

Sunayana Mitra

CONTACT INFORMATION

Office Address:
Box 58,
219 Parkman Ave,
Pittsburgh, PA, 15260
E-mail: sunayanamitra2014@gmail.com

Mailing Address:
Box 58,
219 Parkman Ave,
Pittsburgh, PA, 15260
Mobile: (412) 918-9625

EDUCATION

University of Pittsburgh, Pittsburgh, PA, USA Aug 2014 - Present
Doctor of Philosophy, Chemistry. Physical Chemistry division. Anticipated: May-July 2021

- Thesis Topic:
Characterizing ion-small molecule and hydrogen bonding interactions using ultrafast spectroscopy.
CGPA = 3.188/4

Indian Institute of Science Bangalore, Bangalore, India Dec 2012 - Jan 2014
Internship Projects in the Department of Physical Chemistry.

University of Rochester, Rochester, NY, USA Aug 2011 - Sep 2012
Rotation Projects in the Department of Biophysics & Biochemistry (BSCB Cluster). Completed 26 Credits.

University of Calcutta, Kolkata, India
Masters in Biochemistry, GPA = 4.79/6 Jul 2008 - Jul 2010.
Bachelor in Biochemistry, GPA = 60.4% Graduated with first class Honors. Jul 2005 - Jul 2008.

PUBLICATION

- **Sunayana Mitra** and Eugene Wagner; Introducing undergraduates to primary research literature; J.Chem. Ed. *Submitted Dec 2020 and under review.*
- Zhe Ren, Jordan Kelly, C. Prasad Gunathilaka, Thomas Brinzer, Samrat Dutta, Clinton A. Johnson, **Sunayana Mitra** and Sean Garrett-Roe; Ultrafast dynamics of ionic liquids in colloidal dispersion; Phys. Chem. Chem. Phys., 2017,19, 32526-32535.

ACADEMIC EMPLOYMENT

Research Assistant Aug 2014 - Present

- PhD Advisor: Prof. Sean Garrett-Roe
- Studying small molecule-ion fundamental interactions in solution using ultrafast two dimensional infrared spectroscopy and other non-linear infrared spectroscopy techniques.
- Investigating the proton transfer mechanism in protic ionic liquids with time resolved multi-probe spectroscopy, singular value decomposition and kinetic modeling.
- Gathering experiences in optics alignment, optics setup building, computational chemistry, MATLAB & Python data analysis, scientific methods, scientific communication and writing skills .

Teaching As Research Project Jan 2018 - Present

- Collaborator: Prof. Eugene Wagner
- Introducing undergraduates to primary research literature; Submitted to J.Chem.Ed. Dec 2020. Under review.
- Actively engaged in teaching freshmen undergraduates to distinguish between secondary and primary literature and how to read scientific primary literature. Received CIRTl certification and dB-SERC Mentor-Mentee award for conducting teaching as research project.

Teaching Experience Aug 2014 - Present

- Honors General Chemistry Course 720 (Primary TF). Jan 2019 - Apr 2019,
Jan 2018 - Apr 2018
- Physical Chemistry Course 1430 (TF). Teaching Fellow in the course. May 2019 - Jun 2019,
Apr 2018 - Jun 2018
- General Chemistry Course 120 (TA). Apr 2017 - Dec 2017

- General Chemistry Course 970 (TA). Jan 2015 - Apr 2015
- General Chemistry Course 110. Teaching Assistant (TA) in the course. Aug 2014 - Dec 2014
- Instructed over 15 Lab sections, conducted recitation, delivered tutorials, designed quizzes, conducted feedback workshops and teaching as research materials, graded lab reports, graded exams and held student office hours.
- Mentoring : Junior researchers in my research laboratory. Undergraduate Teaching assistants in Chem 0720 courses. Actively engaged in Pitt Teaching Center workshops mentoring other participants. Participated in *Center for the Integration of Research, Teaching and Learning (CIRTL) Learning Community*, providing feedback and mentoring attendants in Teaching As Research projects.

COLLABORATION

Rutherford Appleton Laboratories Central Laser Facility (CLF) ULTRA facility.

