

Design and Construction of a Deposition Chamber for Thin Metal Films Research



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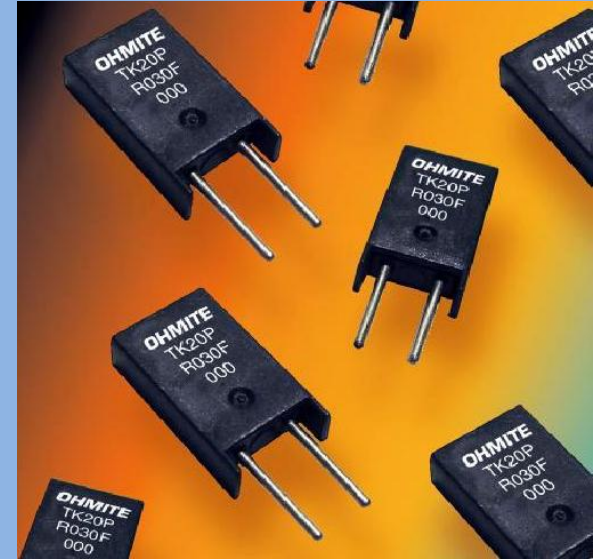
Outline

- Applications
- Motivation
- Deposition Process
- Evaporation Technology
- Apparatus
- Future Work

Applications



<http://astroprofspage.com>



<http://news.thomasnet.com>



<http://www.sierraapplied.com>



<http://www.phys.au.dk>

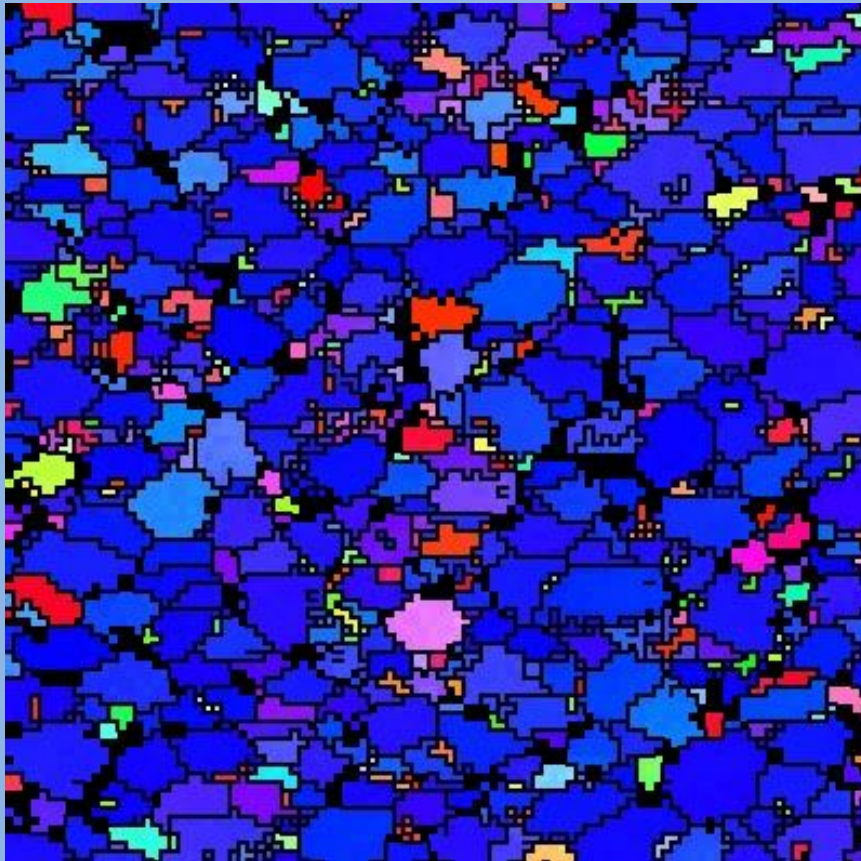
Motivation

- Research Film Microstructures
- Using:
 - Transmission Electron Microscopy
 - X-Ray Diffraction
 - Electron Backscattered Diffraction (EBSD)
- Heating Substrate
- Changing Thickness

