

Michael Straker

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Education

- 2020-22 Ph.D. Student, University of Maryland – College Park,
Current GPA: 3.83.
- 2020 Master of Science in Science – Physics, Morgan State University,
Master Thesis: “Growth and Characteristics of Single Crystalline Boron Carbide”
GPA: 3.87.
- 2016 Bachelor of Science in Bioengineering, Temple University.
Senior Design Project: “Stereoscopic Infrared Imaging Device”
- 2012-13 Drexel University, Major in Biology.

Research Interests

Ingestible Devices
Drug Delivery Systems
Biomaterials

Research Experience

- 2022 Graduate Student Researcher, Ghodssi Lab, University of Maryland – College Park, Spring 2021-Summer 2022. (20-40hrs/ week)
Researched the development of a hybrid bilayer packaging system for the targeting of the small intestine in an ingestible device platform under P.I. Dr. Reza Ghodssi.
- 2019-20 Graduate Research Fellow, Spencer Lab, Morgan State University, Fall 2018-Present. (20hrs/ week)
Researched the growth and characterization of single crystal boron carbide for use in impact testing and evaluate its potential as a high temperature semiconductor under P.I. Dr. Michael Spencer.
- 2019 Research Fellow, Hopkins Extreme Materials Institute, PARADIM Lab, Johns Hopkins University, Summer 2019. (40hrs/ week)
Researched the growth and characterization of large diameter single crystal boron carbide for use in impact and mechanical property testing in the PARADIM Lab under P.I. Dr. W. Adam Phelan as part of the Research Experience for Undergraduates program at Johns Hopkins.

- 2018 Research Fellow, Hopkins Extreme Materials Institute, PARADIM Lab, Johns Hopkins University, Summer 2018. (40hrs/ week)
Researched the growth and characterization of single crystal boron carbide for use in impact testing in the PARADIM Lab under P.I. Dr. W. Adam Phelan as part of the Research Experience for Undergraduates program at Johns Hopkins.
- 2018 Graduate Researcher, Ozturk Lab, Morgan State University, Spring-Summer. (20hrs/ week)
Working under P.I. Dr. Birol Ozturk performing research on the development of an inexpensive scanning electrochemical microscope that utilizes nanowire electrodes to detect nanoscale molecules for use in biosensing.
- 2015-16 Senior Design Engineer, Temple University, Spring 2015-Spring 2016.
Worked in a team of multi-disciplinary engineers, under P.I. Dr. Chetan Patil, to design, develop, and construct a device that utilizes infrared radiation to produce images of the retina for retinal disease diagnosis.
- 2015 Undergraduate Researcher, Dr. Peter Lelke's Integrated Cellular Tissue Engineering and Regenerative Medicine Laboratory, Temple University, Fall 2015. (10hrs/ week)
Worked under P.I. Dr. Peter Lelkes and Graduate Researcher Sean Devlin performing research on the tensile strength and cyclical loading limits of microdiamond infused polymer scaffolds for use as biodegradable ACL reattachment grafts.

Honors and Awards

- 2020 Clark Doctoral Fellow, University of Maryland – College Park.
- 2020 1st Place Graduate Poster Presentation, 44th International Conference and Expo on Advanced Ceramics and Composites (ICACC 2020), Daytona Beach, FL.
- 2019 1st Place Graduate Poster Presentation, 91st Annual National Technical Association Conference, Coppin State University, Baltimore, MD.
- 2018, 2019 Hopkins Extreme Science Institute (HEMI)/ Platform for the Accelerated Realization, Analysis, & Discovery of Interface Materials PARADIM Fellow
- 2015 Temple University Dean's List, Fall 2015. Awarded to students with a gpa of 3.64 or higher.
- 2012-13 A.J. Drexel Academic Scholarship, Fall 2012 – Spring 2013.

