. Modestino, S. Mohammad H. Hashemi, Demetri Psaltis. *Unconventional water splitting platforms*. 228th Electrochemical Society Meeting, October 14th, 2015, Phoenix, AZ, USA.
11. Miguel A. Modestino, Claudia A. Rodriguez, Demetri Psaltis, Christophe Moser. *Design and cost considerations of Solar-Fuel Devices*. 227th Electrochemical Society Meeting, May 28th, 2015, Chicago, IL, USA.
12. Miguel A. Modestino, Claudia A. Rodriguez, Demetri Psaltis, Christophe Moser. *Design Considerations of Cost Effective Solar-Hydrogen Generators*. Materials Research Society, Spring Meeting 2015, San Francisco, CA, USA.
13. Miguel A. Modestino, Claudia A. Rodriguez, Demetri Psaltis, Christophe Moser. *Design Considerations of Deployable Solar-Hydrogen Generators*. AIChE 2014 Meeting, November 18th, 2014, Atlanta, GA, USA.
14. Miguel A. Modestino, C. Moser, D. Psaltis, S. Haussener, A. Braun, J. Bailat. *Engineering Approaches Towards Cost Effective Solar-Hydrogen Generators*, Materials Research Society, Spring Meeting 2014, San Francisco, CA, USA.
15. Christopher Evans, Gabriel Sanoja, Yanika Schneider, Miguel Modestino, Rachel Segalman. *Ionic Conductivity and Gas Permeability of Polymerized Ionic Liquid Block Copolymer Membranes*. American Physical Society, March Meeting 2014. Denver, CO, USA.
16. Miguel A. Modestino, and Rachel A. Segalman. *Understanding Hierarchical Structure in Solar Fuel Membranes and Assemblies.* Materials Research Sociaty, Spring Meeting 2013, San Francisco, CA, USA.
17. Miguel A. Modestino, and Rachel A. Segalman. *Understanding Hierarchical Structure in Solar Fuel Membranes and Assemblies.* American Physical Society, March Meeting 2013. Baltimore, MD, USA
18. Miguel A. Modestino, Rachel A. Segalman. *Polymer mediated solution self-assembly of nanorods*. American Physical Society, March Meeting 2012. Boston, MA, USA.

19. Miguel A. Modestino, Jeff J. Urban, Rachel A. Segalman. *Controlling Nanorod Self-Assembly in Polymer Thin-Films.* American Physical Society, March Meeting 2011. Dallas, TX, USA.
20. Miguel A. Modestino, Jeff J. Urban, Rachel A. Segalman. *Vertical Alignment of Nanorods in Thin Film Polymer Nanocomposites.* American Physical Society, March Meeting 2010. Portland, OR, USA.
21. Miguel A. Modestino, Nicole Zacharia, Paula T. Hammond. *Dendrimer Encapsulated Metallic Nanoparticules Inmovilized in Polyelectrolyte Thin-Films*. VIII Venezuelan Chemistry Congress (2007). Caracas, Venezuela.
22. Nicole S. Zacharia, Miguel A. Modestino, Paula T. Hammond. *Nanoparticles in PAMAM dendrimer containing polyelectrolyte multilayers*. 232nd ACS National Meeting (2006), San Francisco, CA, USA.

MEDIA COVERAGE

1. Fixing the Chemical Industry's Sustainability Problem. IEEE Spectrum, USA. (06/2021)
2. Innovative process that removes key hurdle for next-generation solar cells is also a lockbox for greenhouse gases. Tandon Press Release. Brooklyn, USA (06/02/2021)
3. Daniela Blanco and Sunthetics are ready for their close-up now. Tandon Press Release. Brooklyn, USA. (04/05/2021)
4. Own the Room. Disney+ Documentary. (03/2021).
5. NYU Spearheads project to help chemical industry go green. IEEE Spectrum, USA. (12/2020)
6. Electrolysis in Flux. Joule Preview (12/2020)
7. Starting a science business during a pandemic. Chemical & Engineering News (07/27/2020)
8. NYU Tandon sustainable energy researcher named a top young innovator by MIT Technology Review. Tandon Press Release. Brooklyn, USA. (06/17/2020)
9. MIT Technology Review Innovators Under 35. MIT Technology Review, USA (06/2020)
10. Chemical and Biomolecular Engineering student Daniel Frey heads to NREL. NYU Tandon Press Release. Brooklyn, USA. (05/18/2020)
11. Avoiding Bubble Troubles. University of Twente Press Release. Twente, The Netherlands (04/02/2020)
12. Novel polymer membrane could give boost to fuel cell vehicles. Materials Today. (02/13/2020)
13. Researchers turbocharge hydrogen fuel cells with novel ion-conducting copolymer NYU Tandon Press Release. Brooklyn, USA. (01/29/2020)
14. NYU Tandon professor exploring greener chemical manufacturing wins NSF award for promising young researchers. Tandon Press Release. Brooklyn, USA. (01/13/2020)
15. Year in Chemistry 2019: Chemists made industrial synthesis greener. Chemical & Engineering News (12/2019)
16. Pulsed Electrosynthesis plus Machine Learning Equals Bigger Yields for Adiponitrile. Chemical & Engineering News (09/06/2019)
17. Lego's Quest to Make Plant-Based Toy Bricks Is Met With Skepticism. The Wall Street Journal. New York, USA (06/21/2019)

