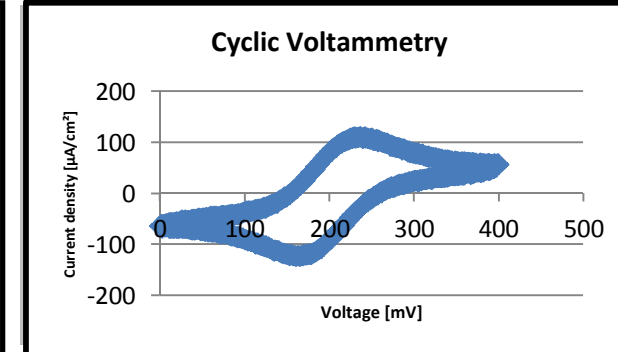
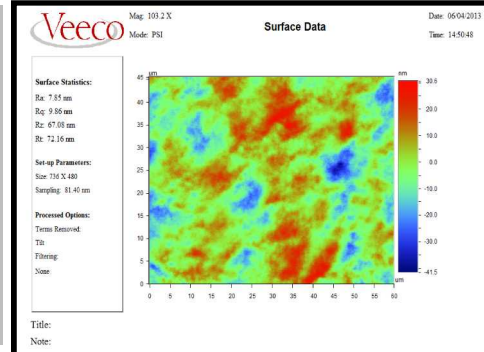
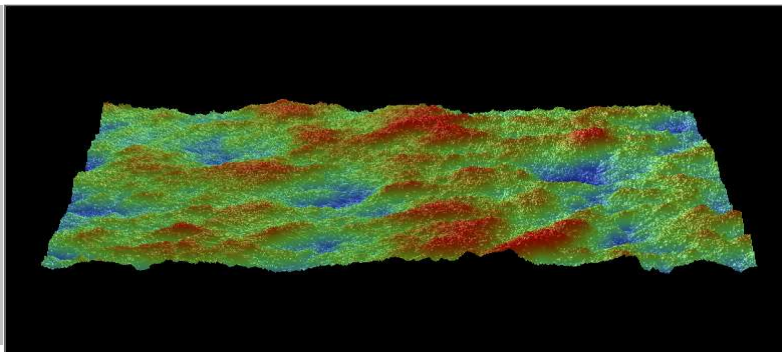


