# SREENIVAS RAGURAMAN

Ph.D. Candidate | Materials Science and Engineering Johns Hopkins University, Baltimore, MD

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## Research Interests

- 1. Defect engineering and microstructural optimization in metallic materials to advance mechanical strength, corrosion resistance, and biocompatibility.
- 2. Thermomechanical processing, severe plastic deformation, and casting techniques for scalable design of lightweight alloys for biomedical, structural, automotive, aerospace, and defense applications.
- 3. Mechanistic understanding of in-vitro degradation, corrosion kinetics, and potential biological responses to emerging biodegradable metals and composites.
- 4. Integration of experimental process parameters and advanced characterization (SEM, EBSD, APT, PAS) with machine learning-guided discovery and process optimization frameworks.
- 5. Translation of fundamental materials science insights into implantable devices, lightweight protection systems, and materials for extreme environments.

### Education

## Johns Hopkins University

Baltimore, MD

Doctor of Philosophy - Materials Science and Engineering; GPA: 4.00/4.00

May 2026 (Expected)

Advisor: Prof. Timothy P. Weihs

Thesis: Tailoring Magnesium Alloys for Biomedical and Structural Applications through Process-Structure-Property Optimizations Thesis Committee: Prof. Timothy P. Weihs, Prof. Michael Falk, Prof. Paulette Clancy, Dr. Arun Devaraj, Prof. Roger Guillory

#### Johns Hopkins University

Baltimore, MD

Master of Science in Engineering – Materials Science and Engineering

May 2023

National Institute of Technology, Tiruchirappalli (NIT, Trichy)

Tamil Nadu, India

Bachelor of Technology - Metallurgical and Materials Engineering

Jun 2021

Advisors: Prof. N. Ramesh Babu & Dr. -Ing Prince Gideon

Undergraduate Thesis: Development of a degradation model for magnesium alloys in simulated body fluids using numerical methods.

# Affiliations

Visiting Researcher | Physical Metallurgy

Richland, WA

Pacific Northwest National Laboratory | Host: Dr. Arun Devaraj

April 2024 - Present

Foreign Guest Researcher | Nanomechanical Properties Group

Gaithersburg, MD

National Institute of Standards and Technology

Jun 2023 - Present

Graduate Researcher | Hopkins Extreme Materials Institute

Baltimore, MD

Johns Hopkins University | Advisor: Prof. Timothy P. Weihs

Aug 2021 - Present

# Honors and Awards

- Discussion Leader, Gordon Research Seminar Physical Metallurgy 2025, Stonehill College, MA Invited to moderate the session "Processing-Structure Relationships: Probing Microstructure Formation" at GRS.
- TMS Travel Grant, Functional Materials Division (FMD), TMS 2025 \$350 award granted for research contributions on biomedical magnesium alloys to attend the TMS 2025 Annual Meeting.
- Donald S. Rodbell Graduate Memorial Fellowship, Whiting School and Engineering, Johns Hopkins University Awarded for excellence in academics and research; provides \$3000 annual stipend supplement from 2024 to graduation.
- TMS Travel Grant, Light Metals Division (LMD), TMS 2024 \$500 award granted for research contributions on magnesium alloys to attend the TMS 2024 Annual Meeting.
- Graduate Research Fellowship, Johns Hopkins University Full funding awarded upon admission to the Ph.D. program in Materials Science and Engineering, 2021.

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- Winner, Start-Up Weekend 2017, NIT Trichy, powered by Google.
  - First place for the entrepreneurship project "Cocoon" at a national competition.
- CIWG Scholarship, NIT Trichy.

Full academic scholarship covering over 75% of tuition and significantly subsidizing housing and living costs through merit-based selection (2017).

## **Publications**

<u>Self</u> | † co-first author | **bold**: Journal | **Violet**: Sreenivas's UG/MS mentees | Corresponding Author: ■

#### • Journal Articles

- 1. <u>Sreenivas Raguraman</u> ✓, Andrew Kim, Tunde Ayodeji, Adam Griebel, Diana Bershadsky, Tram Nguyen, Timothy P. Weihs ✓
  - "Simultaneous Optimization of Strength and Bio-Corrosion Resistance in Biodegradable ZX10 Magnesium Alloy via Thermomechanical Processing and Annealing", Journal of Alloys and Compounds, 2025, 180078. [IF: 5.8]
- 2. Sreenivas Raguraman 

