

Leonard W. Sprague Jr.

LinkedIn: /in/leonard-sprague

Email: lenwsprague@gmail.com

Objective Statement

Learning thrives on engagement. Engagement manifests from recognizing value. Value evolves and is understood through dialogue between teachers and students. In the face of an upswelling AI presence that threatens to bypass genuine engagement, we must reimagine how we connect by crafting dialogues that acknowledge both the possibilities and pitfalls of AI within our learning environments.

Education

Brown University, Providence, RI
Ph.D. in *Chemistry (Computational)*
Period: July 2016 - August 2021

Bridgewater State University, Bridgewater, MA
B.Sc. in *Chemistry* with *Environmental* and *Professional* concentrations
Minor in *Aviation Science: Flight Training*
Period: September 2011 – May 2016

Professional Employment

2024 – Present, Project Assistant Professor (特任講師), University of Tokyo
2026 – Present, Lecturer (担当教員), Keio University
Summer@Brown Course Instructor, Brown University [7+ years]
JET Assistant Language Teacher (ALT), Hibiya High School [2.5 years]
General Chemistry TA, Brown University, CHEM 0330 [2 years]
Organic Chemistry PAL (I & II), Chemistry, Bridgewater State University [2 years]
Martial Arts Instructor, South Shore Martial Arts Center [7+ years]

Leadership Roles (University)

University of Tokyo

Co-chair, AI in Teaching Practices Committee [3 years]
Consultant, Center for Academic Writing [1 year]

Brown University

Co-chair/Member, Graduate Student Leadership Committee (GSLC), 2017 – 2021
Member, Diversity Inclusion Action Committee (DIAC), 2017 – 2021
Co-organizer, Incoming Graduates Visitation Weekend, 2017 – 2021

Academic Courses (Selected)

University of Tokyo, Project Assistant Professor (特任講師) | April 2024 – Present

(A) Academic Writing Courses (Junior Level / 1st years)

ALESS (Active Learning of English for Science Students): Designing courses to guide students from research question and experimental design to presentations & IMRD research papers.

ALESA (Active Learning of English for Students of Arts): Designing courses facilitating critical reading & writing skills through analysis of sources, argument construction and formal essay writing.

FLOW (Fluency-Oriented Workshop): Designing courses fostering academic discussion and collaboration skills through semi-structured discussion, facilitation, and presentation activities.

(B) Advanced Elective Course (Senior Level / 3rd and 4th years, Graduate students)

AI Frenemy (Autumn 2025, ongoing): Facilitating interrogation of the diverse representations of AI from the past to present day through the mediums of science fiction, academic research, and media communications. Extensive reflective practice and student-driven final project.

Writing to Learn, Learning to Write: The possibilities and pitfalls of large language models, such as ChatGPT (Spring 2024 to Autumn 2025): Facilitating discourse around the intersection of writing and large language. Course integrates technical explanations with public AI reporting to build technical understanding and an awareness of AI/LLM's societal impact. Extensive reflective practice and student-driven final project.

Keio University, Lecturer (担当教員) | April 2026 – Present

Exploring AI in Sci-Fi and Society / A Deep Dive (Spring 2026, ongoing): designed for 1st and 2nd year EFL students to develop a more critical understanding of AI separate from the “hype.” Taught at Intermediate and High Intermediate English levels (approx. CEFR B1 to C1).

Hibiya High School, JET Assistant Language Teacher (ALT) | 2021 – March 2024

Designing English language curricula that drew on materials and methodologies from media literacy and literature to debate and argumentation.

Workshops & Seminars

Unraveling the “Magic” of AI.

University of Tokyo (東京大学)

Presented by: Len Sprague, August 2026

Designing AI-Integrated Classroom Activities in ALESS/A Courses.

University of Tokyo (東京大学)

Presented by: Len Sprague and Eric Vanden-Bussche, April 2026

Pedagogy & AI: How AI Usage and Capability Inform Classroom Policy and Practice.

Keio University (慶應義塾大学)

Presented by: Len Sprague, March 2026

Saving Lives with Synthetic Chemistry: Understanding a 2025 Chemical Innovation for Viral Detection. *Hibiya High School (日比谷高等学校)*

Presented by: Len Sprague, March 2026

AI in Higher Education – Fireside Chat.

Organized by: *the MIT Club of Japan*

Presented by: Dean Agustin Rayo (Primary Speaker) & Prof. Len Sprague

AI in Presentations: Creation is what you make of it. *Kyoto University (京都大学)*

Presented by: Len Sprague, October 2025

AI and Agency: Preserving Student Agency During Peer-review with AI Integration.