Exceptional service in the national interest



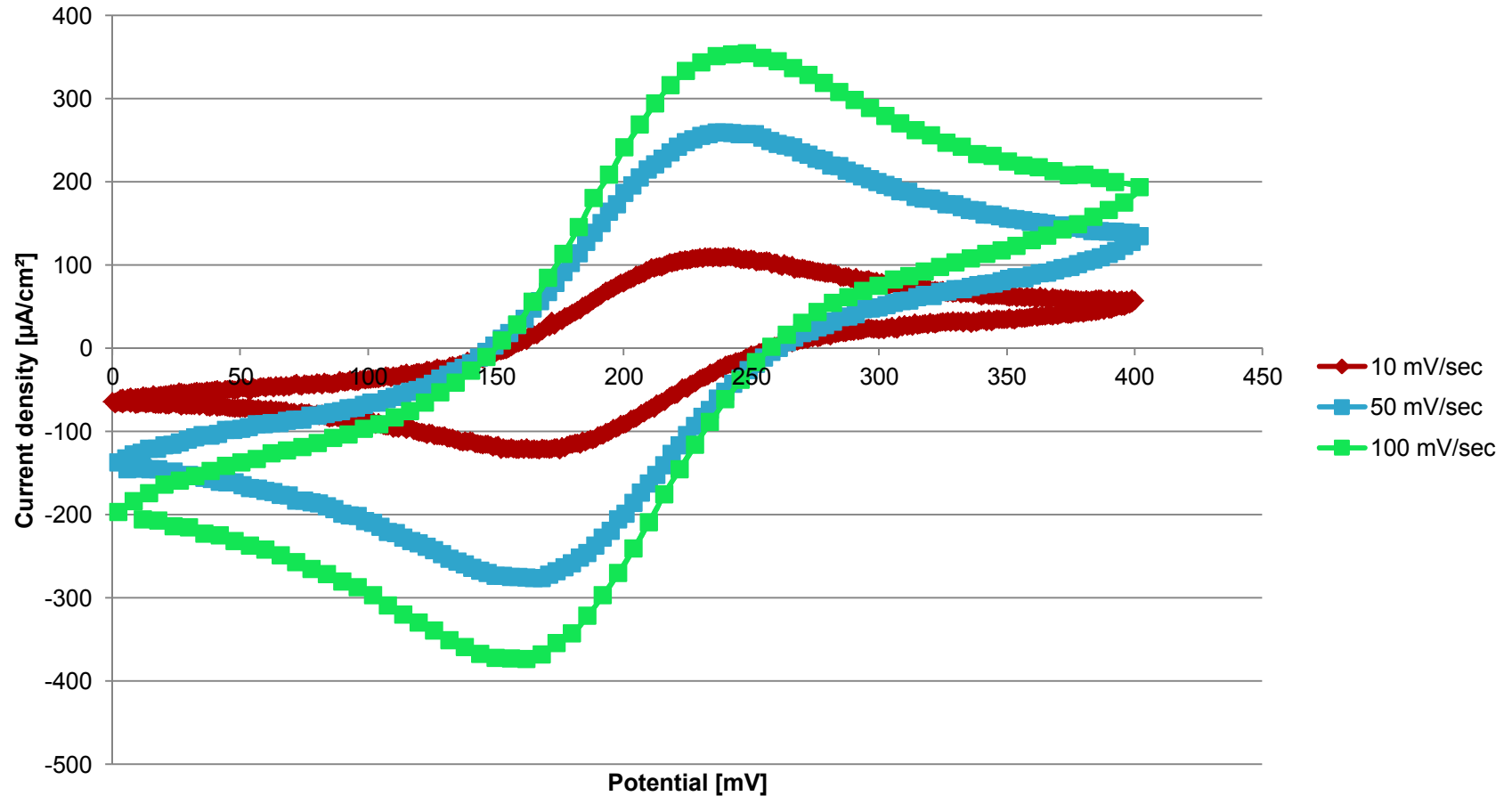
Electropolishing of Z Targets

Midshipman 3/C Tahler Bandarra

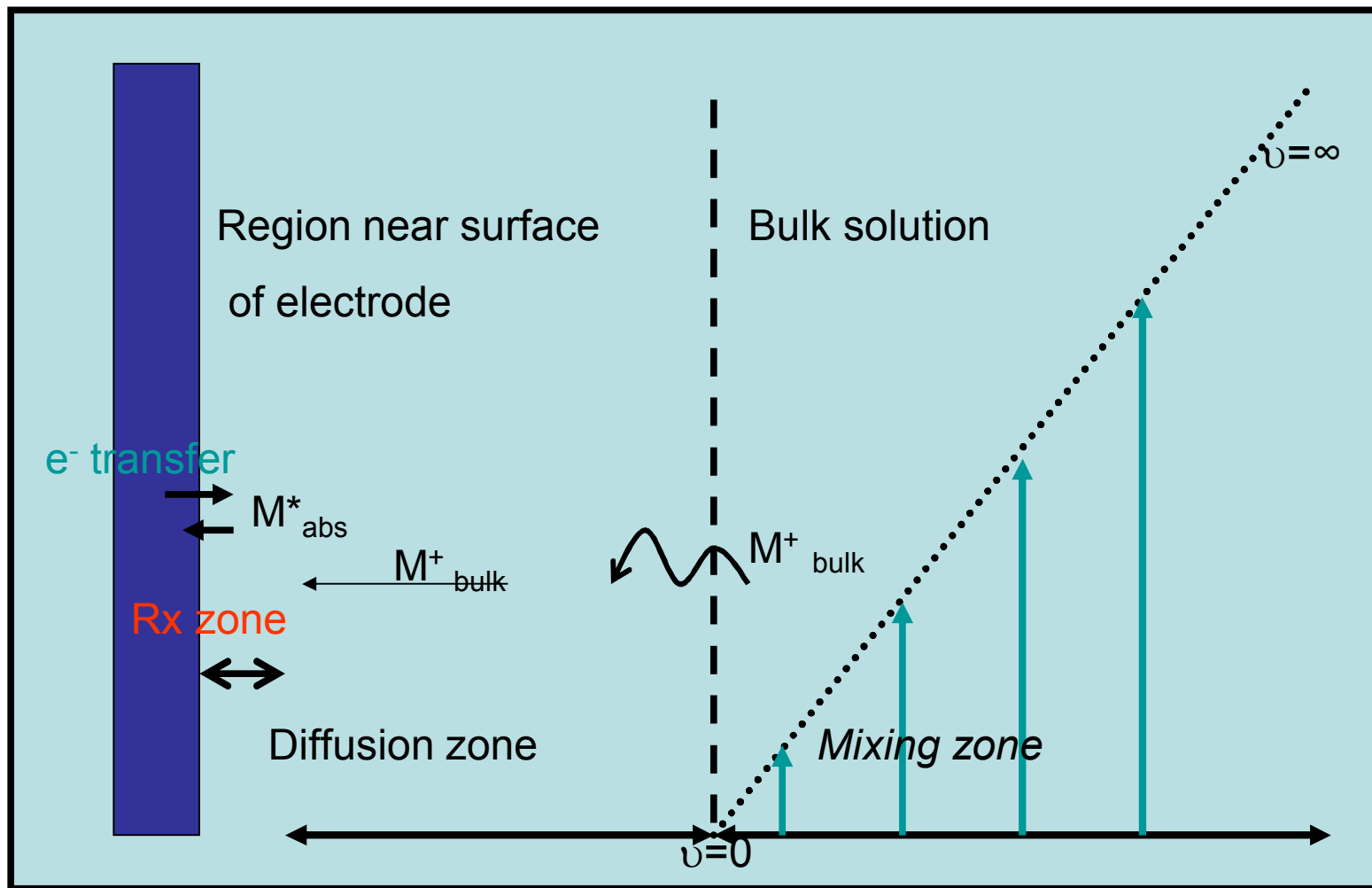