  →, Beril Ulugun, Tunde Ayodeji, Rida Chowdhury, Adam Griebel, Timothy Weihs 

  "Evaluating In-Vitro Corrosion Testing of ECAP-Processed Lean Magnesium Alloys: The Critical Role of Degradation 
  Media Composition, Buffering, and Volume", JOM, 2025, 1-10. [IF: 2.1]
- 3. Sreenivas Raguraman ⋈, Maitreyee Sharma Priyadharshini, Tram Nguyen, Ryan McGovern, Andrew Kim, Adam Griebel, Paulette Clancy, Timothy P. Weihs ⋈ "Machine Learning-Guided Accelerated Discovery of Structure-Property Correlations in Lean Magnesium Alloys for
- Biomedical Applications", Journal of Magnesium and Alloys, 2024, 12.6:2267-2283. [IF: 15.8]
  4. Somasundaram Prasadh†, Sreenivas Raguraman†, Raymond Wong ⋈, Manoj Gupta ⋈
- "Current Status and Outlook of Temporary Implants (Magnesium/Zinc) in Cardiovascular Applications", Metals, 2022, 12(6):999. [IF: 2.6]
- 5. Gyan Shankar, Sreenivas Raguraman, Luis A. Barrales-Mora, Satyam Suwas 

  "Development of Recrystallization Texture in Commercially Pure Titanium: Experiments and Simulation", JOM, 2020, 72(12):4559-4573. [IF: 2.1]
- Conference Proceedings (Peer-Reviewed)
  - 1. Sreenivas Raguraman ⋈, Ryan McGovern, Andrew Kim, Veronica Ivanovskaya, Tram Nguyen, Tunde Ayodeji, Adam Griebel, Timothy P. Weihs "Impact of Thermomechanical Processing on Structure-Property Relationships for the Biodegradable ZX10 Magnesium Alloy", Magnesium Technology, 2024, 213-216.

# • Book Chapters

- Somasundaram Prasadh, <u>Sreenivas Raguraman</u>, Raymond Wong, Manoj Gupta <u>™</u>
   "<u>Metallic Foams in Bone Tissue Engineering</u>", in Pandey, L.M., Hasan, A. (eds), Nanoscale Engineering of Biomaterials: Properties and Applications, Springer, Singapore, 2022, 181-205.
- Under Review/In Preparation
  - 1. Sreenivas Raguraman, Homero Reyes Pulido, Christopher Hutchinson, Marc H. Weber, Arun Devaraj, Michael L. Falk, Timothy P. Weihs; "Vacancy Engineering in Metals and Alloys" (Review Article accepted for Submission in Nature Materials).
  - 2. Beril Ulugun, **Sreenivas Raguraman**, Nana Barimah Osei-Owusu, Sneha Raj, Clarence Ramirez, Adam Griebel, Timothy P. Weihs; "In-Vitro Corrosion-Induced Strength-Ductility Degradation in WE43 and ZX10 Magnesium Alloy Fine Wires for Biomedical Applications", PREPRINT available in **ResearchSquare**, 2025.
  - 3. Sreenivas Raguraman, Mitchell Connon, Camryn Byrum, Rohit Berlia, Berli Ulugun, Veronica Ivanovskaya, Roger Guillory, Timothy P. Weihs; "Regulating Aluminum Release in Biodegradable Mg-Al Alloys via Microstructural Design: Bridging Insights from In-Vitro and In-Vivo Studies."
  - 4. Michael Flickinger, <u>Sreenivas Raguraman</u>, Amee Polk, Colin Goodman, Rami Knio, Mark A. Foster, Timothy P. Weihs; "Ignition and Combustion Properties of Composite Al/Zr Powders as a Function of Al-Zr Intermetallic Heats of Formation."

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5. <u>Sreenivas Raguraman</u>, Jack Grimm, Marc H. Weber, Francelia Sanchez Escobar, <u>Camryn Byrum</u>, Homero Reyes Pulido, Arun Devaraj, Michael L. Falk, Timothy P. Weihs; "Vacancy-Induced Solute Segregation in Binary Magnesium Alloys."

