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Engineering & Scientific Consulting

Amanda Ruschel, Ph.D.

Associate | Mechanical Engineering
Menlo Park
+1-650-688-7095 | aruschel@exponent.com

Professional Profile

Dr. Ruschel specializes in mechanics of materials, mechanical design and analysis, mechanical testing, and finite element analysis (FEA). She also has experience with materials characterization, 3D printing techniques, and digital image correlation. Her breadth of experience enables her to utilize both experimental and theoretical approaches to solve complex engineering problems in a wide range of industries.

Dr. Ruschel received her Ph.D. in Materials from University of California, Santa Barbara, where her research focused on tailoring the mechanical response of polymer lattices and foams to enhance their energy absorbing properties. This work involved designing, characterizing, and experimentally testing candidate structures as well as using finite element simulations to model their response to both quasi-static and dynamic loadings. Her research introduced multi-material design strategies for tuning the balance between high strength and toughness in lattice structures and identified methods for controlling the nonlinear response of foams. While at UCSB, Dr. Ruschel also was a McNair Scholars mentor and co-founded the Graduate Student Consulting Club.

Academic Credentials & Professional Honors

Ph.D., Materials, University of California, Santa Barbara, 2023

B.S., Materials Science and Engineering, Lehigh University, 2017

Publications

AL Ruschel and FW Zok. "A bi-material concept for periodic dissipative lattices." *Journal of the Mechanics and Physics of Solids* 145 (2020): 104144.

AL Ruschel, AF Samuel, MC Martinez, MR Begley, and FW Zok. "A 3D Bi-material Lattice Concept for Tailoring Compressive Properties.", *Materials and Design* (2022): 111265.

Presentations

AL Ruschel, FW Zok, and MR Begley, Design Considerations and Performance of Bi-Material Lattices. Materials Research Society (MRS) Spring Meeting (April 20, 2021)

AL Ruschel and FW Zok, Tailoring the Response of Bi-material Lattices. Soft Robotics Seminar, UC Santa Barbara (January 28, 2020)

AL Ruschel and FW Zok, Structure and Properties of Multi-material Lattices. Soft Robotics Seminar, UC Santa Barbara (August 6, 2019)