Advisor: W. Graham Yelton

Cyclic Voltammetry

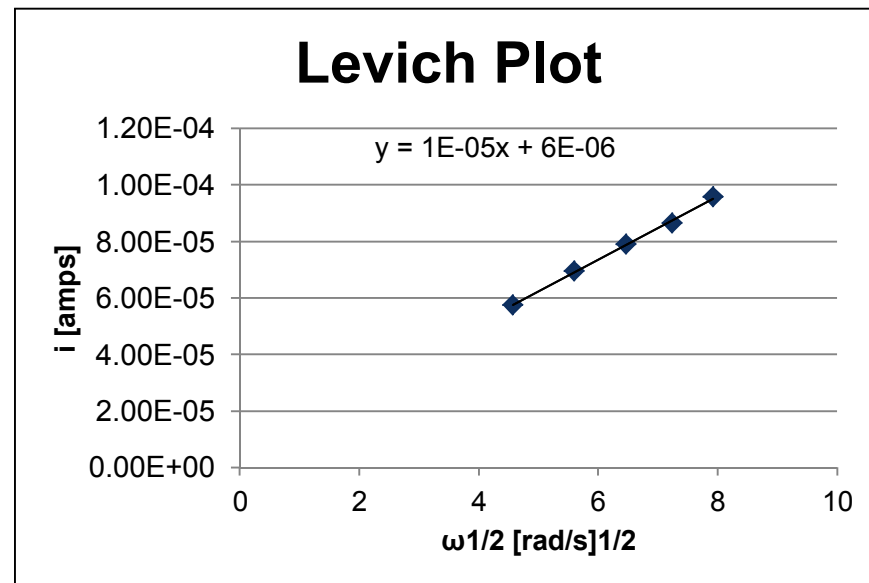
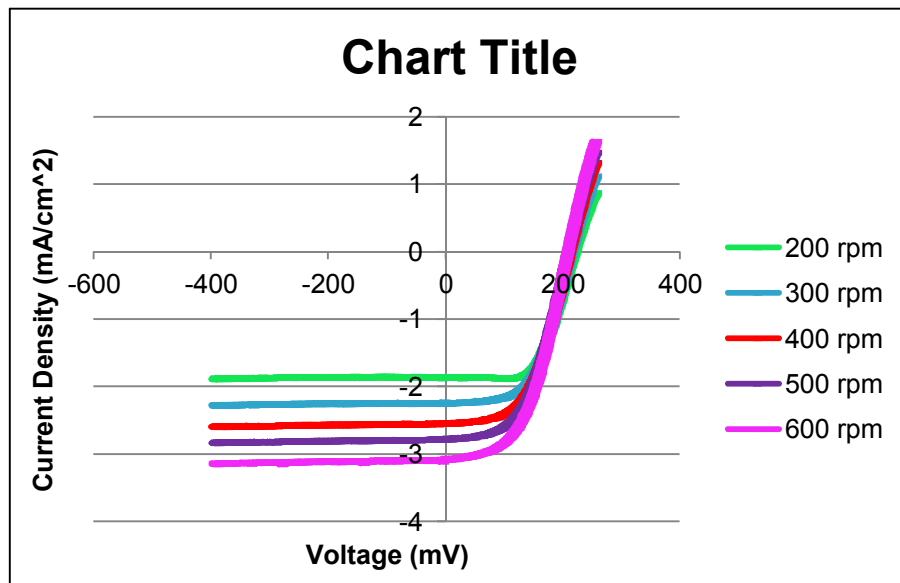
$\text{Fe}^{2+}/\text{Fe}^{3+}$ Cyclic Voltammetry