University of Tokyo (東京大学)

Presented by: Len Sprague and Eric Vanden Bussche, June 2025

Overwhelmed to Organized! Reading Scientific Papers with Purpose (and Technique).

Hibiya High School (日比谷高等学校)

Presented by: Len Sprague, June 2025

Computers & Chemistry: How chemistry can be data, & how computers can do chemistry.

Hibiya High School (日比谷高等学校)

Presented by: Len Sprague, May 2024

Brazil & Bolsonaro: Understanding the Jan. 8th Insurrection.

Hibiya High School (日比谷高等学校)

Presented by: Len Sprague & Aku Owaka-Haigh, February 2023

Understanding the Impacts of Overturning Roe v. Wade.

Hibiya High School (日比谷高等学校)

Presented by: Len Sprague & Aku Owaka-Haigh, July 2022

Teacher Training

Sheridan Teaching Consultant Seminar

Brown University Sheridan Center for Teaching, Fall 2019

English Language Support Training – Working with Multilingual Writers

Brown University Sheridan Center for Teaching and Writing Center, Spring 2019

Sheridan Teaching Seminar – Certificate 1, Reflective & Inclusive Teaching

Brown University Sheridan Center for Teaching, Spring 2018

Publications

Academic Journals

“GenAI as Condition: Faculty Renegotiations of Professional Identity in the Classroom” (est. 2026) Editor accepted. Reviews pending.

“PLeW-NLG: Interactive Exploration of Human Evaluation Data across NLG Tasks” Demo paper, INLG 2026 Conference. Accepted. (2nd author)

“Collaborative exploration of complex data landscapes with PLeW” (est. 2026-7) Oral Archives Journal. Accepted, In press. (2nd author)

“Maximizing Thermoelectric Figures of Merit by Uniaxially Straining Indium Selenide” (2019), Journal of Physical Chemistry C. (1st Author)

“Multicomponent Molecular Memory” (2019), Nature Communications. (7th author)

“Exploring Chemical Equilibrium for Alcohol-Based Cobalt Complexation through Visualization of Color Change and UV-vis Spectroscopy” (2019), Journal of Chemical Education, accepted and published. (3rd Author)

“Applying 1H NMR spectroscopy to develop a kinetic model for the transesterification of glycerol fatty acid triesters” (2016), The Nucleus, Northeastern Section of the American Chemical Society. (1st Author)

“The Archbishop’s Odyssey” (2014), The Undergraduate Review, Bridgewater State University, Journal of Undergraduate Research. (1st Author)

Science Writing

“Struggle of choice,” ASBMB Today, Night Owl Series, April 2019

Research Experience

GenAI and Education Research: ***“Perceived Usefulness, Self-Efficacy, and Ethical Tensions: Faculty Attitudes Toward AI in First-Year Writing Instruction.”*** University of Tokyo, with Prof. Eric Vanden Bussche (co-Principal Investigator) and Prof. Natsuno Funada (Research Investigator), 2025 – present. *In-progress.*

GenAI and Education Research: ***“Enhancing EAP Students’ Research Competency and Self-Efficacy through GenAI Tools: Exploring Experiences, Perceptions, and the Impact of AI Interventions on First-Year Academic Writing and Research Practices,”*** University of Tokyo, with Prof. Eric Vanden Bussche (co-Principal Investigator) and Prof. Natsuno Funada (Research Investigator), Spring 2025 – present. *In-progress.*

Accessibility of Complex Data Landscapes: ***“Collaborative exploration of complex data landscapes with PleW,”*** University of Tokyo, with Prof. Francesco Cangemi and Dr. Fahime Same (Trivago N.V.), Spring 2026. *Development ongoing.*

Computational Chemistry Research: ***“2D Post-Transition Metal Chalcogenides: Tin Sulfide CO₂ Reduction Catalysis,”*** Brown University, with Dr. Brenda Rubenstein (Mentor), Summer 2018 – Present

Computational Chemistry Research: ***“Thermoelectric 2D Indium Chalcogenides under Uniaxial Strains,”*** Brown University, with Dr. Brenda Rubenstein (Mentor) and Dr. Jeong-Pil Song (Post-Doc), Summer 2018 – Present

Computational Chemistry Research: ***“CdSe-CdS Core-shell Nanoparticle Semi-empirical Simulation,”*** Brown University, Mentor: Dr. Brenda Rubenstein, Summer 2017 – Fall 2017

