Dr. Samuel Bechara

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Career Objective

To work at an institution where I can apply my passion for undergraduate education in a setting that encourages professional growth and awards innovative and creative thinking.

Education

2008-2012 Colorado State University P.h.D. Biomedical Engineering

Dissertation synopsis: I independently created a multifunctional tissue-engineering scaffold by incorporating biological, chemical, and mechanical cues to optimize neural stem cell adhesion, proliferation, and differentiation. I also mentored and guided undergraduate research assistants to further their career development and scientific training.

2005-2008 Washington State University B.S. Biomedical Engineering

While an undergraduate I worked in the laboratory of Dr. David Lin where I participated in a biocomputing project designing signal detection algorithms. I also reviewed technical papers for publication.

Experience

2015 - Present Marquette University Assistant Chair and Lecturer of
Medical College of Wisconsin Biomedical Engineering
Milwaukee, WI

- Courses taught include: Introduction to Biomedical Engineering (BIEN 1100), Computing for Biomedical Engineers (BIEN 1120), Biomedical Instrumentation (BIEN 4320), Biocomputers Design Lab (BIEN 4290)
- Developed three innovative laboratory experiences for freshman in Biomaterials
  - A surface engineering lab utilizing plasma and cell phones to change hydrophobicity of materials *(selected for presentation at the annual BMES conference 2016)*
  - A bone cement lab highlighting biomechanics principles of stress, strain, and elastic modulus
  - A materials property lab utilizing scanning electron microscopy to show surface nanotopography
- Managed and coordinated the biomedical engineering graduate seminar series. Implemented live streaming of each seminar and created a repository on YouTube to archive old seminars
- Authored documentation and served on the executive guiding committee overseeing the merger with the Medical College of Wisconsin and the formation of a new joint-department
- Created and directed an outreach activity aimed at empowering High School students from traditionally underrepresented groups. Students were given tools, given materials, and were guided through the process of building electrocardiograms (ECG). At the conclusion of the event, students were allowed to keep their ECGs.
- Drafted the schedule of classes for Fall 2015, Spring 2016, Fall 2016, Spring 2017, and Fall 2017 semesters
- Served as a Senior Design Project faculty advisor for academic years 2015-2016 and 2016-2017
- Counseled undergraduate students as an academic faculty advisor

2013 – 2015 Bellarmine Preparatory School Science Faculty
Tacoma, WA Director of Engineering

- Contributed to advancing the educational programs of robotics
- Contributed to the development of the physics course curriculum
- Served on committee and guiding team leading the school through accreditation and organized accreditation materials

2012-2013 **Red Rocks Community College** **Adjunct Mathematics Faculty**
Lakewood, CO

- Created lectures and curriculum to maximize student involvement, interest, and learning
- Instructed courses in both Calculus and Algebra I

2010-2012 **Hyperion Labs** **Co-Founder**
Denver, CO

- Working with business leaders in the area, co-founded a start-up company based on plasma etching research that was developed as a graduate student at Colorado State University
- Developed marketing strategies
- Created and managed company intellectual property

2008-2013 **Propel Labs** **R&D Biomedical Engineer**
Fort Collins, CO

- Consulted on medical device development projects from a technical and commercial perspective while a graduate student
- Gained valuable industry experience about the entire medical device development process from alpha to release
- Developed, implemented, and documented quality assurance protocols to meet specific project milestones

Teaching Awards

2014 **William Dahlgren Teaching Excellence Award**

The award is given to teachers in K-12 education that exemplify going above and beyond their role as educators. This means that a teacher engages students in the subject, probing beyond mere reciting of facts.

2014 **Anthony Falcone Teaching Excellence Award**

The award is based on evidenced ability to favorably influence students to pursue science, math and engineering fields of further study such as materials and processes.

Publications

S. Bechara, A. Judson, K. Popat. 2010. Template Synthesized poly(epsilon-caprolactone) nanowire surfaces for neural tissue engineering applications. *Biomaterials*

S. Bechara, L. Wadman, K. Popat. 2011. Electroconductive polymeric nanowire templates facilitates in vitro C17.2 neural stem cell adhesion, proliferation, and differentiation. *Acta Biomaterialia*

N. Riedel, **S. Bechara**, K. Popat, J. Williams. 2012. Ion etching for sharp tip features on titanium and the response of cells to these surfaces. *Materials Letters*

N. Riedel, T. Cote, **S. Bechara**, K. Popat, J. Williams. 2012. Low energy helium ion texturization of titanium and relevance to biomedical applications. *Surface and Coatings Technology*

S. Bechara, K. Popat. 2013. Micro-patterned nanowire surfaces encourage directional neural progenitor cell adhesion and proliferation. *Biomedical Nanotechnology*

S. Bechara, A. Niemic, J. VanDehy, L. Riem, *In Review.* A Virtual Reality Game that Enhances Educational Outcomes for a Surface Energy Laboratory. *Journal of Engineering Education Research*

Invited Speaker

S. Bechara, J. Goldberg, M. Sotelo, S. Beardsley. October 2016. Utilizing Cell Phones, Plasma, and Imaging Software to Introduce Surface Engineering to Freshman. *Biomedical Engineering Society Annual Conference*