- 6. <u>Sreenivas Raguraman</u>, Maitreyee Sharma Priyadharshini, <u>Tunde Ayodeji</u>, <u>Andrew Kim</u>, <u>Camryn Byrum</u>, <u>Veronica Ivanovskaya</u>, <u>Ryan McGovern</u>, <u>Tram Nguyen</u>, Adam Griebel, Paulette Clancy, Timothy P. Weihs; "Machine Learning-Guided Process Optimization in Biodegradable ZX10 Magnesium Alloy."
- 7. <u>Sreenivas Raguraman</u>, Adam Griebel, Timothy P. Weihs; "Processing Matters: Reframing Material Design Beyond Composition."

### **Funded Grants**

## Excess Vacancy Enabled Transformations in Light Metal Alloys,

National Science Foundation (NSF-DMR), Award #2320355, Funded: 2023.

**PIs:** Michael L. Falk (PI), and Timothy P. Weihs (Co-PI)

Role: Sreenivas Raguraman (Major Contributor & Experimental Lead)

Total Funding: \$710,125 (including additional \$20,000 NIST-NSF Supplemental Award written by me).

Additional Grant Writing Experience: Contributing to the development of multiple grant proposals to ARPA-H, NIH, DoD and NSF focused on advanced structural biomaterials and biodegradable metal systems.

# Research Mentorship

Over the course of my Ph.D., I have **mentored** and **supervised** a diverse group of students, including high school, undergraduate, and Master's students at Johns Hopkins University. My mentees have **co-authored peer-reviewed publications**, **presented research** at university symposia (**DOM/WSE Research Retreat, DREAMS**), secured competitive fellowships (**PURA**, **SURF**, **SERIUS**), and advanced to graduate programs or industry positions.

# Master's Students (Johns Hopkins University)

2022-2023	Tram Nguyen*	M.S. Materials Science and Engineering Currently: Ph.D. Candidate, JHU (Grayson Lab)			
2023-2023	Diana Bershadsky*	M.S. Mechanical Engineering Currently: Shift Supervisor at Puratos			
Undergradua 2022–Present	te Students (Johns Hopkins Andrew Kim*				
2022–Present	Veronica Ivanovskaya*	B.S. Materials Science and Engineering SURF Fellow at NIST			
2023 – 2025	Camryn Byrum	B.S. Biomedical Engineering			
2023-2025	Tunde Ayodeji*	B.S. Mechanical Engineering SERIUS Fellow at NUS Singapore; Accepted to 5-Year BS/MSE Program at JHU			
2023 – 2024	Ryan McGovern*	B.S. Biomedical Engineering			
2022–2024	Rida Chowdhury*	B.S. Biomedical Engineering Currently: Quality Engineer at Medtronic			
2023	Makayla Mitchell	B.S. Chemical and Biomolecular Engineering			
2022 - 2023	Yi Shen	B.S. Biomedical Engineering			
High School Students					
2023	Karthik Muthukumar	High School Junior, Urbana High School			

## **Professional Involvement**

## Conference Organizing Committee

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AEOP Apprentice

<sup>\*</sup>co-authors on publications

2026 Lead Organizer (Student), Vacancy Engineering in Metals & Alloys, TMS Annual Meeting 2026.

Spearheaded symposium concept and obtained multi-committee approval

(Structural Materials, Processing, Shaping & Forming, Phase Transformations, ICME Divisions).

**Co-organizing the symposium** alongside Professors Michael Falk, Timothy Weihs, Christopher Hutchinson, Bharat Gwalani, Dr. Arun Devaraj, Dr. Marc H. Weber, and Homero Reyes Pulido,

collaboratively developing and finalizing the symposium scope and structure.

2025 Discussion Leader, Gordon Research Seminar — Physical Metallurgy, Stonehill College.

Invited to moderate the "Processing-Structure Relationships" session at GRS 2025.

2023 Organizer, Slip, Twins & Voids Symposium, MACH Conference 2023.

**Invited** to co-organize a session on advanced deformation mechanisms.

#### Journal Services

2025–2026 Co-Guest Editor, JOM Special Issue titled "Advanced Surface Processing of Mg Alloys for

**Engineering Applications**," sponsored by the Magnesium Committee.

2025-2026 Advisor-in-Training, JOM, Magnesium Committee (TMS).

Elected by committee vote (67% approval with 40+ members from all over the word).

Will serve as Lead Editor for the 2026 Magnesium Committee Special Issue of JOM.

2025 - Present Reviewer, Anti-Corrosion Methods and Materials.

2025 - Present Reviewer, Journal of Alloys and Compounds.

