Min Shin

Education

Iolani High School, Honolulu, HI **July 2022 – Present**
Weighted GPA: 4.3182
Unweighted GPA: 4.00
SAT: 1550
Relevant Courses: AP Chemistry, AP Calculus BC, AP Biology, AP Statistics, AP Physics 1, Multivariable Calculus, Ordinary Differential Calculus, Linear Algebra (at Stanford Pre-Collegiate Studies)

Club Activities

Founder, *Chemistry Club at Iolani High School,* Honolulu, HI **April 2024 – Present**
- National Chemistry Olympiad (USNCO) Qualifications (2024, 2025); High Scorer in Local Exam (2025); USNCO Honors Top 150 Nationwide (2025)
- Forge interests in chemistry within the school community by providing diverse learning opportunities; Set up after-school laboratory sessions outside of the class to showcase intriguing and advanced experiments and foster interest in chemistryo
- Hosting tutoring sessions to help sophomores learning new concepts or training sessions with sample problems from USNCO

Team Captain, *Science Olympiad at Iolani High School,* Honolulu, HI **August 2022 – Present**
- Team Co-Captain (25-26); Cabinet (24-25); Member (22-24)
- Participated in 10+ national invitationals/tournaments in the past three years
- Forged a friendly environment not only by communicating with my partners but also by helping other team members during their other events
- Collaborated and motivated other team members to fully engage in their events and thrive in the tournaments from the local to national level by encouraging them to fill out test logs
- Introduced some essential guides for the success of the team (e.g., quality control, early preparation, specialization, etc.)
- Organized optional practices as well as fun activities afterwards to further prepare the team for upcoming major tournaments and strengthen the team bond
- Illustrated excellent performances in many tournaments, contributing to the team's success
- 9th place at MIT invitational and 12th place at the 2025 national tournament for the first time in 'Iolani Science Olympiad history

Team Captain, *Math Team at Iolani High School*, Honolulu, HI **August 2022 – Present**
- Team Co-Captain (25-26); Varsity Member (22-26)
- Participated in 20+ state competitions in the past three years
- Awarded several perfect score honor rolls; Led team to success by acquiring perfect or nearly perfect scores on every competition
- Co-writer of competitive, high-quality tryout problems

Team Captain, *Science Bowl at Iolani High School*, Honolulu, HI **October 2023 – Present**

- Team Co-Captain (24-26); A-Team Member (24-26); Member (23-24)
- Actively led weekly meetings by reading packets and setting up the buzzers
- Introduced some essential guides for the success of the team (e.g., preparation log, specialization, etc.)
- Fostered a strong STEM community while communicating with participants nationwide, sharing essential study materials (textbooks, research articles, practice problems, etc.) through social media, moderating some competitions, and writing sample questions
- Actively led local competition ('Iolani Science Bowl Invitational open for all the students in Oahu) with my teammates (e.g., setting up the competition rooms, sign-up table, placards for each participant, writing packets) and currently planning to set up more in-person and virtual tournaments during the summer and 25-26 school year
- Currently organizing the first trip to an in-person competition at UC Berkeley for the first time in ‘Iolani Science Bowl history
- Greatly contributed to the success of the 5-member team in the many virtual tournaments and the official 2025 Science Bowl National Tournament in Washington D.C.
- Ranked top 12 nationwide, for the first time in the history of Iolani, and earned $1000 for the science department

Lead Trombonist, Stage *Band at Iolani High School*, Honolulu, HI **August 2022 – Present**

- Performed solos and collaborated with the band for active engagement
- Led the trombone section by encouraging fellow musicians to express their voice through music
- Outreached by encouraging students outside of the band to join the band, resulting in a full trombone section for the first time in a few years
- Actively helped out setting up the Big Band Bash festival (jazz festival open for all the jazz bands in Oahu) every year (e.g., setting up the gears, donating/selling food/drinks to raise funds for all the bands at school)

