Michael J. Juhasz, Ph.D.

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Education

Ph.D. in Materials Science and Engineering
Youngstown State University
Dissertation: *"In and Ex-Situ Process Development in Laser-Based Additive Manufacturing"*
Advisor: Brett Conner, Ph.D.
December 2019

MS in Mechanical Engineering
Youngstown State University
Thesis: *"Leveraging Surface Topologies and Additive Manufacturing for CubeSat Thermal Control"*
Advisor: Brett Conner, Ph.D.
August 2015

BS in Mechanical Engineering
BS in Applied Mathematics
Youngstown State University
August 2012

Associate's in Machine Tool Technology
New Castle School of Trades
June 2005

Publications

Michael Juhasz, Rico Tiedemann, Gerrit Dumstorff, Jason Walker, Brett Conner, Walter Lang, and Eric MacDonald. *"Hybrid Directed Energy Deposition for Fabricating Metal Structures with Embedded Sensors."* In *Additive Manufacturing*. 2020.

Michael Juhasz, Rico Tiedemann, Gerrit Dumstorff, Brett Conner, Walter Lang, and Eric MacDonald. *"Hybrid Directed Energy Deposition for Fabricating Metal Structures with Embedded Sensors for the Oil and Gas Industry."* In *Offshore Technology Conference*. Offshore Technology Conference, 2020.

M. Maravola, P. Cortes, and M. Juhasz. *"Development of a Low Coefficient of Thermal*

Expansion Composite Tooling via 3D Printing." In *ASME 2018*. https://asmedigitalcollection.asme.org/IMECE/proceedings-abstract/IMECE2018/52019/V002T02A090/276317. 2018.

Corey Shemelya, Angel De La Rosa, Angel R. Torrado, Kevin Yu, Jennifer Domanowski, Peter J. Bonacuse, Richard E. Martin, et al. *"Anisotropy of Thermal Conductivity in 3D Printed Polymer Matrix Composites for Space Based Cube Satellites."* In *Additive Manufacturing* 16 (August): 186–96. 2017.

K. Myers, M. Juhasz, P. Cortes, and B. Conner. "*Mechanical Modeling Based on Numerical Homogenization of an Al2O3/Al Composite Manufactured via Binder Jet Printing."* In *Computational Materials Science* 108 (Part A): 128–35. 2015.

Michael Juhasz, Michael Maravola, Peter-Jon Solomon, Pedro Cortes, Eric MacDonald, Jason Jones, Jason Walker, and Brett Conner. (*In press*). *"Multi-Materials and Multi-Functionality Enabled by Hybrid Additive Manufacturing."* In *International Journal of Additive and Subtractive Materials Manufacturing*.

Michael Juhasz. *(Preprint). "Machine Learning Predictions of Single Clad Geometry in Directed Energy Deposition."* Open Science Framework. (2020).

Presentations

Michael Juhasz, Jared Clark, William Bevin, Jason Walker, and Brett Conner. "Post-processing Heat Treatments and Residual Stress Behavior of AlSi10Mg." Presentation. Materials Science & Technology 2019, Symposium: Additive Manufacturing of Metals: Post Processing. October 2019.

Michael Juhasz, Will Bevan, Jared Clark, Jason Walker, and Brett Conner. *"Post-processing Heat Treatments and Residual Stress Behavior of AlSi10Mg."* Presentation. 2019 Annual International Solid Freeform Fabrication Symposium (SFF Symp 2019), Session: Materials: Metals IV - Aluminum Alloys. August 2019

Michael Juhasz, Rico Tiedemann, Gerrit Dumstorff, Jason Walker, Brett Conner, Eric MacDonald, and Walter Lang. *"Smart Metal Structures with Embedded Strain Sensing Enabled by Hybrid Manufacturing."* Presentation. 2019 Annual International Solid Freeform Fabrication Symposium (SFF Symp 2019), Special Session: Hybrid AM III - Materials, Structures, Function. August 2019.

Michael Juhasz, Rico Tiedemann, Gerrit Dumstorff , Jason Walker, Brett Conner, Walter Lang, and Eric MacDonald. *"Hybrid Directed Energy Deposition for Smart Structural Elements."* Presentation. 2018 Annual International Solid Freeform Fabrication Symposium (SFF Symp 2018), Special Session: Hybrid AM Processes 3 - Hybrid Materials,Structures, Functions. August 2018.

Michael Juhasz, Jason Walker, and Brett Conner. *"Effect of Processing Parameters on Microstructure of PH 13-8 Stainless Steel Fabricated by Hybrid DED/CNC Manufacturing."* Presentation. 2018 TMS Annual Meeting & Exhibition, Symposium: Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III. March 2018.