Experimental Chemistry Research: ***“Molecular Informatics with Ugi Reaction Products”*** Brown University, Mentor: Dr. Brenda Rubenstein, Lab Advisor: Dr. Jason Sello, Summer 2017

Computational Chemistry Research: ***“Ising Model and Quantum Monte Carlo Techniques”*** Brown University, Mentor: Dr. Brenda Rubenstein, Summer 2016 – Fall 2016

Experimental Chemistry Research: ***“Applying 1H NMR spectroscopy to develop a kinetic model for the transesterification of glycerol fatty acid triesters,”*** Bridgewater State University, Mentor: Dr. Edward Brush, Summer 2015 – 2016

Experimental Chemistry Research: ***“Southeastern Massachusetts Student Network for Biodiesel Research and Education,”*** Bridgewater State University, Mentor: Dr. Edward Brush, Summer 2014 – Fall 2015

Experimental Chemistry Research: ***“Applying Green Chemistry Principles to Biodiesel Synthesis from Waste Vegetable Oil”***, Bridgewater State University, Mentor: Dr. Edward Brush, Spring 2014 – Fall 2014

Mathematics Research: ***“The Archbishop: New Paths, Creating New Opportunities”***, Bridgewater State University, Mentor: Dr. Ward Heilman, Spring 2013 – Summer 2014

Research Presentations

Conference

“Thermoelectric (Uniaxial) Strain Engineering: Indium Selenide”, Poster Presentation, American Chemical Society Conference, Orlando, FL, April 3rd 2019

“Applying 1H NMR spectroscopy to develop a kinetic model for the transesterification of glycerol fatty acid triesters”, Poster Presentation, Northeastern Student Chemistry Research Conference and Career Symposium, April 16th 2016

“Applying 1H NMR spectroscopy to develop a kinetic model for the transesterification of glycerol fatty acid triesters”, Poster Presentation, American Chemical Society Conference, March 14th 2016

“Southeastern Massachusetts Student Network for Biodiesel Research and Education”, Poster & Oral Presentation (Group), EPA P3 Expo, April 11th 2015

“Southeastern Massachusetts Student Network for Biodiesel Research and Education”, Poster Presentation (Solo), American Chemical Society Conference, March 23rd 2015

“The Archbishop: New Paths, Creating New Opportunities”, Poster Presentation, National Conference on Undergraduate Research (NCUR), April 3rd 2014

“The Archbishop: New Paths, Creating New Opportunities”, Oral Presentation, Mathematics Association of America (MAA) Northeastern Sectional Meeting, November 22nd 2013

Institutional

“Trust the Students: Elevating Student Agency and Confidence With Discourse around LLMs (such as ChatGPT)”, Oral Presentation, University of Tokyo, ALESS/A/FLOW Post-Semester Workshop, January 31st 2025

“Thermoelectric (Uniaxial) Strain Engineering: Indium Selenide”, Oral Presentation, Brown University Chemistry Department’s Physical Chemistry Tea Session, March 21st 2019

“Low-Dimensional Materials - Thermoelectric Strain Engineering & Catalysis”, Oral Presentation, Bridgewater State University Chemistry Seminar, October 4th 2019

“Thermoelectric (Uniaxial) Strain Engineering: Indium Selenide”, Oral Presentation, Brown University Electronic Structure Meeting, March 13th 2019

“Simulating Transition Metals and Transition Metal Oxides: Importance and Methodologies”, Oral Presentation, Brown University Chemistry Department’s Physical Chemistry Tea Session, October 12th 2017

“Applying 1H NMR spectroscopy to develop a kinetic model for the transesterification of glycerol fatty acid triesters”, Poster Presentation, Bridgewater State Summer Symposium, August 7th 2015

“Southeastern Massachusetts Student Network for Biodiesel Research and Education”, Oral Presentation (Group), BSU Chemistry Department Seminar, February 20th 2015

“Applying Green Chemistry Principles to Biodiesel Synthesis from Waste Vegetable Oil”, Poster Presentation, Bridgewater State Undergraduate Summer Symposium, August 8th 2014

“The Archbishop: New Paths, Creating New Opportunities”, Poster Presentation, Bridgewater State Undergraduate Summer Symposium, August 9th 2013

Awards & Honors

William T. King Prize for Teaching, Brown University Chemistry Department
American Institute of Chemists Award in Chemistry, American Institute of Chemists
T. Leonard Kelly Award in Chemistry, Bridgewater State University
Departmental Honors Member/Graduate, 2011 – 2016
Dr. George A. Weygand Scholarship, Bridgewater State University
Dr. Henry '58 and Rosemary Daley Chemistry Scholarship, Bridgewater State University
CollegeBoard Advanced Placement Programs, AP Scholar with Honors Award, 2011
Deans List, all semesters, Bridgewater State University