Research Projects

Independent Research, Lumiere Research Program **June – August 2024**

- A discussion on different techniques to enhance the mechanical and thermal properties of biodegradable plastics
- Biodegradable plastics often struggle to match the mechanical and thermal performance of traditional plastics like PE and PET, creating a trade-off between durability and environmental sustainability. Structural factors such as polymer crystallinity and molecular composition influence both strength and degradation rate. Advances like copolymerization (e.g., PLA-PHB blends) and natural fiber additives show promise in improving this balance, but further research is needed to enhance both performance and biodegradability.
- The primary purpose is to create more sustainable catalysts, organobismuth hydride, which could be alternatives to transition metal catalysts that are generally more toxic and expensive

Research Intern, High School Research Association in UT Austin, TX **June – July 2025**

- Actively assisted research about selective hydrogenation of furfural to furfuryl alcohol in computational material science lab led by Weirui Chan
- Furfuryl alcohol is an important molecule for synthesizing furan resins. These resins are generally used for coatings and adhesives due to their excellent heat stability and chemical resistance.

Furfuryl alcohol is derived from furfural through hydrogenation of the carbonyl group. However, if hydrogenation breaks the carbon-carbon bond, undesirable compounds like furan and tetrahydrofuran (THF) are produced
- The purpose of the research is to find the most thermodynamically and kinetically favorable reaction pathway resulting in furan and THF consequently to prevent such reactions
- Use of computational method such as VASP to predict the potential energy minima of each molecules, resulting in accurate theoretical enthalpy of reaction
- Use of nudged elastic band method to create the reaction coordinates of catalysis, resulting in accurate activation energy of the reaction

Research Intern and Co-Principal Investigator, Sattasathuchana Group at UH Manoa, Honolulu, HI
July 2025 – Present
- Actively assisted minor researches such as exploring molecular geometries of isomers of pyridine and silicon-substitute or constructing course curriculum at UH by reviewing different learning exercise such as predicting UV-Vis spectra of organic molecules in computational lab led by Tosaporn Sattasathuchana
- Principal Research: performing chemical bonding analysis of Bi-organometallic system (biphenyl bismuth with different para-activating groups) due to its potential to be an effective catalyst for degradation of polymers
- Use of computational methods such as Hartree-Fock Methods and DFT to optimize molecular geometry and oriented molecular orbital analysis to calculate KBO (kinetic bond order) of each quasi-atomic orbitals
- The ultimate purpose is to determine minima of homolytic cleavage energy since biphenyl bismuth complexes radicalize to catalyze the polymer reaction

Science Bowl & Science Olympiad Tournaments Officials

Tournament Co-Director, ‘Iolani Science Bowl Invitational
January 2025, January 2026
- Hosted local invitational with five local high schools participating
- Created agenda for the competition day (room assignments, organizing brackets, room set-ups, etc.)
- Set up snacks and check-in tables for other schools

Tournament Question Writers and Moderator, Amador Valley Science Bowl Invitational
July – January 2026
- Writer of entire sets of 100+ chemistry toss-ups and bonuses for the virtual tournament in January
- Moderating each rounds from round robins to double elimination rounds

Tournament Question Writers, Yale Science Bowl Invitational
July – January 2026
- Co-writer of sets of 100+ chemistry toss-ups and bonuses

Tournament Question Writers and Event Supervisor, Mason Science Olympiad Invitational
September – November 2026
- Co-writer of chemistry lab and materials science test for tournament of 100+ schools participating

Community Involvement

Intern, *Rep. Sam Satoru Kong's Office at the Hawaii Congress,* Honolulu, HI **March 2024 – Present**

- Interned during the spring break every year
- Participated in different legislative processes such as floor hearings, committee meetings, etc.
- Conducted meaningful discussions with representatives about socioeconomic and environmental issues in the community in HI
- Actively advised the representative of different environmental issues in Hawaii, utilizing scientific knowledge