Diffusivity



Levich Equation and Diffusivity



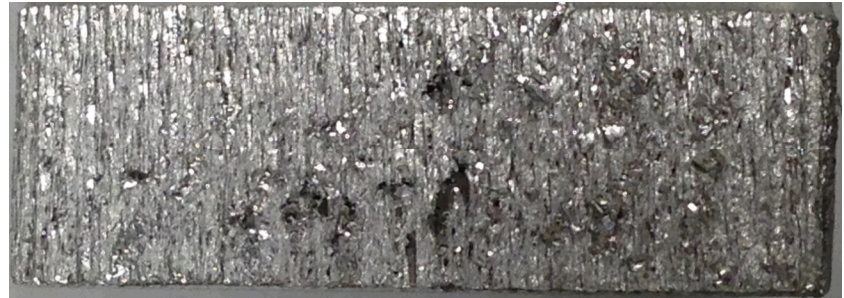
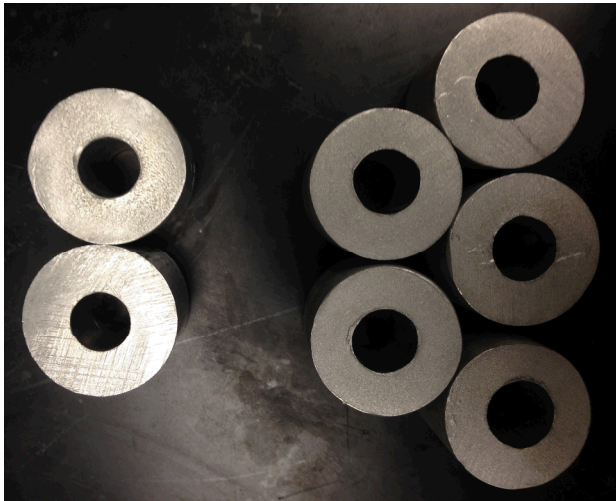
$$i_l = 0.620nFAD_o^{2/3}\omega^{1/2}\nu^{-1/6}C_o$$