18. NYU Tandon chemical engineering students excel on the national, international stage. NYU Tandon Press Release. Brooklyn, USA. (04/15/2019)
19. Sustainable, solar-driven chemical manufacturing. Science Daily. (02/21/2019)
20. NYU Tandon Team Charts Path to Sustainable, Solar-Driven Chemical Manufacturing. NYU Tandon Press Release. Brooklyn, USA. (02/20/2019)
21. NYU Tandon Ph.D. Prepares to Rock the Entrepreneurial Competition. NYU Tandon News. Brooklyn, USA. (01/24/2019).
22. InnoVention Inspiration. NYU Tandon News. Brooklyn, USA. (11/14/2019).
23. Another Day, Another Triumph for Sunthetics Team. NYU Tandon News. Brooklyn, USA. (10/17/2018).
24. Entrepreneurial Success in Tandon's Latine Community. NYU Tandon News. Brooklyn, USA. (10/01/2018).
25. The Finish Line is Just the Beginning at the NYU Summer Faculty Startup Sprint. NYU Tandon News. Brooklyn, USA. (09/25/2018)
26. Come See 12 Top NYU Startups Pitch. NYU Entrepreneurial Institute Entrepreneurs Blog. New York, NY, USA. (09/17/2018)
27. Tandon-bred company sustains success and the environment. NYU Tandon News. Brooklyn, USA. (07/18/2018)
28. Tandon for the Win. NYU Tandon News. Brooklyn, USA. (05/10/2018).
29. NYU Tandon Student Wins U.S. DOE Grant to Conduct Research at Lawrence Berkeley National Lab. NYU Tandon News. Brooklyn, USA. (05/07/2018).
30. Five Tandon Teams Move on to Compete in InnoVention Semifinals. NYU Tandon News. Brooklyn, USA. (03/05/2018).
31. NYU Tandon Celebrates Achievements of Our Students and Faculty. NYU Tandon New. Brooklyn, USA. (12/21/2017)
32. Engineering Sustainable Synthetic Fabric. PBS New York Learning Media. Brooklyn, USA. (12/18/2017).
33. NYU Tandon Sustainable Energy Researcher Named a Top Young Latin American Innovator by MIT Technology Review. NYU Tandon Press Release. Brooklyn, USA. (10/05/2017)
34. Honoring Latinx Heritage Month at Tandon. NYU Tandon News. Brooklyn, USA. (09/18/2017).
35. A Robust Pipeline to STEM. NYU Tandon News. Brooklyn, USA. (09/01/2017).
36. Genios en el mundo. Diario 2001. Caracas, Venezuela. (07/28/2017)
37. Sustainability in Action at NYU Tandon. NYU Tandon News. Brooklyn, USA. (04/20/2017).
38. Tandon Professor Earns Award for Eco-Friendly Textile Manufacturing. Washington Square News. New York, NY, USA. (04/11/2017).
39. Making clothes out of water and sun. EPFL News. Lausanne, Switzerland. (04/07/2017)
40. NYU Tandon professor wins H&M Global Change Award. Brooklyn Daily Eagle. Brooklyn, USA. (04/07/2017).
41. NYU Tandon Professor Wins H&M Global Change Award For Research Into Sustainable Clothing Manufacturing. NYU Tandon Press Release. Brooklyn, USA. (04/07/2017).
42. If H&M Has Its Way, in the Future We'll All Be Wearing "Grape Leather" and "Manure Couture". Vogue. New York, NY, USA. (04/06/2017).

