ADAM KUMAR NIJHAWAN

linkedin.com/in/adam-nijhawan | 715-214-3646 | adam.nijhawan@gmail.com

EDUCATION

Northwestern University *Sept. 2019 - Present*
PhD in Physical Chemistry, *in progress*
3.87 GPA
Certificate in Management for Scientists and Engineers, Kellogg School of Management

- Selected for an intensive 8-week program for doctoral students focused on management, business, and leadership skills

Carleton College *Sept. 2015 - June 2019*
B.A. in Chemistry
3.65 GPA

RESEARCH EXPERIENCE

Northwestern University *Nov. 2019 - Present*
My research focuses on how theoretical techniques and computations can be combined with experimental results to provide atomic-level detail for the kinetics of biological macromolecules (BMMs). I utilize time-resolved X-ray solution scattering (TRXSS) to study BMMs' response to changes in pH and/or temperature. I use a variety of theoretical/computational techniques including genetic algorithms, enhanced sampling Molecular Dynamics (MD), biased-MD, and Markov state modeling to determine structures consistent with the experimental results. I have extensive experience collecting TRXSS data at APS sector 14 IDB and ESRF sector ID09, and equilibrium SAXS measurments at APS DND CAT. I also have experience collecting ultrafast TRXSS measurements for transition metal complexes at the European XFEL and LCLS.

Advisors: **Prof. Lin X. Chen** and **Prof. Kevin Kohlstedt**

Carleton College *April 2017-June 2019*
I studied the behavior of sodium cations within zeolites RHO and MFI. I determined the average position of the cations and the effect of aluminum substitutions in alumino-silicate zeolites on cation position. I used MD simulations to analyze results, and, in the process, I tested the validity of different classical potentials for simulating the zeolites.

Advisor: **Prof. Daniela Kohen**

TEACHING EXPERIENCE

I have a lot of experience in a variety of roles as a teaching assistant (TA) at Northwestern University and Carleton College. I am passionate about teaching and undergraduate education and have sought out every opportunity to TA. The position "Advanced General Physical Chemistry Super TA" was designed specifically for me, where I filled in for many of the responsibilities for the usual lab instructor that was on maternity leave. I have experience lecturing to 150+ students, leading recitation sections for 20 students, demonstrating and supervising laboratory experiments for 10-18 students, grading across a variety of subjects, and writing homework assignments and exams. I have received over 150 reviews from my students, all of which have been positive. A full list of my teaching experience is below.

School of Professional Studies Introduction to Chemistry TA *Sept. 2022-Nov. 2022*
Introduction to Chemistry Recitation TA *Jan. 2022-March 2022*
Advanced General Physical Chemistry Lab Super TA *Jan. 2021-March 2021*
Organic Chemistry Lab TA *March 2020-June 2020*
Advanced General Physical Chemistry Super TA *Jan. 2020-March 2020*

Advanced General Inorganic Chemistry Lab TA	*Sept. 2019-Dec. 2019*
Organic Chemistry Tutor	*March 2019-June 2019*
Quantum Spectroscopy TA	*Jan. 2019-March 2019*
Kinetics Grader	*Sept. 2018-Nov. 2018*
Quantum Chemistry Grader	*Sept. 2018-Nov. 2018*
Equilibrium and Analysis Grader	*March 2018-June 2018*
General Chemistry Prefect	*Jan. 2018-March 2018*
General Chemistry Lab TA	*March 2017-June 2017*
Introduction to Chemistry Prefect	*Jan. 2017-March 2017*

Teaching Reviews Available Upon Request

PUBLICATIONS

1. A. M. Chan, S. Ebrahimmi, D. Samanta, D. Leshchev, **A. K. Nijhawan**, D. J. Hsu, M. Ho, N. Ramani, I. Koshelva, R. Henning, C. Mirkin, K. L. Kohlstedt, L. X. Chen; Early Folding Dynamics of i-Motif DNA Revelaed by pH-Jump Time-Resolved X-ray Solution Scattering; JACS; **2024**; 146, 49, 33743-33752.

2. C. Lee, A. M. Chan,**A. K. Nijhawan**,M. Ho, I. Kosheleva, A. Cheng, L. X. Chen; Millisecond phase transition kinetics of lyotropic liquid crystalline nanoparticles observed by time-resolved small angle x-ray solution scattering; J. Phys. Chem.; *submitted*.

3. **A. K. Nijhawan**, D. Leshchev, D. J. Hsu, A. M. Chan, D. Rimmerman, J. Hong, I. Kosheleva, R. Henning, K. L. Kohlstedt,L. X. Chen,; Unlocking the unfolded structure of ubiquitin: Combining time-resolved x-ray solution scattering and molecular dynamics to generate unfolded ensembles; J. Chem. Phys.; **2024**; 161, 035101. **This manuscript received "editors choice" and featured journal cover art awards.**

4. **A. K. Nijhawan**, A. M. Chan, D. J. Hsu, L. X. Chen, K. L. Kohlstedt; Resolving Dynamics in the Ensemble: Finding Paths through Intermediate States and Disordered Protein Structures; J. Phys. Chem. B; **2021**; 125, 45, 12401-12412.

