Sofia E. Arevalo

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Education

University of California, Berkeley, *PhD Candidate in Mechanical Engineering* **2018 - Present**
Dissertation Title:
Nano-mechanical Testing of Medical Grade Polymers: Evaluating and Understanding Surface Properties
Research Lab: Medical Polymer Group || Professor Lisa Pruitt

Honors and Awards:

- National Science Foundation Graduate Research Fellowship (NSF GRFP) **2016-2019**
- The Ian Finnie (ME Department Fellowship) **Summer 2020**
- Outstanding Graduate Student Instructor Award (UC Berkeley Award) **Spring 2021**
- Chang-Lin Tien Graduate Fellowship (ME Department Award) **Spring 2022**

Relevant Coursework: Polymer Engineering, Advanced Tissue Mechanics, Introduction to Nano-Biology, Mechanical Behavior of Engineering Materials, Deformation and Fracture Engineering, Tribology, Mechanical Behavior of Composite Material

University of California, Berkeley
M.S. in Mechanical Engineering **2016-2018**

University of California, Berkeley
B.S. in Mechanical Engineering **2012-2016**

Undergraduate Honors: BEARS Research Program Scholar, Qualcomm Undergraduate Experience in Science and Technology (QUEST) scholar, National Science Foundation California Alliance for Minority Participation (NSF CAMP) scholar, Summer Undergraduate Research Fellow (SURF)

Leadership & Outreach

BERET+D, University of California, Berkeley
Graduate Student Mentor **Summer 2020, 2018, 2017**

Summer Math and Science Honors Academy (SMASH), University of California, Berkeley
Topics in Current Science Research Project Leader **Summer 2017-2021**

Bay Area Graduate Pathways to STEM, University of California, Berkeley
Conference Organizer **2017-2019**

Equity, Diversity, and Inclusion Committee, University of California, Berkeley
Committee Member **2019-2021**

Teaching

Introduction to MATLAB, University of California, Berkeley
Graduate Student Instructor for the Transfer Pre-Engineering program, a 2-week long program **Summer 2018**

Polymer Engineering, University of California, Berkeley
Graduate Student Instructor **Fall 2019**

Design Methodology, University of California, Berkeley
Graduate Student Instructor **Spring 2020**

Medical Devices - Biomaterials, University of California, Berkeley
Graduate Student Instructor **Fall 2020**

Introspective Leadership, University of California, Berkeley
Graduate Student Instructor **Spring 2021**

Introduction to Solid Mechanics, University of California, Berkeley
Graduate Student Instructor for the Transfer Pre-Engineering program, a 2-week long program **Summer 2021**

Teaching Conference for First-Time GSIs, University of California, Berkeley
Workshop Leader **Summer 2021**

Finding Your Research Pathway Seminar, University of California, Berkeley
Lead Graduate Student Instructor **Spring 2021 and Fall 2021**

Certificates

Graduate Remote Instruction Innovation Fellows Program **Summer 2020**
Received formal training for transitioning from in-person to remote teaching during the pandemic

Publications

Malito, Louis G., Arevalo, Sofia E., et al. "Material Properties Of Ultra-High Molecular Weight Polyethylene: Comparison Of Tension, Compression, Nanomechanics And Microstructure Across Clinical Formulations". *Journal Of The Mechanical Behavior Of Biomedical Materials*, vol 83, 2018, pp. 9-19. *Elsevier BV*, doi:10.1016/j.jmbbm.2018.03.029.

Arevalo, Sofia E., Pruitt, Lisa. "Nanomechanical Analysis Of Medical Grade PEEK And Carbon Fiber-Reinforced PEEK Composites". *Journal Of The Mechanical Behavior Of Biomedical Materials*, 2020, p. 104008. *Elsevier BV*, doi:10.1016/j.jmbbm.2020.104008.

Slouf, Miroslav., Arevalo, Sofia et al. “Comparison of macro-, micro-, and nanomechanical properties of clinically-relevant UHMWPE formulations” .*Journal Of The Mechanical Behavior Of Biomedical Materials*, 2020, p. 104205. *Elsevier BV*, in Press.

Arevalo, Sofia., Ebenstein, Donna., Pruitt, Lisa. “A methodological framework for nano mechanical characterization of soft biomaterials and polymers.” *Journal of the Mechanical Behavior of Biomedical Materials*. Submitted.

Arevalo, Sofia., Van Citters, Douglas., Pruitt, Lisa. “Surface Mechanical Analysis of Orthopedic Implants.” In Progress.

Arevalo, Sofia.* Montes, Andre.* O’Connell, Grace D. “Research seminar builds confidence and access to research opportunities for undergraduate students in mechanical engineering.” *American Society for Engineering Education,* 2022. Accepted.

Conference Presentations

An investigation on the surface and bulk mechanical properties of clinically relevant UHMWPE formulations using nanoindentation and compression testing. 8th UHMWPE International Meeting. Turin, Italy. October 2017

The nano mechanical properties of annealed PEEK with pitch-based and PAN-based carbon fibers: the effect of annealing and indentation tip diameter. 4th International PEEK Meeting. Washington D.C., US. April 2019.

Nano-indentation as a characterization technique for implant retrievals. 9th UHMWPE International Meeting. Philadelphia, US. October 2019.