Thickness Effects

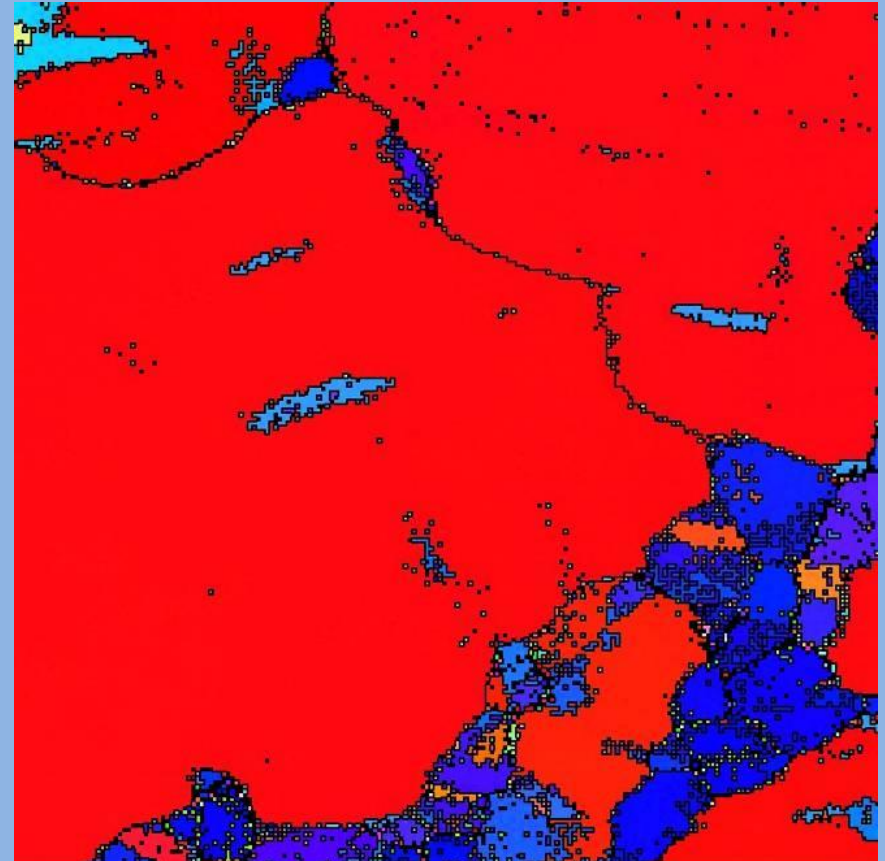
EBSD Maps

~100nm



— = 2 μ m

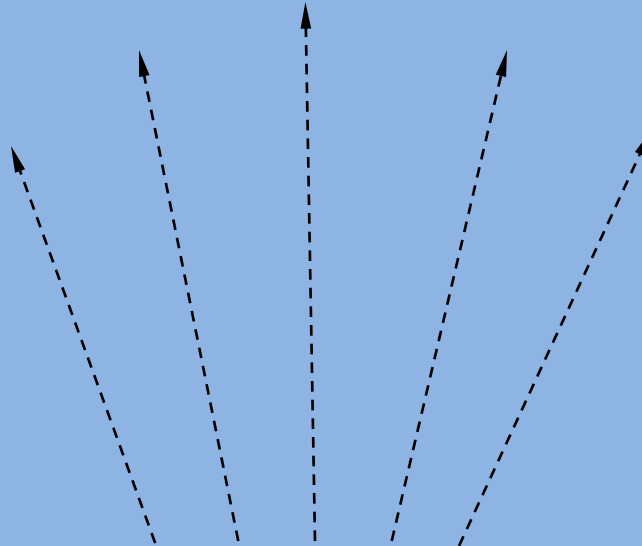