Experimental Diffusion Coefficient =
3.9107E-6 cm/s

Literature Diffusion Coefficient=
7.60E-6 cm/s¹

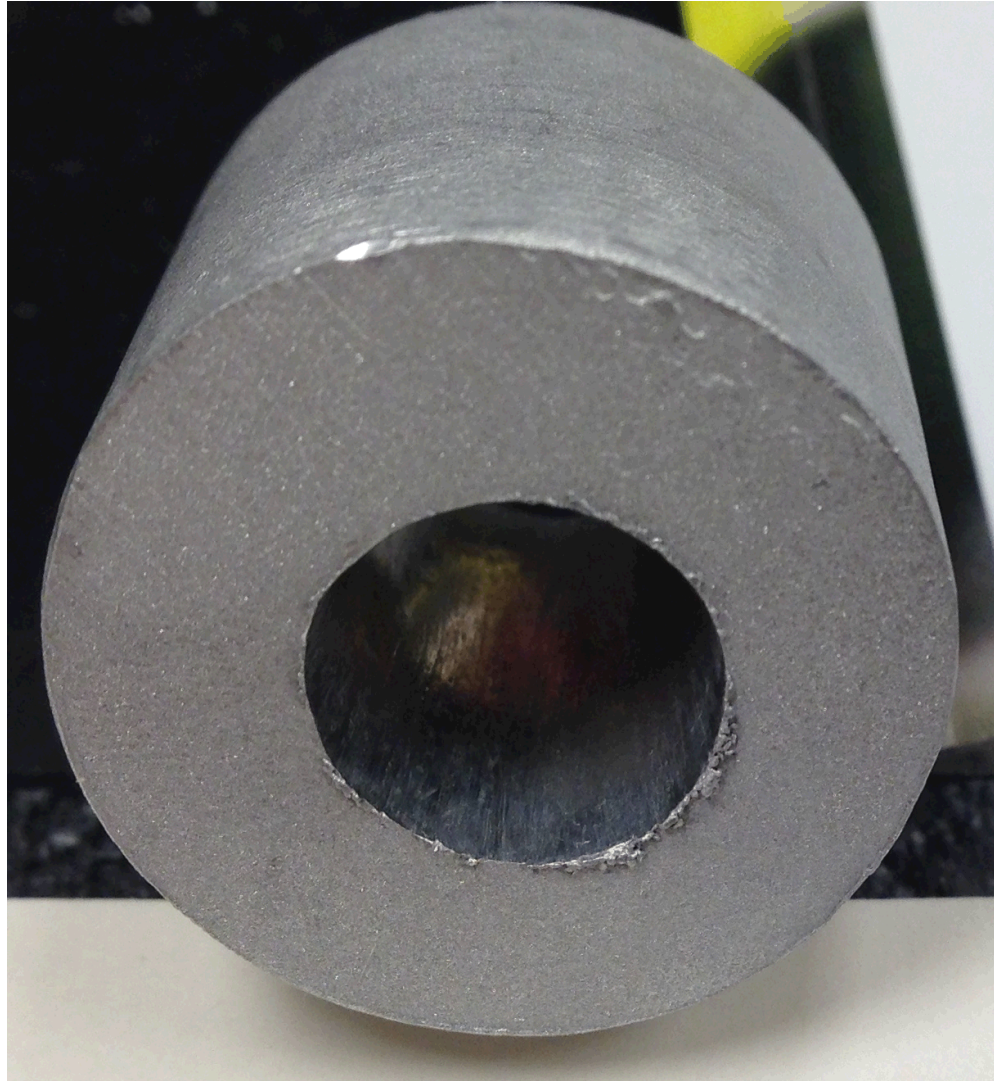
¹From Bard Electrochemical Methods Fundamentals and Applications