2025 - Present Reviewer, JOM.

2024 - Present Reviewer, Materials Characterization.

## Conference Technical Committees

2025 Member, Magnesium Technical Committee, TMS. 2024 Member, Biomaterials Technical Committee, TMS.

## Department and University Service

2023 Mentor, AEOP High School Apprenticeship Program, HEMI, JHU.

Mentored high school students in research; awarded \$1000 for mentorship excellence.

2023–2024 Vice President, Materials Graduate Society (MGS), JHU.

**Elected** by graduate student body.

2022–2023 International Representative, MGS, JHU.

**Elected** by graduate student body.

2022 Ph.D. Student Representative, Departmental Review Committee, JHU.

**Invited** by department leadership to represent graduate students.

2021–2023 Safety Captain, Weihs Group, JHU.

**Nominated** to serve as laboratory safety officer.

2022 **Department Representative**, Graduate Representative Organization (GRO), JHU.

**Elected** by graduate student body.

#### **Professional Memberships**

2024-Present Member, International Magnesium Association (IMA)

2023-Present Member, Materials Research Society (MRS)

2022–Present Member, The Minerals, Metals, and Materials Society (TMS)

2022–Present Member, ASM International

2022–Present Member, Association for Iron and Steel Technology (AIST)

#### Teaching Experience

# Graduate Teaching Assistant – Thermodynamics of Materials (Graduate)

Baltimore, MD

Johns Hopkins University | **Prof. Peter Searson** 

Aug 2022 - Dec 2022

- Conducted weekly tutorial sessions to reinforce core thermodynamic concepts for first-year graduate students.
- Held office hours to assist students with homework, clarify conceptual difficulties, and prepare for exams.
- o Developed and graded weekly problem sets and prepared detailed solution manuals.

# Graduate Teaching Assistant – Thermodynamics/Materials (Undergraduate)

Baltimore, MD

Johns Hopkins University | Prof. James B. Spicer

Jan 2023 - May 2023

- $\circ\,$  Held office hours and review sessions to support students in homework assignments and exam preparation.
- o Graded homework assignments, midterm exams, and final exams.

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# Conference, Poster and Seminar Presentations

## **Upcoming Presentations**

2025 Gordon Research Seminar - Physical Metallurgy, Easton, MA (Poster): Unraveling the Role of

Vacancies in Driving Solute Clustering in Magnesium Alloys

2025 Materials Science & Technology 2025 (MS&T25), Columbus, OH (Poster): Deciphering the Role

of Microstructure in Governing Corrosion and Aluminum Release in Mg-Al Alloys (Invited)

#### **Oral Presentations**

2025 TMS Annual Meeting, Las Vegas, NV: Vacancy Induced Solute Clustering in Binary Magnesium

Alloys

2024 Biometal Symposium, Krakow, Poland: Machine learning-guided accelerated discovery of structure-

property correlations in lean magnesium alloys for biomedical applications

2024 TMS Annual Meeting, Orlando, FL: Machine learning-quided accelerated discovery of structure-

property correlations in lean magnesium alloys for biomedical applications - ZX10 Mq alloy

2024 TMS Annual Meeting, Orlando, FL: Manipulating Precipitate Population to Modulate Corrosion and

Al Release in Mg-9Al Biodegradable Implants

2023 TMS Annual Meeting, San Diego, CA: Effect of Grain Size and Precipitates on the Mechanical and

Biocorrosion Properties of ZX10 Mg Alloy

2023 Materials Graduate Society Research Seminar, Johns Hopkins University, Baltimore, MD: Effect

of Grain Size and Precipitates on the Mechanical and Biocorrosion Properties of ZX10 Mg Alloy

2021 Materials Advantage Alumni Talk, NIT Trichy (Remote): Beyond UG - Explore Ph.D. in Materials

Science in the US as an Indian Student

## **Poster Presentations**

2024 Biometal Symposium, Krakow, Poland: Machine learning-guided accelerated discovery of structure-

property correlations in lean magnesium alloys for biomedical applications

2024 Biometal Symposium, Krakow, Poland: From Corrosion to Mechanics: Evaluating Novel Magnesium

Alloys for Biodegradable Wire Applications

2024 Pacific Northwest AVS Chapter (PNWAVS), Richland, WA: From Fiery Furnace to Bone Fixer:

Unveiling the Processing-Structure-Property Relationships in Magnesium Alloys for Enhanced Biodegrad-

able Implant Design

2024 Department of Medicine & Whiting School of Engineering Research Retreat, Johns Hopkins

University, Baltimore, MD: From Fiery Furnace to Bone Fixer: Unveiling the Processing-Structure-

