

MSE SEMINAR

March 17, 2017
113 McBryde Hall
3:30 – 4:30 PM
Refreshments at 3:00 PM

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“Simulating impurity segregation in aluminum-gallium alloys”

ABSTRACT

Previous research with low alloy Aluminum shows that certain compositions might be able to be used as a sacrificial anode to protect Steel ship hulls from the corrosive effects of the sea. Initial galvanostatic tests however, gave very different results for seemingly identical test conditions of a particular Aluminum Gallium composition.

In an attempt to understand this alloy system, various computer simulations were done using the Thermo-Calc software package. These simulations suggested that cooling rates could affect segregation of the gallium in the alloy, which might explain the differences shown in previous tests. New samples were poured using chilled molds to vary cooling rate, and new galvanostatic tests were done to see if cooling rate did indeed affect sacrificial anode performance.

More tests need to be done to verify that segregation did or did not occur in the new samples.

BIOSKETCH

Michael Kidd is working on a Ph.D. in Material Science and Engineering, advised by Dr. Alan Druschitz. He earned his B.S. in MSE at Virginia Tech in 2012. He is currently teaching “Introduction to Thermo-Calc” and helping the department integrate the Thermo-Calc Software package into its MSE program.