43. From Grapes To Cow Manure, H&M Foundation Unveils Winners Of Latest Innovation Award. Forbes. (04/05/2017).
44. Tandon's Newest Faculty Members Bring Expertise in Clean Energy, Nanomaterials, Machine Learning, and More. NYU Tandon News. Brooklyn, USA. (09/20/2016).

EDUCATION INNOVATION

- **Developed graduate-level numerical methods class for chemical engineering (CBE GY 6153):** The class introduces students to numerical methods concepts in the context of chemical engineering. Theoretical concepts are first introduced in class, followed by in-class examples of implementations of numerical methods in Matlab. Students are then exposed to original chemical engineering problems in homework problems where they need to write independent Matlab codes to gain physical insights into complex systems.
- **Introduced graduate students to finite-element simulation software (CBE GY 6153):** Through a series of two lectures, students are introduced to finite-element simulations and exposed to the use COMSOL Multiphysics® for solving complex engineering problems involving multiple coupled physical phenomena.
- **Developed a computational design project for chemical engineering graduate students (CBE GY 6153):** students are presented with an open-ended project where they have to use computational tools to optimize the design of a flow-based electrochemical reactor. The project covers topics of my group's research, which exposes students to real research applications of computational methods. Students are asked to work in groups and write a comprehensive report on their recommendation for a device design.
- **Introduced concepts of computational methods in undergraduate Heat and Mass Transport class (CBE UY 3313):** through a series of lectures, undergraduate chemical engineering students were introduced to the finite-differences numerical method for solving partial differential equations encountered in transport phenomena.

CLASSES TAUGHT

Numerical Methods in Chemical Engineering (CBE GY 6153):

- S2017, 14 students, 6 responded evaluation, course rating: 4.3, instructor rating: 4.5
- F2017, 25 students, 19 responded evaluation, course rating: 4.3, instructor rating: 4.2
- F2018, 21 students, 18 responded evaluation, course rating: 4.5, instructor rating: 4.7
- F2019, 16 students, 16 responded evaluation, course rating: 4.4, instructor rating: 4.6
- F2020, 16 students, 16 responded evaluation, course rating: 4.7, instructor rating: 4.8

Transport I: Heat and Mass Transport (CBE UY 3313):

- F2018, 50 students, 40 responded evaluation, course rating: 4.3, instructor rating: 4.5
- F2019, 55 students, 37 responded evaluation, course rating: 4.2, instructor rating: 4.4
- S2021, 42 students, 26 responded evaluation, course rating: 4.6, instructor rating: 4.8

(Course ratings are based on a maximum score of 5.0)

MENTORING

Current Students:

Ph.D.:

1. Toshihiro Akashige, Chemical Engineering Ph.D. student, NYU. (Jan 2019 – current)
    - Awards at NYU: **NSF Graduate Student Researcher Fellow (2020).**
2. Andrea Angulo, Chemical Engineering Ph.D. student, NYU. (Jan 2019 – current)
3. Daniel Frey, Chemical Engineering Ph.D. student, NYU. (Jan 2018 – current)
    - Awards at NYU: **DOE Office of Science Graduate Student Research Fellow (2020).**
4. Ricardo Mathison, Chemical Engineering Ph.D. student, NYU. (Jan 2021 – current)

M.S.:

1. Minh Diep, Chemical Engineering B.S./M.S. student, NYU (Jan 2021 – current)
2. Adeola Akin, Chemical Engineering B.S./M.S. student, NYU (Jun 2021 – current)

Undergraduate:

1. Ju Hee Shin, Chemistry and Chemical Engineering B.S. student, NYU. (Sep 2019 – current)
2. Blazej Razewski, Chemical Engineering B.S. student, NYU (Jun 2021 – current)
3. Suryansh Kabra, Chemical Engineering B.S. student, NYU (Jun 2021 – current)

K-12:

1. Mia Montrose (Summer 2021)
2. Eric Gonzalez Cardona (Summer 2021)

Past Students and Postdoctoral Researchers:

Post-Doctoral Researchers:

1. Debdyuti Mukherjee, Chemistry Ph.D., Indian Institute of Science, Bangalore, India (May 2019 – May 2021)
    - Current position: Not known.
2. Enrico Chinello, Microengineering Ph.D., EPFL, Switzerland (Fall 2020)
    - Current Position: Equity Research Ph.D. Fellow at Goldman Sachs.
3. Yasmine Hajar, Chemical and Biological Engineering Ph.D., University of Ottawa, Canada (Sep 2019 – May 2020)
    - Current position: R&D Engineer at Mitrex
4. Thomas Yu, Materials Science Ph.D., Northwestern University, (May 2018 – May 2019)
    - Current position: Senior Energy Storage Engineer at Nanoramics Laboratories