Scholarships & Grants

2018/'19, William R. Potter Grant, Brown University Chemistry Department
2018, Graduate Research Travel Grant, Brown University Graduate School
2017, Graduate Travel Grant, Brown University Graduate School
2017, GSC Travel Grant, Brown University Graduate Student Council
2015, Norris-Richards Summer Grant, North-Eastern Section of the ACS
2013, Adrian Tinsley Program Summer Research Grant, Bridgewater State University
2012, Paul '68 and Barbara Killgoar Annual Fund Scholarship, Bridgewater State University
2011, Abigail Adams Scholarship, Bridgewater Raynham Regional High School

Writing, Consultation & Editing Experience

ALESS/A Program Affiliate @ Center for Academic Writing at Komaba, University of Tokyo, Spring 2025

Writing Consultant & Editor, Self-employed, Fall 2020 – Fall 2022

Writing Consultant, Brown University, Fall 2018 – Fall 2020

Writing Studio Senior Consultant and Fellow, Bridgewater State University, Spring 2012 – Spring 2016

STREAMS Consultant, English and Science, Bridgewater State University, Summer 2014

Mentoring Experience

Diversity Mentor, Brown University, Summer 2018

Graduate Student “Buddy”, Brown University Fall 2017/'18/'19

Leadership Roles (Non-University)

Hibiya High School

Mentor, Global Leadership Program (GLP), 2021 – 2023

Chair, English Speaking Society (ESS), 2021 – 2023

Laboratory Skills

General Topics

Proficiency with “bench top” general chemistry, organic chemistry, and biochemistry techniques – Ex: synthesis, transfers, reflux, assays, etc...

Analytical/Instrumental

Infrared Spectroscopy, Thin-Layer Chromatography, $^1\text{H}/^{13}\text{C}$ Nuclear Magnetic Resonance Spectroscopy, Ultraviolet-visible Spectroscopy, (“Flash”) Column Chromatography, Gas Chromatography Mass Spectrometry, Flame Atomic Absorption Spectroscopy

Technical Workshops

Telluride School on Stochastic Approaches to Electronic Structure Calculation

Telluride Science Research Center (TSRC), Summer 2017

Computer Skills

AI Tools (e.g. LLMs): Claude, Gemini, ChatGPT, Local LLMs (e.g. Ollama) + others

3D Design Software: Blender, Tinkercad, Inventor, 3ds Max

Audio Editing Software: Audacity

ChemBioOffice: ChemBioDraw, ChemBio3D, ChemBioFinder

Office Software: Word, Excel, PowerPoint

Citation Software: Zotero, OneNote

Programming Languages: Python, Matlab

Chemical Modeling Programs: Gaussian (89, 03, 09), Quantum Espresso

Membership in Societies

Member, American Chemical Society, 2014 – 2022

Member, American Physical Society, 2019 – 2021

Member, Materials Research Society, 2018 – 2019

Member, Chemistry Club, 2014 – 2016

Member, Flying Bears: Flight Team, 2011 – 2014

Volunteer Experience

Judge, Times² Academy Science Fair, Feb. 8th 2018/'20

Waiter, Heritage Circle Senior's Thanksgiving Dinner, 2009

Clean Up Crew, TJ² “Green Day” Clean-up Events, 2007 – 2011

Assistant, “Green” Workshops, 2014 – 2016

Special Topics

2nd Kyu, Aikido Kokikai, Spring 2017 (ongoing)

- Training in Kokikai lineage of Maruyama-Sensei, under Otto Liebman-Sensei (5th Dan)

1st Degree Black Belt, South Shore Martial Arts Center (SSMAC), 1999 (ongoing)

- Training in Ed Parker's Kenpo Karate
- Lead Instructor, 2011 – 2016

Private Pilot, Bridgewater State Part 141 Flight Program, 2011 – 2012 (program completed)

- Federal Aviation Administration (FAA) qualified Private Pilot for single engine land airplanes.

*Engineer, **FIRST Robotics Team (FRC)**, Member: 2007 - 2011, Captain: 2009-2011*

- Design and fabrication of a robot built to most effectively solve a problem (or “game”) created by the organization FIRST (For Inspiration and Recognition of Science and Technology). Ideas are tested through competitions around the globe.