~1400nm



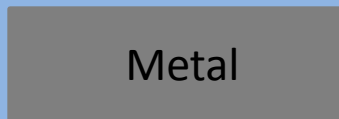
— = 5 μ m

Deposition Process

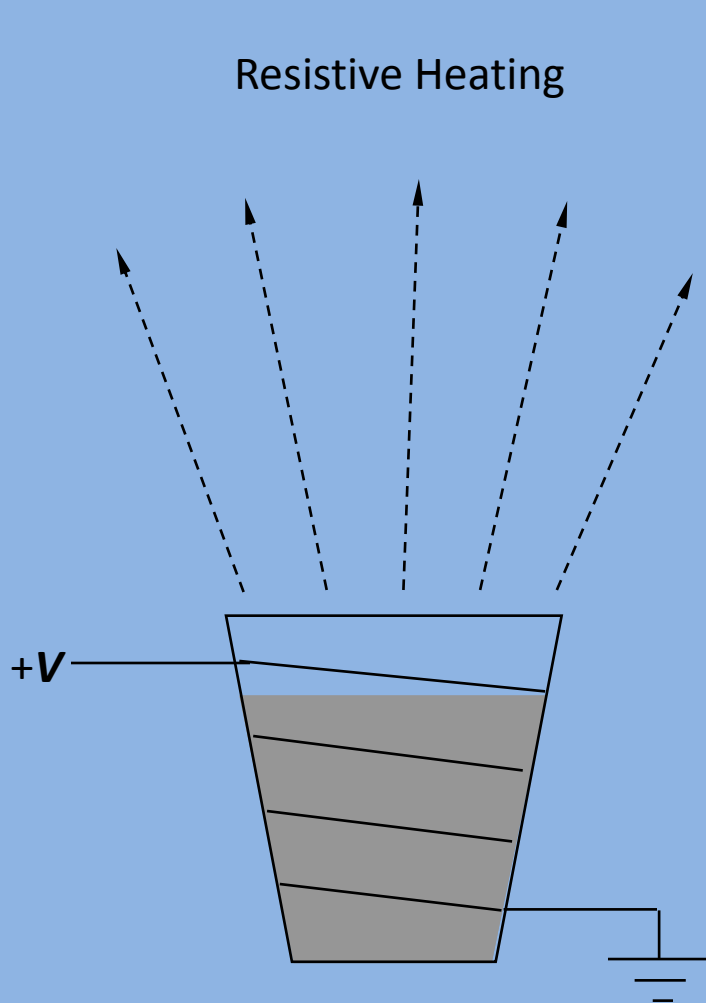