Head Tutor, *Math Center at Iolani High School,* Honolulu, HI **August 2023 – Present**

- Member (23-25); Head tutor (25-26)
- Tutored 200+ middle school and high school students who find math challenging throughout the years
- Empowered students to be actively engaged with the learning material by fostering a safe and collaborative learning atmosphere
- Created activities for tutors to foster a friendly environment within the math center
- Produced videos to advertise the math center and encourage more students to visit the math center

Volunteer, *Hawaii Foodbank,* Honolulu, HI **May 2024**

- Created 5000+ food packages to contribute to the health and wellness of elders in Hawaii and reduce food waste

Intern, *WAIEA Water,* Honolulu, HI **September 2025 — Present**

- Actively assisted the employees at distribution center of WAIEA Water
- Participated in the initiatives of providing sustainable water source not only to Hawaii community but also to the world by utilizing the science and technology
- Actively reviewed and explained the science behind the machines such as reverse osmosis and carbon filter to highlight the viability of the devices

Awards and Honors

Math Team

Team

1st Place, Oahu Math Competition (State) **2023, 2024, 2025**
7th Place, Artelab Math Team Competition (National) **2023**
10th Place, Artelab Math Team Competition (National) **2022**

Individual

5x Perfect Score Honor, Oahu Math Competition (State) **2023-2025**

Olympiads

Distinction Roll, AMC (National) **2023**
Qualified Member, AIME (National) **2023**
Qualified Member, National Chemistry Olympiad (National) **2024, 2025**
USNCO Honors Top 150 Nationwide (National) **2025**
USNCO Local High Scorer (State) **2025**

Science Bowl

Top 12, 2025 National Science Bowl (National)
Top 6, 2025 Niskayuna Winter Invitational (National)
Top 8, 2025 Clements Invitational (National)
Top 8, 2025 Thomas Jefferson Invitational (National)
Top 12, 2025 Blair-Amador Invitational (National)

Science Olympiad

Individual (State)

1st Place in Material Science, Iolani Invitational (State) **2024**
1st Place in Forensics, Iolani Invitational (State) **2024**
1st Place in Robot Tour, Iolani Invitational (State) **2024**
1st Place in Chemistry Lab, State Tournament (State) **2025**
1st Place in Material Science, State Tournament (State) **2025**
1st Place in Chemistry Lab, Leeward Regional Tournament (State) **2025**
1st Place in Robot Tour, Leeward Regional Tournament (State) **2025**

Individual (National)

2nd Place in Codebusters, Boyceville Virtual Invitational (National) **2023**
7th Place in Chemistry Lab, Boyceville Virtual Invitational (National) **2024**
3rd Place in Chemistry Lab, Highland Invitational (National) **2024**
4th Place in Material Science, Highland Virtual Invitational (National) **2024**
18th Place in Chemistry Lab, MIT Invitational (National) **2025**
18th Place in Material Science, MIT Invitational (National) **2025**
2nd Place in Chemistry Lab, Jordan Invitational (National) **2025**
10th Place in Material Science, 2025 National (National) **2025**
14th Place in Chemistry Lab, 2025 National (National) **2025**

Team

Top 15 in 2024 National Tournament **2024**
Top 10 in 2024 Highlands Invitational **2025**
Top 9 in MIT Invitational **2025**
Top 2 in Jordan Invitational Tournament **2025**
Top 12 in 2025 National Tournament **2025**

National Spanish Exam

Gold Medal Spanish I NSE **2023**
Silver Medal Spanish II NSE **2024**
Gold Medal Spanish III NSE **2025**

A comprehensive overview of my academic work, research interests, and community initiatives can be found on my personal website, which also highlights selected projects and publications. Additional details about my professional background and leadership experiences are available on my LinkedIn page:

https://engineershin.com/
https://www.linkedin.com/in/min-shin-352250301