Project 63-L: Aluminum Oxide Melt Interaction

Semi-annual Fall Meeting
October 2021

- Student: Spencer Hunt (Mines)
- Faculty: Dr. Amy Clarke (Mines)

COLORADO SCHOOL OF **MINES**   NSF   **IOWA STATE UNIVERSITY**

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- Student: Spencer Hunt (Mines)
- Advisor(s): Amy Clarke (Mines)

Project Duration
MS: September 2021 to August 2023

- Problem: Oxide bifilm evolution and interaction with both phase formation and crystalline dendrites is not well understood.
- Objective: Investigate the effects of oxide bifilms on phase nucleation process and formation of dendritic microstructures in solidification of aluminum alloys.
- Benefit: This project will guide the development of processing methods that involve solidification and will provide data on oxide-melt interactions during solidification.

Recent Progress
- Literature review
- Coursework initiated
- Equipment training
- Acquire experimental materials
- Dr. Mohsen Asle Zaeem has performed extensive simulations regarding oxide bifilms – I will begin experimental work

Metrics		
Description	**% Complete**	**Status**
1. Literature review	5%	●
2. Produce Pure Al, Al-Cu, and Al-Si samples containing aluminum oxides for solidification experiments	5%	●
3. Perform solidification experiments	0%	●
4. Characterize microstructures after solidification	0%	●
5. Interface with modelers and validate outcomes	0%	●

About Me

Hometown: Brighton, Michigan

Education: Graduated in May 2021 with Bachelors in Material Science and Engineering

Experience:

Dana Inc. – a vehicle driveline producer in Maumee, Ohio

Senior Design – developing a new 5000 series Al alloy with the help of Hobart Filler metals

Williams International – a turbine manufacturer located in Pontiac, Michigan

Hobbies

- Backpacking
- Mountaineering
- Skiing
- Climbing

Thank you!
Spencer Hunt
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