

LEA WINTER

lrw2135@columbia.edu | (203)-605-5122

EDUCATION

Columbia University, New York City, NY

Department of Chemical Engineering

PhD Candidate

GPA: 3.92

Relevant Coursework:

- Advanced Chem. Eng. Thermodynamics
- Advanced Chemical Kinetics
- Chem. Eng. Applications of Electrochemistry
- Protein Engineering

Yale University, New Haven, CT

B.S. Distinction in the Major, Chemical Engineering (May 2015)

RESEARCH EXPERIENCE

Grand Technion Energy Program, Technion Israel Institute of Technology –

Summer 2014

Nitrogen Hydrogen Alternative Fuels Lab, Haifa, Israel

- Researched combustion mechanism of novel nitrogen-based alternative fuel in homemade batch reactor.
- Studied pressure effect on combustion using differential thermal and barometric analysis.
- Developed gas chromatography methods for analyzing reaction by-products.

École Nationale Supérieure de Chimie de Paris (National Superior School of Chemistry) –

Summer 2013

Plasma Process Engineering and Surface Treatment Lab, Paris, France

- Designed and prepared samples for metal-organic plasma-enhanced chemical vapor deposition (MO-PECVD), and carried out silica depositions in homemade reactor.
- Researched hydrophilic/phobic surface modification of novel polymers for microfluidics applications.
- Studied activity of catalysts deposited using MO-PECVD using catalytic ozonation of pyruvic acid in a cyclic olefin copolymer microfluidic device, via spectrophotometric, high-performance liquid chromatography, and flame atomic absorption spectroscopy measurements.

Yale School of Engineering and Applied Science – Elimelech Lab, New Haven, CT

Spring 2013

- Researched coupling of direct osmosis cleaning (DOC) with prokaryotic programmed cell death for desalination membrane biofilm removal.
- Designed a membrane DOC mathematical model to predict the concentration of hypersaline pulse necessary to stimulate backwashing.

Weizmann Institute of Science – Immuno-genomics Lab, Rehovot, Israel

Summer 2012

- Developed methods for murine mast and dendritic cell vesicle isolation, verified using qPCR.
- Isolated vesicle RNA and prepared libraries for full sequencing using ChIP-Seq.

PUBLICATIONS

1. Alon Grinberg Dana, Gal Tvil, **Lea Winter**, Gennady E. Shter, Gideon S. Grader. “**Pressure effect on combustion of aqueous urea ammonium nitrate alternative fuel.**” *Fuel* (2015) 159: 500-507.
2. **Lea Winter**, Mark S. Moore, Kathleen Wu, Caleb Small, Xiyu Wang. “**Accommodation strategies for shallow aquifer source limitations.**” *International Desalination Association World Congress on Desalination and Water Reuse* (2015): 1-13.
3. **Lea Winter**, “Fueling Oil Scarcity: Produced Scarcity, and the Sociopolitical Fate of Renewable Energy.” *Journal of International Affairs* 69.1 (2015): 195-206.
4. Bradley Da Silva, Guillaume Schelcher, **Lea Winter**, Cedric Guyon, Patrick Tabeling, Daniel Bonn, Michael Tatoulian. “**Plasma surface modification of a new family of microfluidic chips for biological applications.**” *European Cells and Materials* (2013) 26 (6): 105.

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- Bradley Da Silva, Guillaume Schelcher, **Lea Winter**, Cedric Guyon, Daniel Bonn, Michael Tatoulian. “**Enhancement of Stability and Superhydrophilicity of Plasma-Modified Microfluidic Materials.**” *In progress.*
- Bradley Da Silva, Guillaume Schelcher, **Lea Winter**, Cedric Guyon, Michael Tatoulian. “**Plasma-enhanced chemical vapor deposition of metal oxide catalysts for catalytic ozonation of pyruvic acid.**” *In progress.*

PRESENTATIONS

- Lea Winter**, Mark S. Moore, Kathleen Wu, Caleb Small, Xiyu Wang. “**Accommodation Strategies for Shallows Aquifer Source Limitations.**” International Desalination Association World Congress, San Diego, CA. 31 Aug. 2015. Digital poster presentation.
- Lea Winter**, Bradley Da Silva, Guillaume Schelcher, Cedric Guyon, Daniel Bonn, Michael Tatoulian. “**Enhancement of Stability and Superhydrophilicity of Plasma-Modified Microfluidic Materials.**” 2014 AIChE Annual Meeting, Hilton Atlanta, Atlanta GA. 17 Nov. 2014. Poster presentation.

