

William Hearn

Ljunglidsvagen 10
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Materials Science PhD Student

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Skilled PhD student in materials engineering with almost 3 years of academic research experience in additive manufacturing and the solidification of metals. Also, have almost 2 years of industry experience in research & product development. Interested in conducting work related to defining the process-microstructure-property relationship of metals produced by Additive Manufacturing as well as defining the optimized operating conditions of Additive Manufacturing processes for metal parts and components.

EDUCATION

Master of Applied Science in Materials Engineering **June 2018**

University of Alberta, Edmonton, Canada

Bachelor of Applied Science in Materials Engineering **June 2015**

University of Toronto, Toronto, Canada

ACADEMIC RESEARCH

PhD Thesis – Chalmers University of Technology **May 2018 – Ongoing**

Ferrous Alloy Development for Powder-based Additive Manufacturing

Master's Thesis – University of Alberta **September 2015 – March 2018**

Microstructural Analysis of Rapidly Solidified Hypoeutectic Al-Si Powders

Focused on the influence of rapid solidification process conditions on the microstructure, morphology and mechanical properties of hypoeutectic Al-Si alloys, for use in Additive Manufacturing. Research involves:

- Optical imaging of powders for α -Al cell spacing, SDAS & eutectic spacing analysis
- Hardness testing to quantify mechanical properties of the powders
- MATLAB modelling for process simulation of Impulse Atomization

Bachelor's Thesis – University of Toronto **September 2014 – April 2015**

Cyclic Compression of 3D Printed Microtruss Structures

Quantified the improvement in fatigue behaviour of novel reinforcement mechanisms of high-performance microtruss materials. Also established the behaviour of microtruss structures under static and cyclic compression.

TEACHING EXPERIENCE

Teaching Assistant, Engineering Safety & Risk Management **Fall 2015 – January 2018**

Department of Chemical & Materials Engineering, University of Alberta

- Marked course assessments to ensure the students understood the material
- Helped with development of course content and teaching methods as the course expanded from 100 students to 800 students

Teaching Assistant, Powder Fabrication & Processing **Winter 2016 – Spring 2016**

Department of Chemical & Materials Engineering, University of Alberta

- Developed and marked course assessments to ensure the students understood the material and stayed on track
- Prepared marking rubric and marked midterm and final project reports

- Prepared lecture and class activity on how to conduct literature research, how to do proper citations and how to structure a literature review paper

GRANTS & FUNDING

University of Alberta MSc Funding

September 2015 – March 2018

- Full funding to pursue my MSc degree at the University of Alberta

TMS Student Travel Grant

February 2017

- Awarded \$300 (USD) by TMS to attend the 2017 TMS conference

ASM Student Travel Award Grant

February 2017

- Awarded \$200 (CAD) by ASM Edmonton to attend the 2017 TMS conference

AIME Oral History: Interview with Dr. Robert Lee

February 2016

- Received funding to conduct an interview with Dr. Lee for AIME Oral Histories

PUBLICATIONS & CONFERENCE PRESENTATIONS

Oral Presentations

Hearn, W., Henein, H., Bogno, A-A., Valloton, J., Gallerneault, M. (2017, October). *Solidification & Microstructure Mapping of Rapidly Solidified Hypoeutectic Al-Si Alloys*. Additive Manufacturing of Metals: Microstructure and Material Properties, MS&T 2017, Pittsburgh, USA

Publications

Spinelli, J.E., **Hearn, W.**, Bogno, A-A., Henein, H. (2018). *A General Formulation of Eutectic Silicon Morphology and Processing History*. Light Metals 2018. TMS 2018. The Minerals, Metals & Materials Series. Springer, Cham

PROFESSIONAL EXPERIENCE

The Woodbridge Group

May 2012 – August 2012 & May 2014 – August 2014

Corporate R&D Lab Research Assistant

Worked in the Corporate Research & Development Lab with a focus on hydrophobic & hydrophilic polyurethane foams. Along with conducting research related to TSG product development for headliner foams. Work involved:

- Preparation and formulation of chemical formulae of polyurethane foams

AGFA- Gevaert

May 2013 to May 2014

NPI Lab Research Assistant

Worked in the New Product Introduction department at AGFA-Graphics in Mortsels, Belgium focusing on physical properties testing. Work involved:

- Development and testing of in-production printing plates
- Creating and defining testing standards for company products

TECHNICAL SKILLS

Programming languages and packages: MATLAB, ThermoCalc, Microsoft Office

Image & Data Analysis: SEM, OM, XRD, EDS, ImageJ

REFERENCES

Hani Henein, Professor

Department of Chemical & Materials Engineering
University of Alberta
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Glenn Hibbard, Professor

Department of Materials Science & Engineering
University of Toronto
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