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EDUCATION

Ph.D. Chemical Engineering, University of Wisconsin-Madison, 2011.

Advisor: Professor Nicholas L. Abbott

Thesis: Impact of Chemical Nanopatterns on Directed Assembly

B.S. Chemical Engineering, University of Puerto Rico – Mayagüez, 2006.

RESEARCH INTERESTS

Colloidal and interfacial phenomena, surfactant science, hydrophobic effect, nanoscale science.

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Chemical Engineering, University of Puerto Rico – Mayagüez, Mayagüez, PR, February 2017 – Present.

Honorary Associate, Department of Chemical Engineering, University of Wisconsin – Madison, Madison, WI, July 2017 – Present.

Visiting Assistant Professor, Department of Chemical Engineering, University of Wisconsin – Madison, Madison, WI, July 2017 – August 2017.

Associate Research Scientist, The Dow Chemical Company, January 2012 – January 2017.

Dow Industrial Solutions R&D, Freeport, TX (July 2013 – January 2017).

- Research project leader for the development of surfactant formulations for Improved Oil Recovery (IOR). Coordinated research activities of a team of scientists and engineers within Dow Industrial Solutions R&D, Dow Oil & Gas R&D, and Corporate R&D, to deliver on project goals and meet critical milestones for product commercialization.
- Principal investigator and technical advisor for university collaborations through Dow Chemical University Partnership Initiative Program.
- Worked on product development for various markets, including fuel additives, paints and coatings and home care. Collaborated with business marketing organization to understand market needs, define and implement new product introduction processes, and assess project economics.

Research Assignments Program (January 2012 – July 2013).

- Dow Oil & Gas, Freeport, TX (1/2013 – 7/2013) – Developed and implemented methods for characterization of fundamental properties and performance of polymeric flocculants for Canadian Oil Sands tailings remediation.
- Dow Microbial Control, Spring House, PA (January 2012 – January 2013) – Designed, planned and conducted research for the development of bacterial and biofilm control solutions in the Energy market.

RESEARCH EXPERIENCE

Research Assistant, Department of Chemical and Biological Engineering and Nanoscale Science and Engineering Center (NSEC), University of Wisconsin – Madison, Madison, WI, September 2006 – December 2011.

Research Intern, The Dow Chemical Company, Formulation Sciences High-Throughput Research Laboratory, Midland, MI, June 2010 – August 2010.

Visiting Researcher, Université Catholique de Louvain, Institute of Condensed Matter and Nanosciences, Bio- and Soft Matter, Louvain-la-Neuve, Belgium, June 2007.

Undergraduate Research Assistant, University of Wisconsin – Madison, Department of Chemical and Biological Engineering, Madison, WI, June 2005 – August 2005.

Undergraduate Research Assistant, University of Puerto Rico – Mayagüez, Department of Chemical Engineering, Mayagüez, PR, January 2005 – July 2006.

Undergraduate Research Fellow, National Institute of Standards and Technology, Gaithersburg, MD, May 2004 – August 2004 and May 2003 – August 2003.

PUBLICATIONS

1. Ma, C.D.; **Acevedo-Vélez, C.**; Wang, C.; Gellman, S.H.; Abbott, N.L. “Interaction of the Hydrophobic Tip of an Atomic Force Microscope with Oligopeptides Immobilized using Short and Long Tethers.” *Langmuir*. **2016**, *32*, 2985.
2. Ma, C.D.; Wang, C.; **Acevedo-Vélez, C.**; Gellman, S.H.; Abbott, N.L. “Modulation of Hydrophobic Interactions by Proximally Immobilized Ions.” *Nature*. 2015, *517*, 347.
3. **Acevedo-Vélez, C.**; Andre, G.; Dufrière, Y.F.; Gellman, S.H.; Abbott, N.L. “Single Molecule Force Spectroscopy of β -Peptide Oligomers that Display Well-Defined Three-Dimensional Chemical Patterns.” *J. Am. Chem. Soc.* 2011, *133*, 3981.
4. Santanu Kumar Pal; **Acevedo-Vélez, C.**; Hunter, J.T.; Abbott, N.L. “Effects of Divalent Ligand Interactions on Surface-Induced Ordering of Liquid Crystals.” *Chem. Mater.* 2010, *22*, 5474.

