

Mark M. De Luna

8303 Hasty Ave • Pico Rivera, CA 90660
Phone: (562) 631-8062 • E-Mail: mmdeluna@usc.edu

Education

- University of Southern California**, Los Angeles, CA July 2014-Present
Ph. D. Student, Chemical Engineering (GPA 3.7/4.0)
Advisor: Dr. Malancha Gupta
- Columbia University**, New York, NY Sept 2010-May 2014
Bachelor of Science, Chemical Engineering (GPA 3.3/4.0)
Minor, Biomedical Engineering

Research Experience

- Graduate Research Assistant July 2014-Present
University of Southern California, Department of Chemical Engineering
Advisor: Dr. Malancha Gupta

- Created novel method for covalently attaching functional polymer coatings to Parylene C via initiated chemical vapor deposition to attain full coverage and functionality for biomedical applications.
- Performed XPS analysis and contact angle goniometry on polymer coatings to determine the efficacy of chemical vapor deposition process parameters to achieve various functionalities.
- Elucidated liquid substrate properties effect in DC magnetron sputter deposition process.

- Undergraduate Research Assistant Jan 2011-May 2014
Columbia University, Department of Chemical Engineering
Advisor: Dr. V. Faye McNeill

- Tested the interfacial tension changes between oil and seawater caused by the addition of natural surfactants.
- Created custom inverted pendant drop tensiometer to measure the surface tension of oil in saltwater solution.
- Measured absorption of amino acids in aerosols using UV-Vis Spectroscopy to determine effect on climate, and effects in the formation of brown carbon in the atmosphere.

- Chemical Coating Engineer, Intern Summer 2013
The Boeing Company, Huntington Beach, CA

- Created and developed a research proposal to use computational methods coupled with new experimental designs for accelerated corrosion testing.
- Planned, coordinated, and interpreted test results for qualification of new production materials.
- Led investigation into new qualification methods for advanced multifunctional coatings.

- Chemical Coating Engineer, Intern Summer 2012
The Boeing Company, Seattle, WA

- Created computational fluid dynamics model using ANSYS Fluent for robotic paint spray application systems.
- Planned, coordinated, and executed coupled experimentation and optimization of robotic paint spray application systems to shorten lead times, minimize labor, and reduce material waste.
- Utilized surface analysis and rheological characterization to improve coating application methods and develop in-house

standard operating procedures for new techniques.

- Proposed improved mathematical algorithm for surface tension calculation and ASTM procedure.

Peer-Reviewed Publications

M. M. De Luna, B. Chen, L. C. Bradley, R. Bhandia, M. Gupta, "Solventless grafting of functional polymer coatings onto Parylene C," *Journal of Vacuum Science & Technology A*, 2016, 34, 041403.

G. Dianat, S. Seidel, **M. M. De Luna**, M. Gupta, "Vapor Phase Fabrication of Hydrophilic and Hydrophobic Asymmetric Polymer Membranes," *Macromolecular Materials and Engineering*, 2016, 301, 1037.

Presentations

Mork Family Department Student Symposium Nov 2016
Oral Presentation: *Modification of Parylene C Substrates using Photoinitiated Chemical Vapor Deposition*

AIChE Annual Meeting: November 17-21 Nov 2015
Oral Presentation: *Modification of Parylene C Substrates using Photo-Initiated Chemical Vapor Deposition*

Mork Family Department Student Symposium Nov 2015
Poster: *Modification of Parylene C Substrates using Photo-Initiated Chemical Vapor Deposition*

Awards/Honors

National Science Foundation Graduate Research Fellowship Aug 2014-Present

Mork Family Department Fellowship Sept 2014

Leadership Experience

American Institute of Chemical Engineers Mentorship Program Sept 2014-May 2014
Columbia Chapter

- Guided underclassmen chemical engineering majors in the selection of classes, strategies for problem solving in chemical engineering classes, how to obtain research positions, and how to find internships.
- Promoted community building through team activities.

IBM Mentorship Program Nov 2010-Nov 2012

- Mentored 5th grade students in science, mathematics, engineering, and medicine fields.
- Worked with an IBM engineer to develop science and technology based activities for the 5th grader's development of technological skills.
- Co-Led the development of the Columbia side of the program by coordinating face-to-face activities and events.

Affiliations/Memberships

Society of Hispanic Professional Engineers 2010-Present

American Institute of Chemical Engineers 2011-Present

American Chemical Society 2013-Present