Substrate



Metal

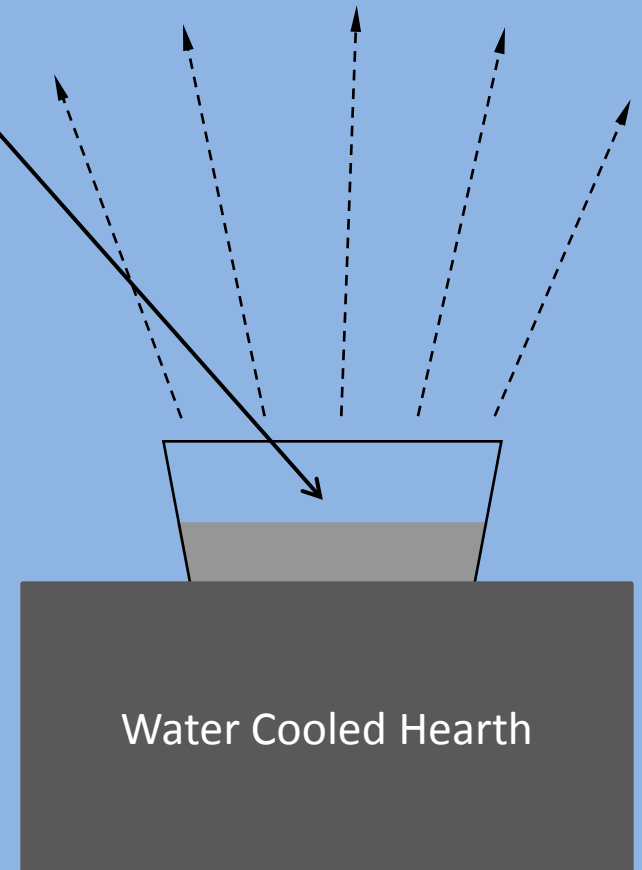


Evaporation Technology

