

Daniel King

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EDUCATION:

University of Texas at Austin, Austin Texas
Doctor of Philosophy in Chemical Engineering

Expected Graduation: May 2027

Texas A&M University, College Station, Texas
Bachelor of Science in Chemical Engineering
Craig and Galen Brow Engineering Honors

December 2021

TECHNICAL SKILLS:

Computer Skills:

Proficient in Matlab Coding, COMSOL, Autodesk Inventor, Aspen Pro, ProMax.

Laboratory Skills:

Acid-Base Titrations, Redox Titrations, Iodometric Titrations, Iodimetric Titrations, Standard preparation and analysis using UV/Vis Spectrometry, High Performance Liquid Chromatography (HPLC), Scanning Electron Microscope (SEM), Circuit building, Induction circuit building, Operating a Distillation column, Thin Layer and Column Chromatography (Isocratic and Gradient), High Vacuum usage, Chemical and Apparatus Sourcing.

RESEARCH EXPERIENCE:

University of Texas, Austin, Texas

August 2022-present

Freeman and Kumar Lab Groups

- Collaborated with GivePower to design off-grid photovoltaic reverse osmosis systems for communities in need.

Yale University, New Haven, Connecticut

June 2021-August 2021

Leadership Alliance Summer Undergraduate Research Fellow (SURF)

- Collaborated with Dr. Shu Hu within the Department of Chemical and Environmental Engineering to conduct studies to model dissolved inorganic carbon in ocean water
- Performed sensitivity analysis and created supporting data using the Finite Element Analysis software, COMSOL.
- Developed a model for precise bipolar membrane flow cell

Department of Chemical Engineering, Texas A&M University

January 2018-December 2021

Undergraduate Researcher

- Collaborated with Dr. Sreeram Vaddiraju other researchers to create novel solutions to create potable water.
- Manipulated magnetic properties of the nanomaterials, Barium Ferrite, to purify water more effectively
- Fine-tuned nonperiodic nematic liquid crystals via electrostatic forces to enhance color
- Analyzed size segregation of nano-particles using scanning electron microscopy
- Created a cost-effective photocatalytic water treatment device that can be sustainable and efficient using UV-LED's with a polymer composite of photocatalyst attached.

Stanford University, Stanford, California

June 2019-August 2019

Leadership Alliance Summer Undergraduate Research Fellow (SURF)

- Collaborated with Dr. Xiaolin Zheng within the department of Mechanical Engineering

- Analyzed Cobalt (II) Sulfate Heptahydrate ability to quantify hydrogen peroxide
- Performed Redox Titrations and analyzed data using UV/Vis spectrometry
- Created standardized procedure to quantify hydrogen peroxide in no less than 5ppm.

Department of Aerospace Engineering, Texas A&M University
 NASA UNIVERSITY LEADERSHIP INITIATIVE RESEARCH

January 2017-August 2018

- Collaborated with Dr. Darren Hartl and Boeing personal to engineer a supersonic aircraft that could morph it's shape midflight.
- Created functional desktop model of concord that could change shape using shape memory alloys
- Contacted Shape training to create shape memory alloys
- Used Finite element analysis software, Autodesk Inventor, to measure points of most strain while morphing aircraft

Honors & Publications:

Zeng, M., King, D., Huang, D., Do, C., Wang, L., Chen, M., Lei, S., Lin, P., Chen, Y., & Cheng, Z. (2019). Iridescence in nematics: Photonic liquid crystals of nanoplates in absence of long-range periodicity. *Proceedings of the National Academy of Sciences*, 116(37), 18322–18327. <https://doi.org/10.1073/pnas.1906511116>

Zeng, M., Huang, D., Wang, P., King, D., Peng, B., Luo, J., Lei, Q., Zhang, L., Wang, L., Shinde, A., Shuai, M., Clark, N. A., & Cheng, Z. (2019). Autonomous Catalytic Nanomotors Based on 2D Magnetic Nanoplates. *ACS Applied Nano Materials*, 2(3), 1267–1273. <https://doi.org/10.1021/acsanm.8b02153>

Cockrell School of Engineering Fellowship, **University of Texas**
 Chevron Scholarship, **Texas A&M University**

January 2022-Present
 January 2017-August 2018

Poster and Presentations

- “Molecular Dynamic Simulation of Capturing Carbon with Sea Water” *Leadership Alliance National Symposium (LANS)*, **August 2021**, Zoom
- “Quantifying Minute Concentrations of Hydrogen Peroxide Using Cobalt Complex” *Stanford SURF Symposium*, **August 2019**, Stanford, California
- “Morphing Aircraft Using Shape Memory Alloys to Achieve Quiet Supersonic Travel”, *Engineering Project Showcase*, **May 2017**, College Station, Texas
- “Blue Force Tracking Alternative”, *Aggies Invent*, **August 2017**, College Station, Texas

Outreach and Education Experience

Teaching Assistant – Senior Design

January 2023-Present

- Mentored Senior Undergraduate students to design and optimize reverse osmosis systems.

Graduate and Industry Networking

August 2022-Present

- Handled the logistics of planning GAIN 2022

UT Girl Day

February 2023

- Research Booth Volunteer

MRSEC K-12 Outreach

August 2022-present

- Educate K-12 students about STEM with fun projects.

Leadership:

Engineering Honors Program, Texas A&M University
 Director Honors Ambassador

Jan 2018 – December 2021

- Organized prospective student visits and National Scholar outreach programs
- Presented Texas A&M to prospective students through means of student panels, tours, or personal communication
- Planned and executed Chemical Engineering Honors events and collaborated with department faculty
- Planned professional and social programs to ensure the personal development of ambassadors
- Managed 25 ambassadors

Access & Inclusion, Texas A&M University

Aug 2018 - May 2019

Peer mentor

- Promoted the success and retention of students from underrepresented groups in engineering
- Created test reviews and recitations for Calculus 1, Intro to Engineering, and Chemistry 101 classes.
- Managed 6 mentees and held professional development workshops

Just4Water Club, Texas A&M University

August 2017 - August 2018

Water Well and filter researcher

- Designed water filters, wells, and latrines to export to Guatemala
- Developed easy-to-read instructions for construction for any inexperienced Guatemalan villager
- Managed a group of 4 engineers with the logistics of acquiring and transporting necessary equipment

