Sean Eric Anderson, PhD

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Summary

- Mechanical engineer with expertise in nanotechnology, biotechnology and fluid mechanics.
- 7 years engineering research experience in both academic and industrial settings.
- Seeking an impactful career in medical device development, translational research, or biotechnology.
- CV and references available on request.

Professional Experience

PhD Researcher - University of Pennsylvania (Philadelphia, PA) 2009-2015

Thesis: "Carbon Nanopipettes for Advanced Cellular Probing and Microinjection" (3 publications)

- Developed applications for carbon nanopipettes in microinjection and electrochemical biosensing.
  - Novel technique for high-resolution electrical feedback during microinjection and cell probing.
  - Electrochemical measurement of neurotransmitters in *Drosophila melanogaster* (fruit flies).
  - Microinjection technique for first-ever measurement of tRNA nuclear trafficking kinetics.
- Supervised a master's thesis: "Carbon Nanopipette-based Automated Cellular Microinjection System".
  - Developed a Matlab-based GUI for automated microinjection of adherent cells.
- NIH R21 grant coauthor, Ashton Fellow, USDOE GAANN Fellow, Lab Safety Officer.
- >$800,000 in scholarships, fellowships, and grant awards.

Graduate Researcher – French Atomic Energy Commission (CEA, Grenoble, France) 2011

"Silicon Surface Functionalizations for the Reversible Capture of Bacteria"

- Characterized surface functionalizations for the reversible capture of bacteria on silicon chips.
  - Zetammetry, contact angle goniometry, and SARFUS microscopy for surface characterization.
  - Bacterial experiments on functionalized pillar-array chips to evaluate and optimize capture.

Teaching Assistant - University of Pennsylvania (Philadelphia, PA) 2010-2011

Fluid Mechanics (2x teaching award finalist)
Mechanical Engineering Junior Design Laboratory

Research Assistant - NASA Langley Research Center (Hampton, VA) 2008

"A Next-Generation Engine Concept for Improved Fuel Economy of Commercial Jet Aircraft"

- Researched a turboshaft concept for improved fuel efficiency and aeroacoustics of commercial aircraft.
  - Finite element modal analysis for aeroacoustic noise and vibration considerations.
  - Systems-level flight optimization and engine configuration analysis.

Research Assistant - The College of New Jersey (Ewing, NJ) 2008

"Aerodynamics of Saccate Pollen Grains" (1 publication)

- Experimentally investigated the influence of pollen air sacs on their dispersion characteristics in wind.
  - Measured drag coefficients as a function of Reynolds number for 3D-printed scale models.

Skills

Micro/Nanofluidics, Biosensing, Diagnostics, Electrochemistry, Lab-on-Chip, Microinjection, Electroporation, Electrophysiology, Neuroscience, Nanofabrication, Electron Microscopy, Spectroscopy (EIS, EDS, Raman), Confocal Microscopy, Scanning Probe Techniques (AFM, SECM/SICM), Cell Culture, Biophysics, Machining, Rapid Prototyping, MS Office, COMSOL Multiphysics, Matlab, Pro/E, Solidworks, LabVIEW, ImageJ, C++

Education

PhD, **MS – Mechanical Engineering and Applied Mechanics** 2015
University of Pennsylvania

BS – Mechanical Engineering, *Summa Cum Laude* 2009
The College of New Jersey