Ph.D.:

1. Adlai Katzenberg, Chemical Engineering Ph.D. student, NYU. (Jan 2017 – Dec 2020)
    - Current position: Postdoctoral Researcher at Lawrence Berkeley Lab
    - Awards while at NYU: **DOE Office of Science Graduate Student Research Fellow (2018), Zuckerman Postdoctoral Fellowship (2020, declined).**
2. Daniela E. Blanco, Chemical Engineering Ph.D. student, NYU. (Jan 2017 – May 2020)
    - Current position: CTO at Sunthetics, Inc.

- Awards while at NYU: **2019 Graduate Student Inventor by Lemelson-MIT, 2019 Brightest AI Mind by Minds & Tech and the MIT Center for Collective Intelligence, and 2019 Global Student Entrepreneur.**

M.S.:

1. Lankun Yang, Chemical Engineering M.S. student, NYU. (Jan 2020 – May 2021)
   - Current position: Associate Scientist, WuXi Biologics
2. Xinshu Shang, Chemical Engineering, M.S. student, NYU (Jan 2019 – May 2020)
   - Current position: Not known.
3. Nicole Schnabel, Chemical Engineering, M.S. student, NYU (Jan 2018 – May 2019)
   - Current position: Senior Global Product Analyst at Johnson & Johnson
4. Cesar Muñoz, Chemical Engineering M.S. student, NYU (Jan 2017 – Jun 2018)
   - Current position: Sales Executive at Venair Group
5. Zhixiao Zhao, Chemical Engineering M.S. student, NYU (Sep 2017 – Sept 2018)
   - Current position: M.S. student in Computer Science at NYU Courant

Undergraduate:

1. Brian Chen, Applied Physics B.S. student, NYU (Sep 2017 – May 2020)
   - Current Position: Research Engineer, Commonwealth Fusion Systems
2. Sunny Chantanakajonfung, Chemical Engineering B.S. student, NYU. (Jan 2020 – May 2020)
   - Current Position: Not Known.
3. Kaylee Dunnigan, Chemical Engineering, B.S. student, NYU (Sep 2018 – May 2020)
   - Current Position: Ph.D. Student in Chemical Engineering, Cornell. **NSF Graduate Student Researcher Fellow.**
4. Andrea Quispe, Chemical Engineering, B.S. student (Jun 2019 – May 2020)
   - Current Position: Packaging Engineer, L'Oreal.
5. Rhea Reyes, Chemical Engineering/Chemistry, B.S. student, NYU (Sep 2018 – May 2020)
   - Current Position: Not Known.
6. Bryan Lee, Chemical Engineering, B.S. student, NYU (Sep 2018 – May 2020)
   - Current Position: M.S. student at Stanford University.
7. Neha Vasudevan, Chemical Engineering, B.S. student (Summer 2019)
   - Current Position: B.S. student at NYU.
8. Azan Brar, Chemical Engineering, B.S. student (Summer 2019)
   - Current Position: M.S. student at NYU.
9. Tana Siboonruang, Chemical Engineering B.S. student, NYU (Sep 2017 – Jun 2019)
   - Current Position: Ph.D. Student in Chemical Engineering, Drexel University. **NSF Graduate Student Researcher Fellow.**
10. Aaliyah Dookhith, Chemical Engineering B.S. student, NYU (Sep 2017 – Jun 2019)
    - Current Position: Ph.D. Student in Chemical Engineering, UT Austin.
11. Andrew Hamlin, Mechanical Engineering, B.S. Visiting Student, Union College (Summer 2019).
    - Current Position: Ph.D. Student in Materials Engineering, Dartmouth College. **NSF Graduate Student Researcher Fellow.**
12. Kunal Miyani, Chemical Engineering, B.Eng. Visiting Student, Loughborough University (Jan 2019 – Jun 2019)
    - Current Position: M.S. Student at Loughborough University.