CONFERENCE PROCEEDINGS AND NON-PEER REVIEWED PUBLICATIONS

1. Rozowski, P.; **Acevedo-Vélez, C.**; Mukherjee, J.; Yu, W. “Factoring in Flooding.” *Oilfield Technology*. 2015, *8*, 65.
2. Mohler, C.E.; Poindexter, M.K.; **Acevedo-Vélez, C.**; Sanders, T.; Meyers, G.; Reinhardt, C.; Chen, W.; Singh, H.; Atias, J., “Clay-Flocculant Interactions in Developing Next Generation Flocculants for Oil Sands Tailings Fluid Fines Tailings Management.” *Proceedings of the 4th International Oil Sands Tailings Conference*, December 2014.
3. **Acevedo-Vélez, C.**; Mukherjee, J.; Yu, W.; Mounzer, H.; Buckner, W.; Falcone-Potts, S.; Hernandez, M. “Chemical Solutions for Improved Waterflooding in Carbonate Reservoirs.” *Society of Petroleum Engineers*, November 2014.

PATENTS

1. Mukherjee, J.; Das, S.; Yu, W.; **Acevedo-Vélez, C.**; Rozowski, P.M; Falcone-Potts, S.K. “Filtration and Reuse of Surfactant-containing Produced Water for Oil Recovery.” *WO2017077355 A1* (2017).

2. **Acevedo-Vélez, C.**; Yu, W.; Buckner, W.G.; Mukherjee, J. “Method for Subterranean Petroleum Recovery using a Surfactant Blend.” *WO 2016048765 A1* (2016).

