Exponent®
Engineering & Scientific Consulting

Michael Bowen Castellano, Ph.D.

Associate | Biomedical Engineering and Sciences
Philadelphia
+1-215-594-8839 | mbowen@exponent.com

Professional Profile

Dr. Michael Bowen has specific expertise in characterization of materials for applications in unique and extreme environments. His experience in materials characterization spans solid-state synthesis, powder x-ray diffraction, scanning electron microscopy, electrochemical impedance spectroscopy, thermogravimetric analysis, gas chromatography, and thermal diffusivity. He has developed and modified previously established experimental techniques to characterize materials at high temperatures and for magnetohydrodynamic applications.

Since joining Exponent, Dr. Bowen has worked on evaluating the mechanical performance of medical devices at various stages of product development and the regulatory submission processes. This work has comprised of bulk material property measurements, surface characterization, and failure and fatigue testing of implant devices and anchor components.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, Oregon State University, 2023

M.S., Mechanical Engineering, Oregon State University, 2021

B.S., Physics, Marietta College, 2017

Prior Experience

Research Associate, National Energy Technology Laboratory, 2017-2023

Publications

Bowen MS, Cann DP, Woodside CR. Application of the van der Pauw method for electrical conductivity measurements at high temperatures using an insulating compressing ring. Review of Scientific Instruments 2023; 94: 114701.

Bowen MS, Kwong KS, Hsieh PY, Cann DP, Woodside CR. High temperature corrosion stability of ceramic materials for magnetohydrodynamic generators. ASTM International Journal on Material Performance and Characerization 2021; 11:2.

Bowen MS, Johnson M, McQuade R, Wright B, Kwong KS, Hsieh PY, Cann DP, Woodside CR. Electrical properties of gadolinia-doped ceria for electrodes for magnetohydrodynamic energy systems. Springer Nature Applied Sciences 2020; 2:1529.

Presentations

Van der Pauw Contacts for High-Temperature Bulk Electrical Properties of Oxide Ceramics. Electronic Materials and Applications – American Ceramic Society – Orlando, FL. (2023)

Evaluation of Ceria- and Hafnia-Based MHD Electrode Materials. Int. Conference and Expo on Advanced Ceramics and Composits – American Ceramic Society – Virtual (2021)

Peer Reviews

Journal of the American Ceramic Society

Review of Scientific Instruments