Research is partially supported by the Science and Technology Facilities Council (STFC). Harwell Campus, Didcot, UK. Feb 2017 - Present

- Project 2, 2019 : *Revisiting the 2D-IR measurement of the activation energy of a hydrogen bond.*
- Investigators: Dr. Paul Donaldson, Prof Sean Garrett-Roe, Prof. Steve Corcelli.
- Project 1, 2017: *Interplay Between Ultrafast Vibrational Spectroscopy & Nuclear Quantum Effects on the Proton Transfer Mechanism/Dynamics of Protic Ionic Liquids.*
- Collaborators: Dr. Paul Donaldson, Prof Sean Garrett-Roe, Prof. Tony Parker and Dr. Maria Izzo.

TEACHING PROFESSIONAL DEVELOPMENT & OUTREACH

Discipline-Based Science Education Research center (dB-SERC). May 2018 - Present

- Won dB-SERC Mentor-Mentee award to implement *Teaching As Research (TAR)* project on Honors General Chemistry Course Apr 2019.
- Implementing “Developing primary research literature reading comprehension skills in first year students” TAR project in *Honors General Chemistry Curriculum*. Publication under review in J.Chem. Ed.
- Implemented TAR project on Honors General Chemistry Class Spring 2018 - Spring 2020. Created assessments, workshops and opinion surveys for students.

Center for the Integration of Research, Teaching, and Learning. Aug 2017 - Present

- Active member of Center for the Integration of Research, Teaching, and Learning (CIRTL). Presented CIRTL TAR project at 25th Biennial Conference on Chemical Education (BCCE).
- Pitt-CIRTL Certification in STEM Teaching, University of Pittsburgh, 2019: Completed-Scholar, Practitioner and Associate certification programs and gained scholarly teaching skills. Developed and implemented a TAR project in Honors General Chemistry class 2018-2020.
- Mentored CIRTL learning community members and participated in CIRTL professional development program.
- Disseminated TAR project in the CIRTL community and contributed to the existing undergraduate teaching methods.

Center for Teaching and Learning, University of Pittsburgh. Jan 2018 - Present

- Received *Pedagogy Badge* in Spring 2019. Participated in workshops on Professional Development, Pedagogy and Diversity.
- Facilitated Teaching Assistant Orientation Aug, 2019. Led discussion between first year graduate students about teaching responsibilities and TA'ing at Pitt. Organised by the University of Pittsburgh Teaching center.
- Participated in *Mentoring Matters: How to Cultivate Productive Mentoring Relationships*. Workshop organised by Center for Doctoral and Postdoctoral Career Development, university of Pittsburgh, Sep 11, 2019.

Pitt Phi Lambda Upsilon (PLU) Student Outreach Program. Sep 2019 - Sep 2020

- Worked with high-school students. Teaching school students exciting scientific laboratory skills. This outreach program aims to motivate high school students in science.

INTERNSHIP

Junior Research Fellow in Indian Institute of Science Bangalore, Bangalore, India

- Advisor: Prof. Siva Umaphathy Dec 2012 - Jan 2014

- Project 1: *Amino acid sensitizer based ‘nanosecond flash photolysis’ study of Triplet-Triplet energy transfer to nucleobases.*
- Project 2: *Studying structural signature changes in nucleobases upon pH change, using Raman spectroscopy.*

University of Rochester, Medical Center, Rochester, NY, USA Aug 2011 - Sep 2012

- Project 1: *Studying the unwinding of the Shine Dalgarno - Anti Shine Dalgarno sequence using FRET.* Advisor: Prof. Dmitri Ermolenko.
- Project 2: *Studying the Oligomerization of GPCR by FRET.* Advisor: Dr. Mark Dumont.
- Project 3: *Pinpoint whether the C terminus of the PLC β 3 is responsible for binding to the intercellular loop-3 of Human Muscarinic Receptor M3 (M3i3).* Advisor: Prof. Alan Smrka.
- Project 4: *To Study the Quantum Yields of Thymine dimers at different wavelengths, using TpT.* Advisor: Prof. David McCamant.
- Project 5: *Synthesis, characterization of cohort of nanoparticles to form a complex with si-RNA. Delivery of the Complex into hMSCs and direct their differentiation into OST and Chondrocytes.* Advisor: Prof. Danielle Benoit.