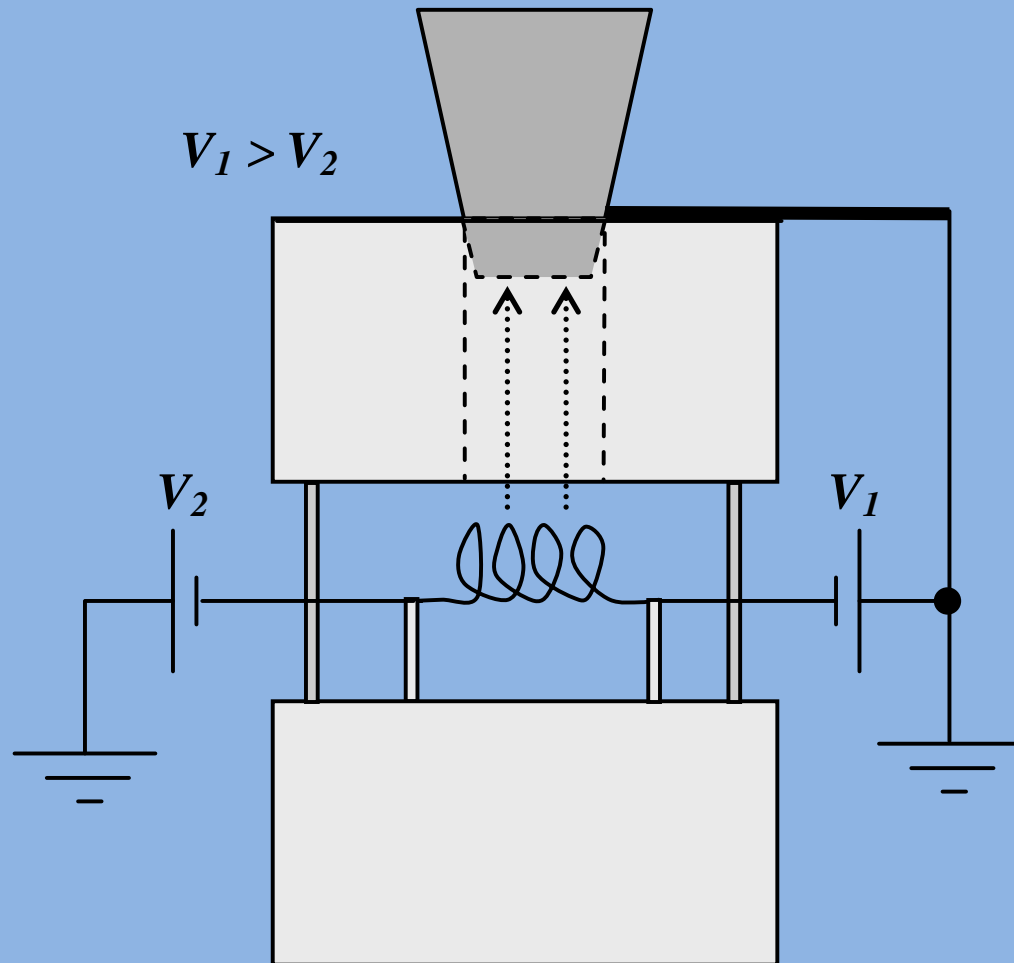


Electron Gun

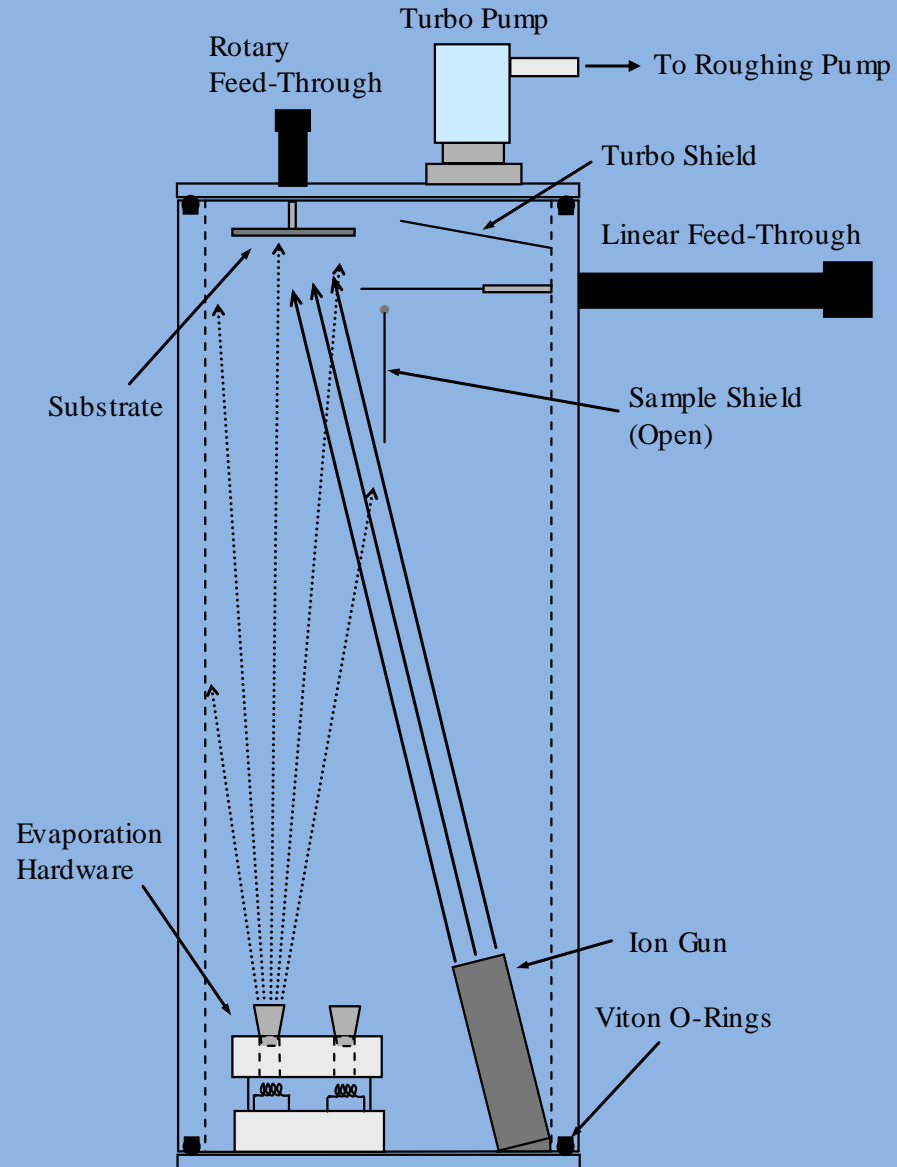
Electron-Beam Heating



Apparatus