5. A. M. Chan, **A. K. Nijhawan**, D. J. Hsu, D. Leshchev, D. Rimmerman, I. Kosheleva, K. L. Kohlstedt, L. X. Chen; The Role of Transient Intermediate Structures in the Unfolding of the Trp-Cage Fast-Folding Protein: Generating Ensembles from Time-Resolved X-ray Solution Scattering with Genetic Algorithms; J. Phys. Chem. Lett.; **2023**; 14, 5, 1133-1139.

PRESENTATIONS

1. "Resolving Structural Dynamics in Biological Macromolecules with Time-resolved X-ray Solution Scattering and Molecular Dynamics Simulation", **American Crystallographic Association Annual Meeting**, Denver, CO, July 2024, oral presentation. **Invited Talk.**

2. "Combining time-resolved x-ray solution scattering and molecular dynamics for structural insight into the unfolding of villin headpiece 35", **Gordon Research Conference**, Les Diablerets, CH, June 2024, poster presentation.

3. "Combining experimental and computational techniques to examine the structural response of intrinsically disordered proteins to environmental perturbations", **Gordon Research Seminar**, Les Diablerets, CH, June 2024, poster presentation.

4. "Combining time-resolved x-ray solution scattering and molecular dynamics to elucidate kinetic pathways for small peptides following environmental perturbations", **265^{th} ACS National Meeting**, Indianapolis, IN, April 2023, poster presentation. **This abstract was selected for the sci-mix.**

5. "Combining Time-Resolved X-ray Solution Scattering and Molecular Dynamics to Examine Ubiquitin Unfolding Dynamics", **Invited Speaker for Northwestern Biophysics Club**. Evanston, IL, February 2023, oral presentation.
6. "Combining Time-Resolved X-ray Solution Scattering and Molecular Dynamics to Examine Ubiquitin Unfolding Dynamics", **Northwestern Biophysics Symposium**. Evanston, IL, September 2022, poster presentation.
7. "Cation Behavior within Zeolites", **257^{th} ACS National Meeting**, Orlando, FL, April 2019, poster presentation. **This poster received the "Recognition for Outstanding Research" award**.
8. "Sodium Cation Behavior within Zeolites", **Scholars at the Capital**, St. Paul, MN, January 2019, poster presentation.
9. "Sodium Cation Behavior within Zeolites", **Celebration of Excellence in the Sciences**, Northfield, MN, October 2019, poster presentation.
10. "Cation Motion within Zeolites: A Molecular Dynamics Study", **Thirty-First Midwest Undergraduate Computational Chemistry Symposium**, University of Minnesota Twin Cities, July 2018, oral presentation.
11. "Cation Motion within Zeolites: A Molecular Dynamics Study", **Thirtieth Midwest Undergraduate Computational Chemistry Symposium**, University of Illinois Campaign Urbana, August 2017, oral presentation.

HONORS AND AWARDS

L. Carroll King Award for Excellence in 100-Level Teaching *June 2020*
A monetary award administered by Northwestern's Phi Lambda Upsilon branch to reward excellent performance teaching a 100-level course. Nominations for the award are done by students and teaching faculty. I was nominated for the award by students from all three of the courses I taught this year.

Jerry Mohrig Prize in Chemistry *June 2019*
A student award at Carleton College given to a top senior in chemistry who has excelled in both the study of chemistry and scientific research.

James Finholt Prize in Inorganic Chemistry *June 2019*
An award given by Carleton College to a student that has excelled in the study of inorganic chemistry and shares a similar passion for teaching and research as emeritus Prof. James Finholt.

Honors in Music Performance *June 2019*
An award given to a senior at Carleton College that has excelled in the study and performance of an instrument.

EXTRACURRICULAR ACTIVITIES

President of AFC Roscoe *June 2022-present*
Athletic Football Club (AFC) Roscoe is a non-profit 501(c)(3), semi-professional men's soccer team with the goal of creating a highly competitive club free for all members. In addition to playing for the club, my role focuses on managing the team's funds and networking with local business to pursue potential sponsorship. I manage the registration of over 60 players. Most recently, I lead the expansion for AFC Roscoe into the Midwest Premier League (MWPL), where we won our division in our first season.

National School on Neutron and X-ray Scattering (NXS) *June 2020*
Selected to participate in NXS, where I learned about neutron and x-ray scattering from prominent scientists and professors. The school is put on annually by Argonne and Oak Ridge National Laboratories, and all participants must apply for selection.

Teaching Assistant Training Program Workshop Facilitator *Sept. 2020*
Facilitated training workshops for new TAs at Northwestern, where I was responsible for demonstrating teaching in a laboratory setting and active learning techniques. I also participated in a small panel of experienced TAs, where I offered advice to new TAs.

Carleton Club Soccer *Sept. 2015-June 2019*
Member of the Carleton Men's Club Soccer team, serving as treasurer, captain, and president over four years.

Jazz Saxophone *Sept. 2015-June 2019*
Leader of a jazz quartet, under the direction of Zacc Harris, and lead alto in the jazz ensemble, under the direction of Laura Caviani, at Carleton College.

TECHNICAL STRENGTHS

Software & Tools	MS Office, LaTex, Gaussian, Avogadro, NWChem, LAMMPS, NAMD, VMD, Git
Coding	Python, C, Fortran, MatLab, Bash, Tcl