AWARDS

- National Science Foundation Graduate Research Fellowship 2015-Present
- Columbia University Dept. of Chemical Engineering Pesco Award 2015-Present
- Journal of International Affairs* Andrew Wellington Cordier Essay Winner 2015
- Yale University Dept. of Chemical Engineering Harry A. Curtis Prize 2015
- Alan S. Tetelman 1958 Fellowship for International Research in the Sciences 2014
- Yale Summer Environmental Fellowship 2014
- Yale College Masters Richter Summer Fellowship 2013
- Schusterman Israel Travel Grant 2013
- Elisa Spungen Bildner '75 and Robert Bildner '72 Israel Travel Grant 2012
- Ganzfried Family Travel Fellowship 2012
- Yale Scroll and Key Society Member 2014-Present
- Shalom Hartman Fellowship 2014
- Yale Creative and Performing Arts Award 2013 & 2014
- Yale Leading Ladies Nominee 2014

COMMUNITY OUTREACH, TEACHING, AND LEADERSHIP ACTIVITIES

Chemical Engineering Sophomore Spring Break Project 2012-2013

Project Leader

Conceived idea for and organized trip to survey comparative desalination technologies in Florida water facilities.

Yale-New Haven Summer Science Research Institute 2014-2015

Co-Founder, Co-Coordinator

Founded and organized a program to place New Haven high school students in Yale research laboratories.

Technion SciTech International High School Summer Program Summer 2014

Mentor

Mentored three international high school students in the laboratory while interning at the Technion. Led literature discussions, guided students in formulating experiments, and taught and supervised lab work.

Yale Urban Debate League 2012-2015

President (2013-2014), Tournament Director (2012-2013), & Coach

Yale Undergraduate Ballet Company 2012-2015

President (2013-2014), Artistic Director, & Soloist

Yale Chapter of the American Institute of Chemical Engineers 2013-2015

Board Member

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STEM Likely Team

Spring 2013

Mentor

Selected by the Yale Office of Undergraduate Admissions to mentor Yale's strongest applicants in STEM fields.

Community Access Partners, Yale-New Haven Hospital

2012-2013

Co-Founder, Steering Committee Member

Worked with peers and Yale School of Public Health students to establish pilot project that provides social services for patients of the Yale-New Haven Hospital Primary Care Clinic.

Jerusalem American International School, Dance for Peace, Jerusalem, Israel

Summer 2013

Founder

Initiated dance program for children from various religious, cultural, and linguistic backgrounds.

Bertozi Foundation for Educational Access in the Congo

2012-2015

Website Developer & Advisor

Scroll and Key Senior Society

2014-Present

Member

Selected as one of top 15 students in the Yale junior class for excellence in accomplishment and character. Engaged in personal and intellectual development with fellow society members.

Yale Joseph Slifka Center Kosher Kitchen Committee

2014-2015

Founder, Coordinator

Integrated data collected on student opinion, health standards, and environmental and social sustainability to reform and improve Yale's kosher dining hall, via establishing a Kosher Kitchen Committee.

Yale Resource Office on Disabilities

Fall 2013

Note Taker

Provided detailed notes for another student for *Fluid Mechanics for Mechanical Engineers* as a Yale student job.

SKILLS

- *Language:* Advanced Hebrew, Advanced French, Beginner Russian
- *Computer:* MATLAB, Simulink, C, ASPEN Hysis, Excel, SigmaPlot, Wolfram Alpha