Carla Becker

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Education

Harvey Mudd College (HMC), Claremont, CA; B.S. Physics, B.S. Chemistry – Expected May 2018
Randolph High School, Huntsville, AL; Valedictorian – May 2014

Objective

To find a summer internship at the Jet Propulsion Laboratory (JPL) for 2017 in an area related to any of the following: condensed matter physics, nanoelectronics, optoelectronics, micro/nano electromechanical systems (MEMs/NEMs), or computational fluid dynamics.

Publications

- "The genome-wide transcriptional response to varying RpoS levels in Escherichia coli K-12," Journal of Bacteriology – January 2017
- "Internal Optical Spectroscopic Real-Time Diagnosis Technique," Aviation and Missile Research Development and Engineering Center (AMRDEC) – September 2013
- "Assessment of Acoustic and Thermal Sensors for Monitoring Gun Barrel Degradation," AMRDEC – July 2013

Project Experience

Researcher, Harvey Mudd College Department of Chemistry – January 2016 - present

- Performed single-molecule super-resolution fluorescence microscopy to study the protein aggregates involved in Huntington's disease
- Helped build microscope and develop imaging process for characterizing aggregation

Student Body Senate Chair – March 2016 - present

- Lead twice-weekly meetings of 30-50 people
- Regularly presented to faculty, administrators, and board of trustees
- Envisioned, organized and executed initiatives, events, and projects for the student body?s benefit

Researcher, Harvey Mudd College Department of Biology – January 2015 - present

- Coded and determined bioinformatic methods used to illuminate testable hypotheses in the lab
- Used standard molecular and microbiological techniques to investigate transcriptional regulation related to the stress response in *E. coli*

Army's Science and Engineering Apprenticeship Program (SEAP), AMRDEC – 2011 - 2014

- Gained experience with fiber optics, acoustic sensors, foams, and equipment/instruments associated with these technologies
- Developed educational outreach materials for grades K-8

Volunteer Experience

- Student Body Senate Chair, HMC
- HMC Honor Board
- Student Philanthropy
- United States Space and Rocket Center (USSRC)

Work Experience

- Researcher, HMC (2015 - present)
- Lab Assistant, HMC (2014 - present)
- Tour Guide, HMC (2015 - present)
- Grader, HMC Dept. of Chemistry (2015, 2016)

Awards and Honor Societies

- 2016 Alabama Alumnus of the Year, Future City Competition
- Bausch and Lomb Honorary Science Award (2014)
- Wernher von Braun Award for academic excellence (2014)
- 1st Place, SEAP Technical Paper Competition and Presentation Competition (2012, 2013)

Other Skills

- Python, MATLAB, Mathematica, LaTeX, Unix
- Sterile laboratory techniques and methodologies
- Lathe, CNC mill

Technical Course List

Physics

- Quantum Mechanics II
- Statistical Mechanics and Thermodynamics
- Theoretical Mechanics
- Electronics Laboratory
- Quantum Physics (Quantum Mechanics I)
- Modern Physics Laboratory
- Electromagnetic Theory and Optics
- Mechanics and Wave Motion
- Special Relativity
- Intro Physics Laboratory

Mathematics

- Fourier Series and Boundary Value Problems
- Linear Algebra/ Differential Equations II
- Multivariable Calculus
- Differential Equations
- Linear Algebra
- Probability and Statistics
- Calculus

Biology

- Molecular Genetics

Chemistry

- Adv. Analytical Chemistry and Laboratory
- Biochemistry and Laboratory
- Chemical Analysis and Laboratory
- Group Thry., Quant. Chem., and Spectroscopy
- Carbons (Organic I)
- Physical Chemistry and Laboratory
- Energetics, Dynamics, and Structure (Intro Chem.)
- Intro Chemistry Laboratory

Computer Science

- Robotics Laboratory
- Principles of Computer Science
- Introductions to Biology and Computer Science

Engineering

- Introduction to Signals and Systems
- Digital Electronics
- Engineering Mathematics
- Electric & Magnetic Circuits/Devices