OPTICS102

EDUCATION

University of Oregon, Eugene, Oregon
Master of Science in Applied Physics: Optical Materials and Devices **June 2017 – Present**
Trinity University, San Antonio, Texas
Bachelor of Science in Physics **August 2013 - May 2017**

SKILLS

Technical: Matlab, Mathematica, Maple, imageJ, scatterjn, Basic 3D Modeling Software, Adobe (Photoshop, Premiere, Illustrator), VistaVision Imaging Software, Abelton Live Studio, Massive Studio
Non-Technical: 2.5 years of Mandarin leading to a moderate level of proficiency, 3 semesters of rhetorical training

RESEARCH

Biophysics (*Murchison Research Fellow)* **May 2016 - May 2017**
Department of Physics and Astronomy–Trinity University-San Antonio, TX (Dr. Kelvin Cheng)

- Designed and constructed an electrofusion device for fabrication of giant unilamellar vesicles (GUVs) by adapting a thermal incubation chamber to be bypassed by BNC cables such that externally driven voltages could be applied in a temperature regulated environment.
- Architected and 3D printed "capacitor blocks" using 123D modeling software as housings to grow GUVs with high throughput efficiency, marking up the output of samples by 500% per cycle.
- Grew GUV's with different ternary mixture, percent compositions. High melting temperature lipids doped with DiIC_{12}, low melting temperature lipids, and cholesterol doped with Bodipy-Chol were used to fabricate successful, phase separated, samples.
- Facilitated in conceptual development of two-photon imaging techniques to image GUV system which replaced Bodipy-Chol/Cholesterol with dehydroergosterol (DHE), having innate fluorescent properties at 325nm excitation.
- Rendered and performed analysis on systems containing intensity based confocal data and systems containing time-correlated single photon counting (TCSPC) data corresponding to the samples fluorescence lifetime utilizing VistaVision, imageJ, and Matlab.
- Helped develop protocol for in-vivo imaging techniques of mitochondria in astrocytes allowing for single mitochondrial identification.
- Developed data analysis techniques using imageJ and scatterjn to identify membrane potential distributions in live astrocytic samples.
- Presented findings with talks at the National Conference for the American Physical Society and in the undergraduate research section and at Trinity University's Research Symposium in the cross disciplinary section.

WORK HISTORY

Distribution Technician **January 2015 – May 2017**
Academic Technology – Trinity University- San Antonio, TX

- Performed diagnostics on Ultimaker Makerbot 2 and Lulzbot TAZ 6 model 3D printers from having to re-run filaments to having to remove, repair and re-attach certain components minimizing downtime for repair processes from weeks to days.
- Helped students develop intuition for improvised problem solving in situations where the troubleshooting fix was not obvious by teaching them to probe the system and iterate their resultant probing behavior adaptively maximizing student efficiency in the lab.
- Provided troubleshooting assistance in Adobe Suite, Mathematica, Matlab, Maple, 123D, Cura and other software used for projects to students ranging in skill from novice to adept.
- Performed preliminary diagnostics over the telephone with people having various levels of technical skill which helped to characterize troubleshooting endeavors before leaving the equipment storage.
- Outsourced to accommodate classroom technical support ranging from things as simple as cycling the system power, to having to improvise a solution with limited data and time-based, in-situ, diagnostics.
- Developed ability to conceptualize event setups before leaving the distribution center such that all necessary components were obtained and return trips were not necessary improving efficiency and effectiveness.
- Obtained intuition for formulating solutions and developing procedures for event demands using only available equipment.

COMMUNITY INVOLVMENT

President, Society of Physics Students **January 2016 – January 2017**
Trinity Lacrosse **August 2015 – May 2017**
NCAA Division III Football **August 2013 – May 2014**