Publications

- 2022 Michael A. Straker, Joshua A. Levy, Justin M. Stine, Vivian Borbash, Luke A. Beardslee, and Reza Ghodssi, “Region-targeted Bilayer Coating Technology for Ingestible Devices And Systems” Hilton Head Workshop 2022: A Solid-State Sensors, Actuators and Microsystems Workshop Conference Proceedings (2022).
- 2022 Joshua A. Levy, Michael A. Straker, Luke A. Beardslee, Reza Ghodssi, “Biomimetic Anchoring System for Sustained and Localized Gastrointestinal Drug Delivery” Hilton Head Workshop 2022: A Solid-State Sensors, Actuators and Microsystems Workshop Conference Proceedings (2022).
- 2022 Arezoo Zare, Mo-Rigen He, Michael Straker, M. V. S. Chandrashekhkar, Michael Spencer, Kevin J. Hemker, James W. McCauley, & K. T. Ramesh, “Mechanical characterization of boron carbide single crystals”, *Journal of the American Ceramic Society*, 105(5), 3030–3042 (2022).
- 2020 Michael Straker, Ankur Chauhan, Mekhola Sinha, W. Adam Phelan, M.V.S. Chandrashekhkar, Kevin J. Hemker, Christopher Marvel and Michael Spencer, “Growth of high purity zone-refined Boron Carbide single crystals by Laser Diode Floating Zone method”, *Journal of Crystal Growth*, Volume 543, (2020).
- 2019 Alperen Guver, Nafetalai Fifita, Michael Straker, Michael Guy, Kara Green, Taha Yildirim, Ilyas Unlu, Mehmet V. Yigit and Birol Ozturk, “Construction of a Low-Cost and High-Precision Scanning Electrochemical Microscope with Open Source Tools”, *HardwareX*, (2019).

Conferences and Presentations

- 2022 Poster Presentation—Hilton Head Workshop 2022: A Solid-State Sensors, Actuators and Microsystems Workshop “Region-targeted Bilayer Coating Technology For Ingestible Devices And Systems” Hilton Head, South Carolina.
- 2020 Poster Presentation—44th International Conference and Expo on Advanced Ceramics and Composites (ICACC 2020) “Floating Zone Crystal Growth and Characterization of Boron Carbide” Daytona Beach, FL.
- 2019 Poster Presentation—NOBCChE Meeting 2019 “Floating Zone Crystal Growth and Characterization of Boron Carbide” St. Louis, MO.
- 2019 Poster Presentation—National 91st Annual National Technical Association Conference “Floating Zone Crystal Growth and Characterization of Boron Carbide” Coppin State University, Baltimore, MD.

- 2019 Poster Presentation—National Nanotechnology Coordinated Infrastructure (NNCI) REU Convocation “Floating Zone Crystal Growth and Characterization of Boron Carbide” Cornell University, Ithaca, NY.
- 2019 Poster Presentation—Hopkins Summer Research Symposium “Mechanical and Electrical Transport Properties Characterization of Single Crystal Boron Carbide” Johns Hopkins University, Baltimore, MD.
- 2019 Oral Presenter—The Hopkins Extreme Materials Institute MACH Conference 2019 “Growth, Preparation, and Characterization of Boron Carbide” Annapolis, MD.
- 2018 Poster Presentation—The MEDE 2018 Fall Meeting “Crystal Growth and Characterization of Boron Carbide” Baltimore, MD.
- 2018 Poster Presentation—Hopkins Summer Research Symposium “Crystal Growth and Characterization of Boron Carbide” Johns Hopkins University, Baltimore, MD.
- 2018 Oral Presenter, “Bioengineering and My Academic Journey” Hopkins Engineering Innovation – Career Connections 2018. Johns Hopkins University, Baltimore, MD.

Techniques

Sterile Cell Culture	Powder X-ray Diffraction Analysis
DENA Gold Nanowire Growth	AutoCAD sketching
Floating Zone Crystal Growth	CAD 3D Modeling
Laue Diffraction Analysis	MATLAB coding

Professional Affiliations

- 2020 Bioengineering Graduate Student Society (UMD), August 2020 – Present.
- 2020 Black Engineers Society (UMD), August 2020 – Present.
- 2020 National Society of Black Physicists, January 2020 – Present.
- 2017 National Organization for the Professional Advancement of Black Chemists and Black Chemical Engineers, October 2017 – Present.
- 2014 National Society of Black Engineers, Temple University, September 2014 – Present.

References

Dr. Michael Spencer
Professor of Electrical Engineering, Morgan State University.
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Dr. Reza Ghodssi
Herbert Rabin Distinguished Chair in Engineering, University of Maryland – CP.
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Dr. W. Adam Phelan
Scientist 3, Los Alamos National Laboratory.
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