CONTRIBUTED PRESENTATIONS

1. Patil, P.D.; **Acevedo-Vélez, C.**; Yu, W.; Rozowski, P.M.; Gao, M. “A Systematic Approach to Design Surfactant Based EOR Process for High Salinity and High Temperature Fractured Carbonate Reservoirs: Laboratory Evaluation.” *Society of Petroleum Engineering Workshop: Effective and Efficient Development of Fractured Carbonate Reservoirs*, Xi'an, China, July 2017.
2. **Acevedo-Vélez, C.**; Yu, W.; Patil, P.D. “Surfactant Enhanced Oil Recovery (EOR): Role of Reservoir Wettability and Oil-Water Interfacial Tension in Designing Efficient Surfactant Systems.” *253rd ACS National Meeting, Division of Colloid and Surface Chemistry*, San Francisco, CA, April 2017.
3. **Acevedo-Vélez, C.**; Gao, M. Yu, W. “Enhanced Solubility and Self-Assembly of Nonionic Surfactants in Electrolyte Solutions.” *251st ACS National Meeting, Division of Colloid and Surface Chemistry*, San Diego, CA, March 2016.
4. Mohler, C.E.; Poindexter, M.K.; **Acevedo-Vélez, C.**; Sanders; T.; Meyers, G.; Reinhardt, C.; Chen, W.; Singh, H.; Atias, J. “Clay-Flocculant Interactions in Developing Next Generation Flocculants for Oil Sands Fluid Fines Tailings Management.” *4th International Oil Sands Tailings Conference*, Alberta, Canada, December 2014.
5. **Acevedo-Vélez, C.**; Mukherjee, J.; Yu, W.; Mounzer, H.; Buckner, W.; Falcone-Potts, S.; Hernandez, M. “Chemical Solutions for Improved Waterflooding in Carbonate Reservoirs.” *Society of Petroleum Engineers, Abu Dhabi International Petroleum and Exhibition Conference*, Abu Dhabi, United Arab Emirates, November 2014.
6. **Acevedo-Vélez, C.**; Ma, D.; Gellman, S.H.; Abbott, N. L. “Directed Assembly on the Nano-scale Using β -Peptide Oligomers.” *2012 MRS Fall Meeting*, Boston, MA, November 2012.
7. **Acevedo-Vélez, C.**; Ma, D.; Gellman, S.H.; Abbott, N.L. “Understanding Hydrophobic Interactions on the Nano-Scale Using β -Peptide Oligomers.” *2012 AIChE National Annual Meeting*, Pittsburgh, PA, October 2012.
8. **Acevedo-Vélez, C.**; Dufrene, Y. F.; Gellman, S.H.; Abbott, N.L. “Impact of Nanoscopic Chemical Patterns on Supramolecular Assembly.” *Gordon Research Conference on Chemistry of Supramolecules and Assemblies*, Lucca, Italy, June 2011. *Poster Presentation*.
9. **Acevedo-Vélez, C.**; Pomerantz, W.C.; De Pablo, J.J.; Gellman, S.H.; Abbott, N.L. “Understanding the Impact of Chemical Patterns on the Interactions and Self-Assembly of Organic Macromolecules at Interfaces.” *2009 AIChE National Annual Meeting*, Nashville, TN, November 2009.
10. **Acevedo-Vélez, C.**; Pomerantz, W.C.; De Pablo, J.J.; Gellman, S.H.; Abbott, N.L. “Understanding the Impact of Chemical Patterns on the Interactions and Self-Assembly of Organic Nanostructures.” *BEST Symposium, The Dow Chemical Company*, Midland, MI, September 2009.
11. **Acevedo-Vélez, C.**; Pomerantz, W.C.; De Pablo, J.J.; Gellman, S.H.; Abbott, N.L. “Understanding the Impact of Chemical Patterns on the Interactions and Self-Assembly of Organic Nanostructures.” *83rd ACS Colloid and Surface Science Symposium*, New York, NY, June 2009.
12. **Acevedo-Vélez, C.**; Pomerantz, W.C.; Dufrêne, Y.F.; De Pablo, J.J.; Gellman, S.H.; Abbott, N.L. “AFM Force Spectroscopy of Organic Nanorods Formed from β -Peptides.” University of Wisconsin – Madison Advanced Materials Industrial Consortium, Madison, WI, October 2008. *Poster Presentation*.
13. **Acevedo-Vélez, C.**; Rinaldi, C. “Synthesis and Characterization of Nickel Nanoparticles.” *2005 AIChE National Annual Meeting*, Cincinnati, OH, October 2005. *Awarded First Place in the Materials Division of the Annual Student Poster Competition*.
14. **Acevedo-Vélez, C.**; Flores, J.C.; Colucci, J. “Self-Assembled Monolayers on Gold and Platinum Electrodes.” *2004 AIChE National Annual Meeting*, Austin, TX, November 2004. *Poster Presentation*.

PROFESSIONAL SERVICE

Member: American Chemical Society (ACS), Division of Colloid and Surface Chemistry.
Co-organizer and Session Presider: “Interfacial Phenomena & and the Oil-Water Interface”, ACS Annual Meeting, Spring 2017.

TEACHING EXPERIENCE

University of Puerto Rico – Mayagüez

INQU 4010 Momentum Transfer Operations (Spring 2017, Fall 2017).
INQU 4010 Chemical Engineering Process Design I (Fall 2017).
INQU 4027 Chemical Engineering Seminar (Spring 2017).
INQU 6029/8996 Graduate Chemical Engineering Seminar (Spring 2017).

University of Wisconsin – Madison

CBE 424 Operations and Process Laboratory (Visiting Assistant Professor, Summer 2017).
CBE 250 Process Synthesis (Teaching Assistant, Spring 2009).
CBE 324 Transport Phenomena Lab (Teaching Assistant, Fall 2008).

AWARDS AND HONORS

Vilas Conference Presentation Funds Award, 2011.
Building Engineering and Science Talent (BEST) Symposium, The Dow Chemical Company, 2009.
UW – Madison Nanoscale Science and Engineering Center (NSEC) Graduate Fellowship, 2006.
UW – Madison Graduate Engineering Research Scholars, 2006.
Puerto Rico Louis Stokes Alliance for Minority Participation, University of Puerto Rico – Mayagüez, 2006.
Hess Corporation Scholarship, University of Puerto Rico – Mayagüez, 2005.
Robert C. Byrd Honors Scholarship, U.S. Department of Education, 2001.
U.S. President's Education Award for Outstanding Academic Achievement, 2001.