Property Relationships in Magnesium Alloys for Enhanced Biodegradable Implant Design

2023 Gordon Research Conference - Physical Metallurgy, Easton, MA: Impact of Thermo-Mechanical

Processing on Structure-Property Relationships for the Biodegradable ZX10 Mg Alloy

2023 Gordon Research Seminar - Physical Metallurgy, Easton, MA: Impact of Thermo-Mechanical

Processing on Structure-Property Relationships for the Biodegradable ZX10 Mg Alloy

2022 Department of Medicine & Whiting School of Engineering Research Retreat, Johns Hopkins

University, Baltimore, MD: Influence of Microstructure on the Biocorrosion and Mechanical Properties

of a Biodegradable Implant Material - ZX10 Mg Alloy

# Skills Summary

Characterization Optical Microscopy, Scanning Electron Microscopy (SEM), X-Ray Diffractometry (XRD), X-Ray

**Tools:** Micro-computed Tomography ( $\mu$ -CT), Optical Profilometry, Focused Ion Beam (FIB), Atom Probe

Tomography (APT)

Testing: Mechanical Testing (Tension, Compression, Impact, Hardness, Fatigue), Digital Image Correlation,

Damping Analysis, Corrosion Testing (Immersion, Hydrogen Evolution, Electrochemical Studies

(Potentiodynamic Polarization), pH Variation), Gas Pycnometry, Profilometry

**Programming:** MATLAB, Python

Software: OriginPro, Digital Micrograph, X'Pert HighScore, SOLIDWORKS (CAD), Microsoft Suite, Im-

ageJ, GrabCAD, LATEX, AP-Suite, ThermoCalc

Processing Routes: Extrusion, Equal Channel Angular Processing, Rolling, Disintegrated Melt Deposition, Casting,

Heat Treatment, 3D Printing - FDM

Other: Metallography, Metallic sample Preparation for electron microscopy, Machining (Electrical dis-

charge machining; Diamond Wire Saw; Band Saw; Lathe)

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# **Experience and Projects**

Graduate Researcher | Process-Structure-Property Correlation in Mg alloys

Johns Hopkins University | Advisor: Prof. Timothy P. Weihs

Baltimore, MD Aug 2021 - Present

# 1. Process-Structure-Property Optimizations in Dilute Magnesium Alloys for Biomedical Implants In collaboration with JHU-ChemBE, Fort Wayne Metals, and Virginia Tech

- Developed a rapid, cost-effective process-microstructure assessment framework for biodegradable Mg alloys, integrating machine learning with cost-effective accelerated characterization techniques.
- Optimized thermomechanical processing (ECAP, extrusion, solutionizing, aging) to enhance mechanical strength and corrosion resistance.
- Achieved a 25% strength increase from conventional processing route without significant corrosion depreciation in Mg alloys through ML-guided process optimization.

# 2. Degradation Kinetics and Ion Release in Mg-Al Alloys for Cardiovascular stents

In collaboration with the Medical College of Wisconsin

- Led in-vitro and in-vivo degradation studies, quantifying corrosion kinetics and aluminum ion release using ICP-MS, CT imaging, and SEM.
- Achieved a **3X** reduction in Al release from Mg-Al alloys via processing control—critical for biodegradable stents.

# 3. Vacancy-Induced Segregation in Mg Alloys

In collaboration with JHU-Physics, PNNL, WSU, and NIST

- First to demonstrate solute clustering in Mg-Al alloys upon quenching, providing experimental validation for vacancy-induced strengthening.
- Investigated vacancy-induced solute clustering via cryo-quenching, APT, PAS, and computational modeling to analyze solute clustering and precipitation behavior.

# Winter Research Intern | Recrystallization Behavior in Biomedical Ti & Mg Indian Institute of Science, Bangalore | Advisor: Prof. Satyam Suwas Bengaluru, India Dec 2019 - Jan 2020

- Investigated the recrystallization behavior of cold-rolled and heat-treated hexagonal close-packed (HCP) titanium and magnesium.
- Characterized microstructure and mechanical properties using optical microscopy, SEM, and micro-hardness testing.
- Optimized annealing parameters (temperature and time) to analyze microstructural evolution and mechanical behavior during recrystallization.