13. Sairam Ravishankar, Chemical Engineering B.S. Visiting Student, SASTRA University, India (Feb 2019 – Jul 2019)
    - Current Position: Not known.
14. Purnima Prasad, Chemical Engineering, B.S. student (Aug 2018 – Jan 2019)
    - Current Position: B.S. student at NYU.
15. Junyi Sha, Chemical Engineering, B.S. student (Jun 2018 – Aug 2018).
    - Current Position: Ph.D. Student in Computer Science at MIT.
16. Akash Raman, Chemical Engineering B.S. intern, SASTRA University, India (Feb 2018 – Jun 2018)
    - Current Position: Ph.D. Student in Chemical Engineering, University of Twente.
17. Peter van der Linde, Visiting Ph.D. student, Twente University, The Netherlands (Jan 2018 – April 2018)
    - Current Position: Engineer, VDL Enabling Technologies Group.
18. Alexandra Ryan, Chemical Engineering B.S. student, NYU (Sep 2017 – May 2018)
    - Current Position: General Engineer/Project Manager U.S. Army Corps of Engineers.
19. Myriam Sbeiti, Chemical Engineering B.S. student, NYU (Jan 2017 – May 2018)
    - Current Position: Former CEO of Sunthetics.
20. Ricardo Mathison, Chemical Engineering B.S. student, University of Wisconsin (Jun – Aug 2017)
    - Current Position: Ph.D. Student in Chemical Engineering, NYU.
21. Janar Jeksen, Mechanical Engineering B.S. student, NYU Abu Dhabi, (Jun – Aug 2017)
    - Current Position: Not Known.

K-12:

1. Valerie Viteri (Summer 2019)
2. Sandhya Sethuraman (Sumer 2018 – Spring 2021)
3. Julian Morales (Summer 2018)
4. Nathaniel Downes (Summer 2018)
5. Angela Baigorria (Summer 2018)
6. Jason Mei (Summer 2017)
7. Xue Ye Lin (Summer and Fall 2017)

Thesis committee participation:

1. Ackwei Maclean, Ph.D. in Chemical Engineering, NYU (Expected graduation: Spring 2023)
2. Steven Farrell, Ph.D. in Chemical Engineering, NYU (Expected graduation: Spring 2023)
3. Minh Tran, Ph.D. in Chemical Engineering, NYU (Expected graduation: Spring 2023)
4. Iver Cleveland, Ph.D. in Chemical Engineering, NYU (Expected graduation: Spring 2023)
5. Kevin Wolf, Ph.D. in Chemical Engineering, NYU (Expected graduation: Spring 2024)
6. Steven Watt, Ph.D. in Chemical Engineering, CCNY and the Graduate Center at CUNY (Expected graduation: Spring 2023)
7. Shejla Pollozi, Ph.D. in Chemistry, Lehman College and the Graduate Center at CUNY (Expected graduation: Spring 2022)

8. Enrico Chinello, Ph.D. in Photonics, Ecole Polytechnique Federale de Lausanne, Switzerland (Thesis defense: April 2019)
9. Houlei Gan, Ph.D. in Engineering, Deaking University, Australia (Thesis defense: Spring 2018)
10. Benjamin Riskin, Ph.D. student in Chemical Engineering, NYU (Thesis defense: Spring 2020)
11. Yukun Liu, Ph.D. student in Chemical Engineering, NYU (Expected defense: Fall 2021)
12. Mersal Khwaja, M.S. student in Chemical Engineering, NYU (Thesis Defense: Spring 2019)

ENTREPRENEURSHIP

Sunthetics Inc (Summer 2018 – Current): I serve as co-founder and director of Sunthetics Inc, a spin-off from my lab at NYU, which aims to accelerate sustainable innovation in the chemical industry via the implementation of machine learning tools.

Summary of activities: the company was founded by me and two of my students, Myriam Sbeiti (B.S. 2018) and Daniela Blanco (Ph.D. 2020), with the initial goal to commercialize improvements discovered in my lab on the electrochemical production of adiponitrile. Through technology development grants and prizes, the company, in collaboration with my group, was able to scale-up the technology from reactors at ~1 cm^2 to ~100 cm^2 and develop product purification protocols. The company also developed automation tools for process discovery and development and machine learning software to aid in the development of new chemical processes and products. Currently, the company operates from offices at the Urban Future Labs at NYU Tandon and research labs in Temple, TX.