Saha Institute of Nuclear Physics, Kolkata, WB, India Jun 2009 - Aug 2009

- Advisor: Prof. Udayaditya Sen
- Project: *Cloning, Expression and Purification Of Low Molecular Weight Protein Tyrosine Phosphatase [LMW-PTP-121] isolated from Vibrio cholerae0395.*

CONFERENCES & WORKSHOPS

- “A method to develop undergraduate ability to interpret & analyze primary research”, Oral Presentation in ACS Fall Conference 2020, virtual Sci-Meeting in San Francisco, Aug 18, 2020.
- “Mode mixing between the carboxylate symmetric stretch and CH bends cause the vibrational structures in EDTA, [Ca:EDTA]²⁻, [Mg:EDTA]²⁻ spectrum. Poster Presentation in ACS Fall Conference 2020, virtual Sci-Meeting in San Francisco, Aug 18, 2020.
- “A method to develop undergraduate ability to interpret & analyze primary research”, Oral Presentation in Disciplined-Based Science Education Research organization, Pittsburgh, University of Pittsburgh, Jun 8, 2020.
- “Mode mixing between the carboxylate symmetric stretch and CH bends cause the vibrational structures in EDTA, [Ca:EDTA]²⁻, [Mg:EDTA]²⁻ spectrum.” Accepted abstract in Gordon Conference 2020, RI. Conference was cancelled due to covid-19 situation.
- “Developing Primary Literature Comprehension Skills in Honors General Chemistry Students”, Oral Presentation in ACS Conference 2020, virtual Sci-Meeting in Philadelphia, Mar 26, 2020.
- “Developing Primary Literature Comprehension Skills in Honors General Chemistry Students”, Oral Presentation in Disciplined-Based Science Education Research organization, Pittsburgh, University of Pittsburgh, Feb 13, 2020.
- “Developing primary research literature reading comprehension skills in first year students”, Oral Presentation at CIRTL, University of Pittsburgh, February 2019.
- “Applying Primary Literature to Freshmen Laboratory”, Oral Presentation at 25th Biennial Conference on Chemical Education, University of Notre Dame, Jul 29 - Aug 2, 2018.
- Participated *POGIL-PCL Workshop*, University of Pittsburgh, May 8-10, 2019.
- “Kinetics of Proton Transfer in Protic Ionic Liquids”, Poster Presentation at PQI 2018, Pittsburgh Quantum Institute, Pittsburgh, Apr 18-20, 2018.
- “Kinetics of Proton Transfer in Protic Ionic Liquids”, Poster Presentation at Society of Women in Engineering: Women in STEM Conference, Pittsburgh, Feb 10, 2018.
- “Kinetics of Proton Transfer in Protic Ionic Liquids”, Poster Presentation at Science 2017, Pittsburgh Quantum Institute, Pittsburgh, Oct 18-20, 2017.
- “Flash Photolysis study of TTET from Tyrosine to Nucleobases.” Poster Presentation in DAE-BRNS NLS-22, Manipal University, Manipal, India, Jan 8 - 11, 2014.

AWARDS, ACHIEVEMENTS & EXTRA CURRICULARS

- Completed the “Pitt-CIRTL Scholar Level Certification (3rd and Final level)” Pittsburgh, Dec, 2019.
- Received the “2019 Safford Awards for Excellence as a Graduate Student Teacher”. Honored by the

Department of Chemistry, University of Pittsburgh.

- Active member of the “Pitt PLU K-12 Outreach Program”. University of Pittsburgh, June, 2019. Worked on designing experiments and gave onsite school demonstrations.
- Active member of the “Women in Science and Engineering Graduate Student Organization (WISE GSO)”. University of Pittsburgh, Sept, 2019.
- Received the Mentor Mentee award for “Developing primary research literature reading comprehension skills in first year students” Teaching as Research Project from the Disciplined-Based Science Education Research organization, Pittsburgh, Apr, 2019.
- Completed “Pitt-CIRTL Practitioner Level Certification (2nd level)” Pittsburgh, Apr, 2019.
- Nominated for the “2019 Elizabeth Baranger Excellence in Teaching Award” University of Pittsburgh, Feb, 2019.
- Received “Pedagogy Badge” Center for Teaching and Learning , University of Pittsburgh, Pittsburgh, Feb, 2019.
- Completed the “Pitt-CIRTL Associate Level Certification (1st level)” Pittsburgh, Apr, 2018.
- Earned a fellowship for pursuing PhD in Biophysics at University of Rochester.
- Awarded Sangeet Bivakar title in Vocal Music conducted by Bangiya Sangeet Parisad. (*First Division with Distinction*).
- Received a gold medal in cultural competition (Nazrulgeeti) held on March, 2009, University of Calcutta.
- Received a certificate for distinctive performance in Fourth National Science Olympiad, Calcutta, 2002.

REFERENCES: AVAILABLE UPON REQUEST.