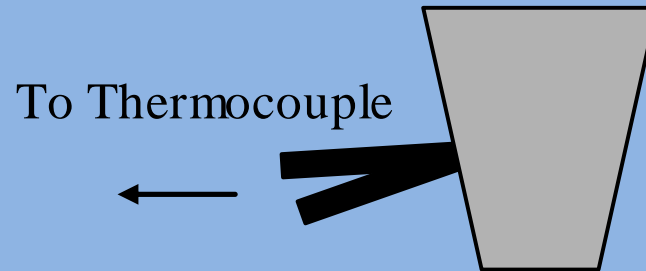


Apparatus Diagram

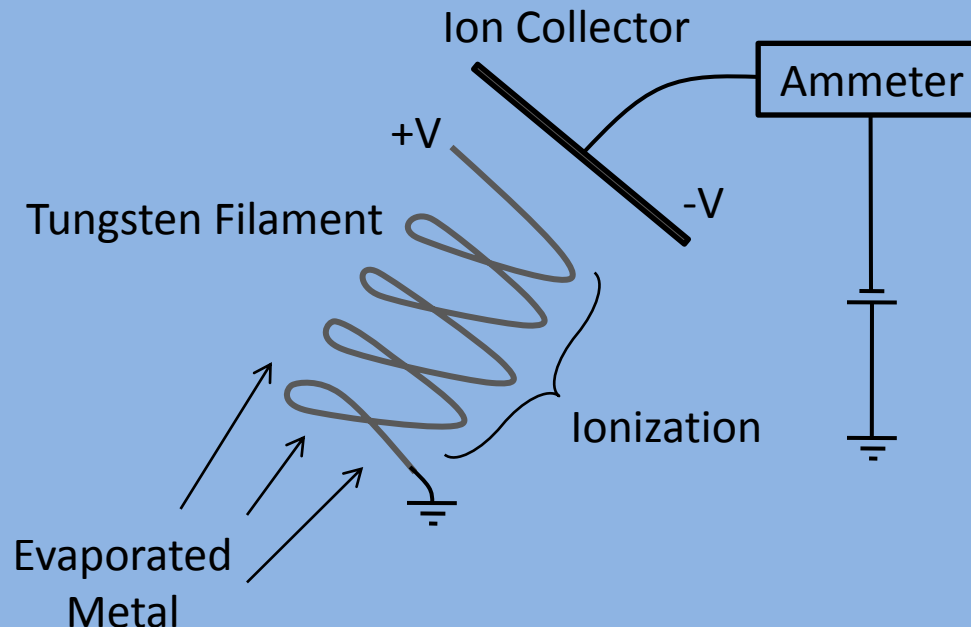


Deposition Monitoring