Manual Labor



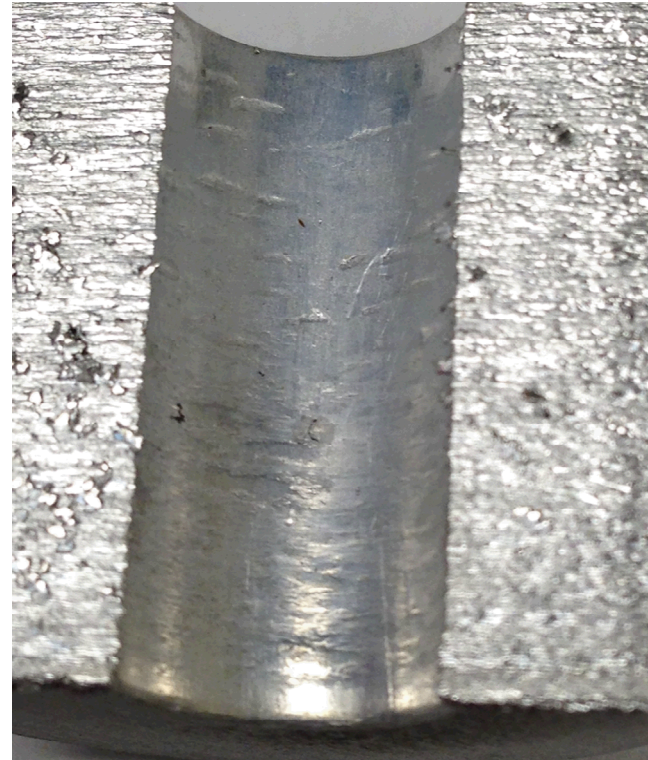
- Before beginning the electropolishing process, the samples had to be polished by hand after the rough machining.

Hand polished finish

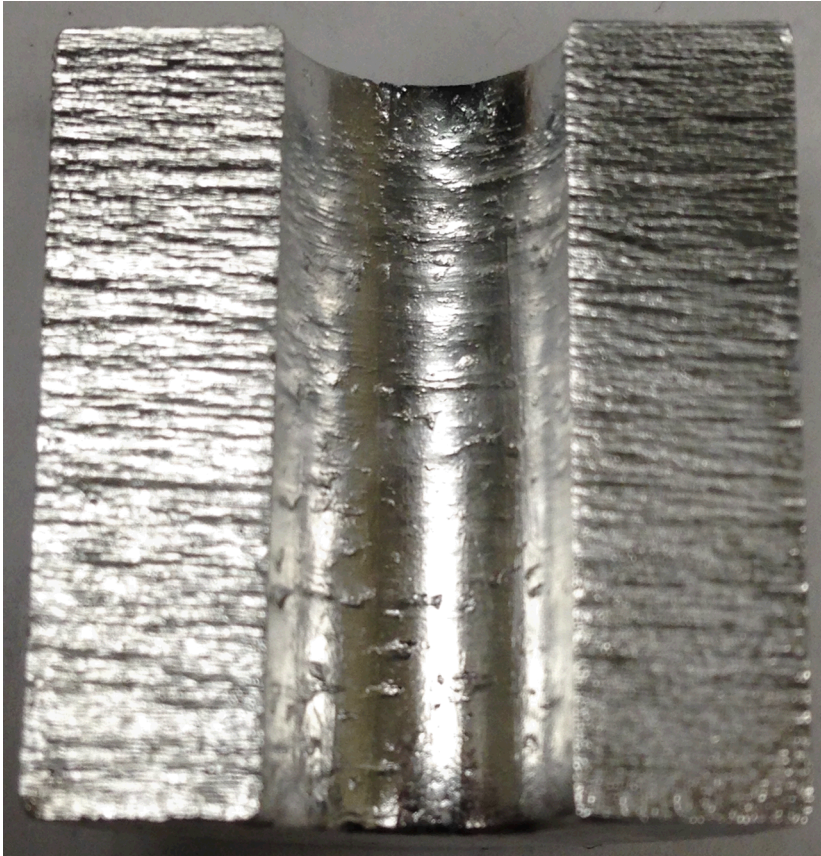


Anodization

- Barrier anodization was used to further reduce the surface roughness



Electropolishing



- Spikes of current are run to allow the polish to strip off aluminum

Smaller Sample

