

# LILY A. GIDO

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Berkeley, CA

## EDUCATION

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- BS** **Carnegie Mellon University** – Pittsburgh, PA *May 2021*  
Chemical Engineering major, Physics minor  
3.96/4.0 Cumulative GPA, 4.0/4.0 Major GPA  
Dean's List (All Semesters)  
AIChE and SWE member
- PhD** **University of California Berkeley** – Berkeley, CA *May 2026*  
Chemical and Biomolecular Engineering  
Balsara Lab

## HONORS AND AWARDS

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- Senior Honors Research Thesis Program** *2020*  
An invitation only honor involving a year-long research project with the Bettinger lab, a research paper and a public presentation in May 2021
- Summer Undergraduate Research Fellowship (SURF)** *2020*  
A grant awarded during the Summer and Fall of 2020 for full time research with the Bockstaller lab. Includes a minimum 300 hours of research and a public presentation in May 2021
- Tau Beta Pi Engineering Honors Society** *2019 to Present*  
Invitation based honors society open to the top 1/8 of the Junior engineering class

## RESEARCH EXPERIENCE

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- Bockstaller Group: Material Science and Engineering Department,  
Carnegie Mellon University** *May 2019 – May 2021*  
**Undergraduate Researcher – (9h/week), (30h/week during Summers)**
- Working under Prof. Michael Bockstaller to characterize the behavior of polymer brushes on silica nanoparticles using both dynamic and static light scattering.
  - Using Zimm-Plot analysis to observe the effects of brush density, core composition, and particle concentration on the second virial coefficient, thereby relating these system parameters to interparticle interactions.
  - Currently mathematically modelling the influence of polymer brushed nano-particles geometry on experimental data analysis using MATLAB and Python
  - Presenting results at the Meeting of the Minds conference at Carnegie Mellon University in May.

**Bettinger Group: Materials Science and Engineering Department,  
Carnegie Mellon University**

*August 2020 – May 2021*

**Undergraduate Researcher – (9-12h/week)**

- Making advancements in the design of an ingestible electronic sensor used to measure the impedance of the esophagus for early detection of eosinophilic esophagitis.
- Using electrochemical impedance spectroscopy to track sensor function *in-vitro*.
- Contributing to changes in the physical design of the sensor based on impedance results.
- Currently working to publish a research paper on electrochemical impedance spectroscopy of phantom tissue models with different electrolyte concentrations.
- Presenting results at the Meeting of the Minds conference at Carnegie Mellon University in May and writing a senior thesis paper.

**Santore Group: Polymer Science and Engineering Department., University of  
Massachusetts Amherst**

*May 2018 to August 2018*

**Undergraduate Researcher – (40h/week)**

- Researched flow patterns and surface-particle interactions of bacteria and various microparticles with different coatings under the advisement of Dr. Molly Shave and Prof. Maria Santore
- Optimized the synthesis and purification of silica micro-rods for pharmaceutical applications

**PROJECTS**

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**Adsorption Based Direct Air Capture Method**

**Using Magnesium based MOF**

*September 2020 - December 2020*

**Chemical Process Systems Design (06-421) – Carnegie Mellon University – (20h/week)**

- Researched, developed, and simulated a complete direct carbon capture process using a tetra-amine appended magnesium metal oxide framework as a chemisorbent for carbon dioxide.
- Used a combination of Python, MATLAB, and Aspen to generate and analyze safety, cost and energy usage of the process.
- Reported results over three detailed reports totaling 106 pages.
- Presented in front of representatives from ExxonMobile, Dow, Covestro, NETL, Linde, Lanxess, CMU, Harvard, and MIT

**Iodine Based Hand Sanitizing Agent to Help Counteract**

**Covid-19**

*February 2020 - May 2020*

**Transport Process Laboratory (06-363)– Carnegie Mellon University – (7h/week)**

- Created and tested a hand sanitizer using iodine as the sanitizing agent as an alternative to ethanol or isopropyl alcohol based sanitizers which can cause contact dermatitis for some users.
- Developed as a response to the increased use of hand sanitizer as a result of the Covid-19 pandemic.

**Analysis of Antioxidant Content in Berries** *March 2019 - May 2019*  
**Laboratory I, Chemical Analysis (09-221) – Carnegie Mellon University – (12h/week)**

- Worked on a project to determine the complete phenolic and anthocyanin content in four types of berries.
- Used the pH differential method of UV/Visible spectroscopy, the Folin-Ciocalteu reaction and HPLC analysis to produce results.
- Presented results at the Mellon Institute of Industrial Research in Pittsburgh, PA.

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**LEADERSHIP**

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**First Year Orientation Program – Carnegie Mellon University**

**Orientation Counselor – (105h/week)** *August 2018, August 2019*

- Helped run a 2 week long first year orientation program, specifically overseeing a group of 30-50 first year students each year.
- Facilitated several campus wide discussions about equity in academics. Specific topics included disability, race, gender, sexuality and first-generation status.

**Orientation Leader – (105h/week)** *August 2020*

- Led a group of 14 orientation counselors and over 200 first generation students during the 2020 orientation program.
- Aided in transferring the orientation program to an online format to accommodate the pandemic.
- Helped to implement an afternoon long program to extend diversity and inclusion training in orientation.

**American Institute of Chemical Engineers Advising**

**Program – Carnegie Mellon University – (1-2h/week)** *August 2020 – May 2021*

- Currently advising one first year and one second year student in the Chemical Engineering department
- Meeting bi-weekly with advisees to give academic advice and help students access research opportunities.

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**SKILLS**

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**Programming and Software:** MATLAB, Origin, Python, Aspen

**Laboratory Instruments:** Hardness tester, tensile tester, bend test apparatus, optical inverted microscope, optical lateral microscope, scanning electron microscope, static and dynamic light scattering instruments, UV/visible spectrophotometer, atomic absorption spectrophotometer, high performance liquid chromatograph, gas chromatograph, high performance ion chromatograph, Brookhaven viscometer, Cannon-Fenske viscometer, Electrochemical impedance analyzer