Michael Juhasz, Jason Walker, and Brett Conner. *"Characterization of Precipitation Hardening 13-8 Stainless Steel Fabricated with Hybrid-DED Manufacturing."* Presentation. Materials Science & Technology 2017, Symposium: Additive Manufacturing of Metals: Microstructure and Material Properties. October 2017.

Awards or Honors

2019 Defense Manufacturing Technology Achievement Award: Readiness Improvement, for the Maturation of Advanced Manufacturing for Low-Cost Sustainment *(MAMLS)* program. *MAMLS* was selected through a competitive process by the Joint Defense Manufacturing Technology Principals *(JDMTP)* for this award.

Experience

FormAlloy Technologies, Inc. *(Spring Valley, California)*
> **Senior Applications Engineer**
> Dates Employed: September 2020 – Present
> - Working for a DED machine manufacturer investigating the areas of:
>   - In-situ process monitoring
>   - Robust process control and management
>   - Multi-material and repair applications

Youngstown State University *(Youngstown, Ohio)*
(6 yrs 8 mos)
> **Adjunct Professor**
> Dates Employed: January 2020 – August 2020
> - Teaching in the Department of Mechanical and Industrial Engineering
>   - Courses such as Dynamic Systems Analysis, Thermodynamics, Systems Design, and Dynamics.
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> **Ph.D. Student**
> Dates Employed: Aug 2015 – Dec 2019 *(4 yrs 5 mos)*

- Investigate Hybrid Manufacturing (DED and Subtractive In-Envelope) for high-value component structural health monitoring
- Investigate casting replacement with LPBF produced AlSi10Mg components for aerospace applications through the development of a post-processing schedule
- Direct, support, and train undergraduate and graduate students:
  - Specimen preparation for multiple forms of material characterization
  - Instrumentation and data acquisition for experiments
  - Mechanical testing of ceramics, metals, composites, and polymers
  - Numerical simulations on the effects of quenching using bilinear, temperature dependent material models
  - Modeling of high-velocity impacts on FGM's using SPH and traditional finite-element methods
  - Creation of a tri-material, discrete-element, structure through DED which exhibited low amounts of thermal expansion
  - Microscopy of EB-PBF produced Ti-6Al-4V
  - Residual stress measurements via ASTM-E837 hole drilling
- Analytical Techniques:
  - Tensile and bending mode mechanical testing
  - Hardness testing (traditional and micro-indentation)
  - XRD, XRF, and EDS
  - Optical and SE microscopy
  - FTIR and Raman Spectroscopy

Graduate Assistant
Dates Employed: Aug 2013 – Aug 2015 *(2 yrs 1 mo)*

- Material property augmentation, specifically thermal conductivity, through surface topology manipulation
  - Simulation in Siemens PLM - NX Space Systems Thermal
- Numerical homogenization technique applied to a two phase interpenetrating ceramic-metallic system utilizing MatLab for elastic tensor simulation compared against experimental results
- Analytical Techniques:
  - Tensile and bending mode mechanical testing
  - High strain-rate mechanical testing (Split-Hopkinson Pressure Bar)
  - Optical and SE microscopy

Makino *(Mason, Ohio)*
(1 yr)

Mechanical Engineer

Dates Employed: Sep 2012 – Aug 2013 *(1 yr)*

- Mechanical Engineer in the Options Engineering Department.
    - Integration and implementation of hardware/software to extend the capabilities of base configuration CNC machines

Youngstown State University *(Youngstown, Ohio)*

(7 mos)

Teaching Assistant

Dates Employed: May 2012 – Jul 2012 *(3 mos)*

- Teaching assistant for Finite Element Analysis class.

Teaching Assistant

Dates Employed: Jan 2012 – May 2012 *(5 mos)*

- Teaching assistant for Dynamics, and Dynamic Systems Modeling classes.

Medart, Inc. *(Ellwood City, Pennsylvania)*
(1 yr 7 mos)

CNC Programmer

Dates Employed: Feb 2005 – Aug 2006 *(1 yr 7 mos)*

Technical Skills

- Programming languages and modeling programs: MatLab, G-code, Python (TensorFlow/Keras, Scikit Learn, etc.), Minitab, Maple
- Computer aided design/engineering: Solidworks, MasterCAM/APlus, Autodesk Fusion 360, Ansys, ImageJ, Mayka
- Other: Windows OS, Linux Mint OS, and Microsoft Office Products

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