

***Project 36G-L: Control of Microstructure During
Additive Manufacturing of Ni Alloys***

***Semi-annual Fall Meeting
October 2021***

- Student: Ruben Ochoa (Mines)
- Faculty: Amy Clarke, Jonah Klemm-Toole (Mines)
- Industrial Mentors: Jeremy Iten, Elementum 3D
- Other Participants: UT/ORNL, ISU, OSU, Virginia Tech, UCSB, U. Sydney, UNSW



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- Student: Ruben Ochoa (Mines)
- Advisor(s): Amy Clarke, Jonah Klemm-Toole (Mines)

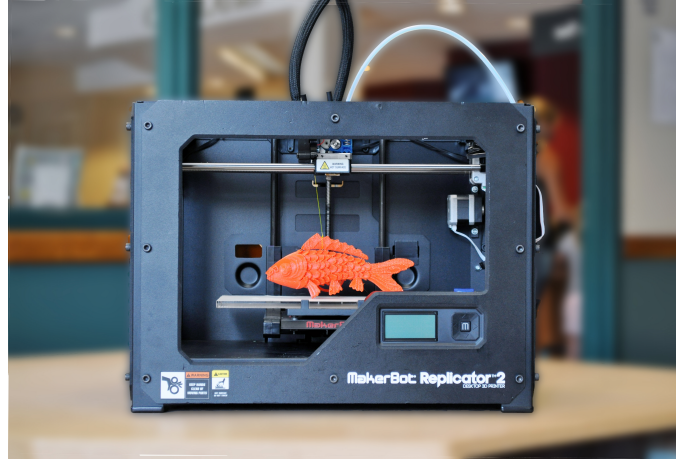
Project Duration Current
PhD : September 2021 to 2025

- **Problem:** The links between AM processing conditions, processing history, and the consequent microstructural evolution are not well understood.
- **Objective:** Understand the role of processing on microstructure and defect development and control.
- **Benefit:** Fundamental understanding of microstructural evolution during AM will result in improved components with controlled properties.

- **Recent Progress:**
- Literature review
- Initiated coursework
- Electron microscopy training
- Materials in hand: IN738, IN718, Haynes 230, Haynes 282, IN625, Hastelloy 276, Rene 80, CM 247LC

Metrics		
Description	% Complete	Status
1. Literature review	5%	●
2. Analysis of APS in-situ radiography data	0%	●
3. Ex-situ metallography and microscopy of Ni-based AM samples	0%	●
4. Columnar-to-equiaxed transition (CET) modeling	0%	●
5. Correlate microstructure observations with AM processing conditions	0%	●

About Me



Thank you!

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