Awards and Contracts: First prize in NYU 300k Entrepreneurship Challenge (Technology Venture Competition), First prize in Innovention Competition, VentureWell Stage 1 and 2 Awardees, NYU Summer Launchpad, First prize in Green Tech track of University Startup Worldcup, Empire State Development NYSTAR Technology Transfer Grant, PowerbridgeNY Awardees, The Heritage Group x Techstar Accelerator, NSF SBIR Phase I. (Total funding raised: $900k)

ReactPower Inc (Fall 2018 – Summer 2019): I served as co-founder and technology advisor for ReactPower Inc, a spin-off company from my lab at NYU that focused on the development of Aluminum-based nanomaterial for hydrogen production and thermal enhanced oil recovery.

Summary of activities: the company was founded by me and my postdoc, Thomas Yu, to commercialize an Aluminum nanomaterial developed by the Army Research Lab (ARL). These commercialization efforts were funded through the MD5 Launch Program at NYU, with financial resources provided by the US Department of Defense. In Fall 2018, our team characterized the reactivity of the material, its hydrogen production capabilities, and the possibility to deliver it in mixtures of hydrocarbons for enhanced oil recovery activities with energy efficiency enhancements. In Spring 2018, our team decided to incorporate a company to pursue a license agreement with ARL. The company was a finalist in the NYU 300K Entrepreneurship Challenge and obtained the best pitch award. This startup ceased operation at the end of Summer 2018.

XPrize $100M Carbon Removal Competition (June 2021 – current): I serve as an advisor for an NYU student team in the XPrize Carbon Removal competition. The team is composed of 3 NYU Tandon Chemical Engineering Students: Adeola Akin, Suryansh Kabra, and Blazej Razewski. The focus of the team is to develop an electrochemical swing absorption device that can capture CO_2 from the air at scale. The team is expected to submit an application for the competition in Oct 2021.

SERVICE ACTIVITIES

Internal Service:

- Member of the Racial Justice, Inclusion and Diversity Committee, Chemical and Biomolecular Engineering Department, NYU Tandon (2020-current)
- Member of the Inclusion@Tandon Committee, NYU Tandon (2019-current)
    - Co-leader of Strategic Foci 2: Student recruitment sub-committee
    - Ad-hoc committee leader on Future Leaders Fellowship program
- Member of the Chemical and Biomolecular Engineering Graduate Studies Committee, NYU Tandon (2017-current)
- Faculty Speaker, Back to School Day & Golden Jubilee Induction Ceremony, NYU Tandon (Spring 2019)

External Service:

- Co-chair for *Electrocatalysis Symposium*, AIChE Virtual Meeting 2020. (Virtual)
- Co-organizer of the 2020 AIChE Battery & Energy Storage Conference. (Virtual)
- Co-organizer, ERC Planning Workshop: Center for the Electrification of the Chemical Industry. June 2020. (Virtual)
- Discussion Leader, 2020 NSF Workshop on Electroorganic Chemistry: from Synthesis to Chemical Manufacturing. Washington, DC, USA.
- Co-chair for *CO_2 electroreduction Symposium*, AIChE Meeting 2019, Orlando, FL, USA.
- Co-chair for *Green Chemical Reaction Engineering for Sustainability Symposium*, AIChE Meeting 2019, Orlando, FL, USA.
- Co-chair for *Green Chemical Reaction Engineering for Sustainability Symposium*, AIChE Meeting 2018, Pittsburg, PA, USA.
- Session chair of symposium on *(Photo)Electrocatalytic Materials and Integrated Assemblies for Solar Fuels Production*. MRS Spring Meeting 2017, Phoenix, AZ, USA.
- Co-organizer of international conference on *Pathways towards Solar-Hydrogen Deployment*, June 2016, Lorentz Center, The Netherlands.
- Guest editor for *Solar-Fuels Special Issue*, Journal of Physics D: Applied Physics. To be published in 2016.
- Co-chair of Special Symposium on *Optoelectronic Devices for Solar Energy Harvesting* at the 2014 IEEE Photonics Conference, San Diego, October 2014.
- Proposal Reviewer for National Science Foundation (CBET and Future Manufacturing Program), Department of Energy (DOE EERE), Netherlands Organization for Scientific Research (NWO), and Swiss National Science Foundation.

- Reviewer for ECS (J. Eletrochem. Soc.), ACS (J. Phys. Chem, ACS Energy Letters, Industrial Chemistry and Engineering, ACS Macro Letters, ACS Applied Polymer Materials and Macromolecules), RSC (Green Chemistry, Reaction Chemistry and Engineering, Energy and Environmental Science), Wiley journals (Angewandte Chemie, Advanced Materials and Advanced Energy Materials), PNAS, Nature Communications, and Cell (Joule, Chem, Chem Catalysis).