# Summer Research Intern | Synthesis of Mg materials for Orthopedic Implants National University of Singapore | Advisor: Prof. Manoj Gupta Singapore May 2019 - Jul 2019

- Synthesized ultralight magnesium-based alloys and composites via Disintegrated Melt Deposition (DMD), followed by heat treatment and extrusion.
- Characterized microstructure and mechanical properties using SEM, micro-hardness, XRD, compression testing, and damping analysis.
- $\circ$  Achieved a  $65\times$  increase in compressive strength and 80% fracture strain in Mg-Li-SiO<sub>2</sub> composites, with a 6% reduction in density compared to pure Mg.
- Enhanced yield strength by 70% in Mg-Zn-Ca-Mn alloys, demonstrating the beneficial role of manganese while maintaining a minimal 2% density increase.

# Bachelor Thesis | Numerical degradation modeling in biomedical magnesium alloys NIT, Trichy | Advisors: Prof. Ramesh Babu & Dr.-Ing Prince Gideon Tiruchirappalli Jan 2021 - May 2021

- Developed a numerical model to simulate the degradation behavior of binary (Mg–Zn, Mg–Ca) and ternary (Mg–Zn–Ca) biodegradable magnesium alloys in simulated body fluid.
- Applied numerical methods to identify degradation trends based on a comprehensive literature-derived dataset.
- Demonstrated that degradation in Mg–Zn–Ca alloys was more dependent on Ca concentration than Zn, based on comparative analysis of fitted model coefficients across binary and ternary systems.

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# **Ongoing Research Collaborations**

## Academia

2023	Prof. Paulette Clancy	Professor/ AI-X foundry	Johns Hopkins University, USA
2023	Prof. Michael Falk	Professor/ Materials Engineering	Johns Hopkins University, USA
2023	Dr. Marc H. Weber	Research Professor	Washington State University, USA
2023	Prof. Roger Guillory II	Assistant Professor/Pediatrics	Marquette University/Medical College of Wisconsin
2023	Prof. Maitreyee Sharma	Assistant Professor	Virginia Tech, USA
2023	Prof. Suhas Prameela	Assistant Professor	University of Utah, USA

#### National Laboratory

2025 Prof. Chris Hutchinson

2023	Dr. Mark McLean	Materials Research Engineer	National Institute of Science and Technology, USA
2023	Dr. Arun Devaraj	Chief Materials Scientist	Pacific Northwest National Laboratory, USA

Monash University, Australia

## Industry

2021 Mr. Adam Griebel Senior R&D Manager Fort Wayne Metals, USA

## References

## 1. Timothy P. Weihs, Professor & Program Director, MSEE-URA

Department of Materials Science and Engineering, Johns Hopkins University

Professor

Relationship: Ph.D. Thesis Advisor

Email: weihs@jhu.edu

## 2. Paulette Clancy, Edward J. Schaefer Professor & Director of Research, AI-X initiative

Department of Chemical and Biomolecular Engineering, Johns Hopkins University

Relationship: Ph.D. Thesis Committee Member

Email: pclancy3@jhu.edu

#### 3. Michael L. Falk, Professor and Vice Dean of Undergraduate Education

Department of Materials Science and Engineering, Johns Hopkins University

Relationship: Ph.D. Thesis Committee Member

Email: mfalk@jhu.edu

# 4. Roger J. Guillory II, Assistant Professor

Joint Department of Biomedical Engineering, Marquette University/Medical College of Wisconsin

Relationship: Ph.D. Thesis Committee Member

Email: rguillory@mcw.edu

# 5. Maitreyee Sharma Priyadharshini, Assistant Professor

Kevin T. Crofton Department of Aerospace and Ocean Engineering, VirginiaTech

Relationship: Collaborator | Mentor

Email: msharmap@vt.edu

# 6. Suhas Eswarappa Prameela, Assistant Professor

Department of Materials Science and Engineering, University of Utah

Relationship: Collaborator | Mentor Email: suhas.prameela@utah.edu

## 7. Adam J. Griebel, Senior R&D Engineer

Fort Wayne Metals Research Products LLC

Relationship: Industry Collaborator Email: adam\_griebel@fwmetals.com

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