DARSHAN BAMNEY

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Education

Present **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
Doctor of Philosophy in Materials Science and Engineering | GPA - 3.89 / 4

2017 **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
Master of Science in Materials Science and Engineering | GPA - 3.84 / 4

2015 **M. S. RAMAIAH INSTITUTE OF TECHNOLOGY** **BANGALORE, KARNATAKA**
Bachelor of Engineering in Mechanical Engineering | GPA 9.33 / 10

- Specialization in Materials Science and Metallurgy, and Manufacturing Processes.

Professional Experience

Jun 2016- **FEDERAL-MOGUL POWERTRAIN** **SOUTH BEND, INDIANA**
Aug 2016 **Foundry Engineering Intern**

- Carried out the Start-Up Curve analysis to investigate and verify the reliability of aluminum piston casting process.
- Assessed, organized and inventoried casting die components, and compiled a die database.
- Designed experimental studies to develop coating procedure and standard work instruction for DFS pouring ladles, leading to projected reduction in scrap due to oxides by 33% and recovery of $114,840 in losses for 2016.

Research Experience

Jun 2017 – **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
Present **Graduate Research Assistant | Department of Materials Science and Engineering**

- Discrete Dislocation Dynamics (DDD) study of dislocation mediated plasticity in Al.
- Developed virtual diffraction methods for characterization of dislocation microstructures in DDD simulations.
- Implemented mobility rules and calibrated DDD model using atomistically derived data.

May 2018 – **LOS ALAMOS NATIONAL LABORATORY** **GAINESVILLE, FLORIDA**
July 2018 **Student Guest | Materials Science and Technology (MST-8)**

- Developed virtual diffraction model for characterization of dislocation microstructures in DDD simulations.

June 2019 – **LOS ALAMOS NATIONAL LABORATORY** **GAINESVILLE, FLORIDA**
Aug 2019 **Student Guest | Materials Science and Technology (MST-8)**

- Hierarchical integration of atomistically-derived dislocation mobility laws into DDD models.

Aug 2016 – **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
May 2017 **Graduate Researcher | Department of Mechanical and Aerospace Engineering**

- Analyzed the biaxial flexural deformation response of Hydroxyapatite-Polysulfone laminated composites, for use as bone substitutes, using the finite element method.
- Optimized the thickness of the interleaf to minimize interlaminar shear stresses, to obtain best design parameters for the biocomposite.

Teaching Experience

Fall 2018 **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
Graduate Teaching Assistant | Department of Materials Science and Engineering

- Assisted instructor in designing coursework, grading exams, assignments, and projects, for Diffusion, Kinetics and Phase Transformation.
- Provided additional course related support and tutoring to a class of 78 graduate students.

Spring 2018 **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
Graduate Teaching Assistant | Department of Materials Science and Engineering

- Assisted instructor in designing coursework, grading exams, assignments, and projects, for Introduction to Materials Science.
- Provided additional course related support and tutoring to a combined class of undergraduate and graduate students.

Jan 2017 – May 2017 **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
Graduate Teaching Assistant | Department of Mechanical and Aerospace Engineering

- Assisted Instructor in organizing, and grading exams, assignments, and projects, for Finite Element Analysis and Design.

Projects

2016 **METALLOGRAPHY OF ALUMINUM ALLOYS USED FOR CASTING PISTONS**

- Prepared samples of hypereutectic aluminum-silicon alloys, for metallographic examination, by polishing, grinding and etching.
- Analyzed the microstructure samples using light optical microscopy to determine the effect of pouring and solidification on the structure and properties of the castings.

Journal Publications

- Dang, K.Q., Bamney, D., Bootsita, K., Capolungo, L., Spearot, D.E. (2019) "*Mobility of dislocations in aluminum: Faceting and asymmetry during nanoscale dislocation shear loop expansion*", Acta Materialia, 168, 426-435.
- Bamney, D., Tallman, A., Capolungo, L., Spearot, D.E. (2020) "*Virtual diffraction analysis of dislocations and dislocation networks in discrete dislocation dynamics simulations*", Computational Materials Science, accepted.
- Dang, K.Q., Bamney, D., Capolungo, L., Spearot, D.E. (2020) "*Mobility of dislocations in aluminum: Role of non-Schmid stress state*, Acta Materialia", accepted.

Conference Presentations

- "*Virtual Diffraction Analysis of Microstructural Features in Discrete Dislocation Dynamics Simulations*", TMS2019 Annual Meeting, San Antonio, Texas, USA.
- "*Hierarchical Integration of Atomistically-derived Dislocation Mobility Laws into Discrete Dislocation Dynamics Simulations*", TMS2020 Annual Meeting, San Diego, California, USA.

Volunteering and Leadership Experience

Mar 2018 - Present **Cuong Nhu – Cypress Dojo at UF** **GAINESVILLE, FLORIDA**
Assistant Instructor – **Two Black**

- Led martial arts training sessions and assisted senior black belts in training practitioners at the University of Florida.

Honors and Awards

Oct 2016 - Present **UNIVERSITY OF FLORIDA** **GAINESVILLE, FLORIDA**
Member | Alpha Epsilon Lambda [AEL] National Graduate Honors Society.
Top 1% of graduate student population at the University of Florida.

Skills

Softwares: Fortran, C++, Matlab, Abaqus, ANSYS, Inventor, Eclipse.
Languages: English, German, Hindi, Kannada.

Website: https://dbamney.github.io
LinkedIn: https://www.linkedin.com/in/dbamney

References

Dr. Douglas E. Spearot	(352)-392-6747	dspearot@ufl.edu
Dr. Bhavani V. Sankar	(352)-392-6749	sankar@ufl.edu