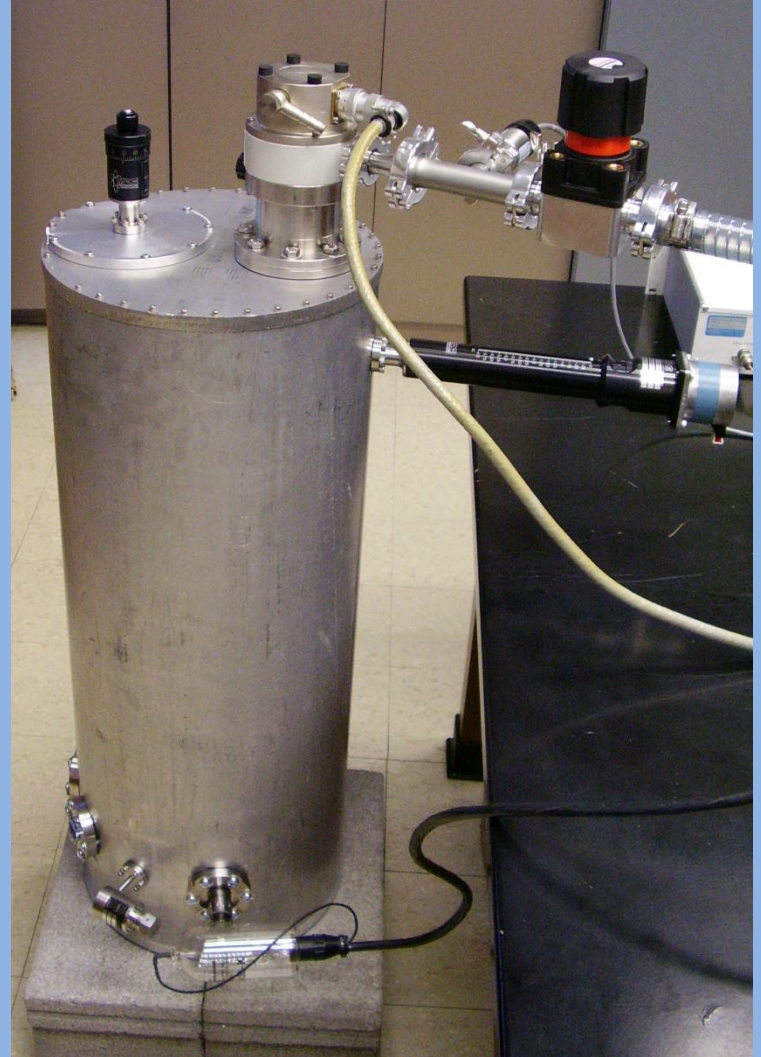
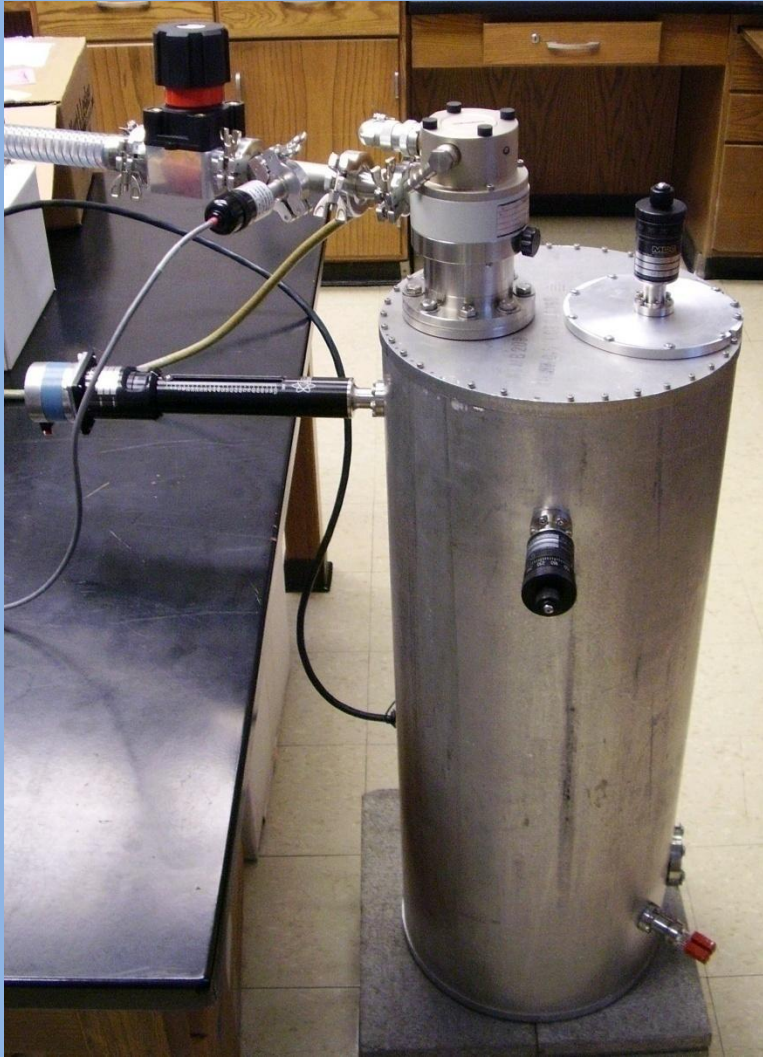
- Temperature Monitoring



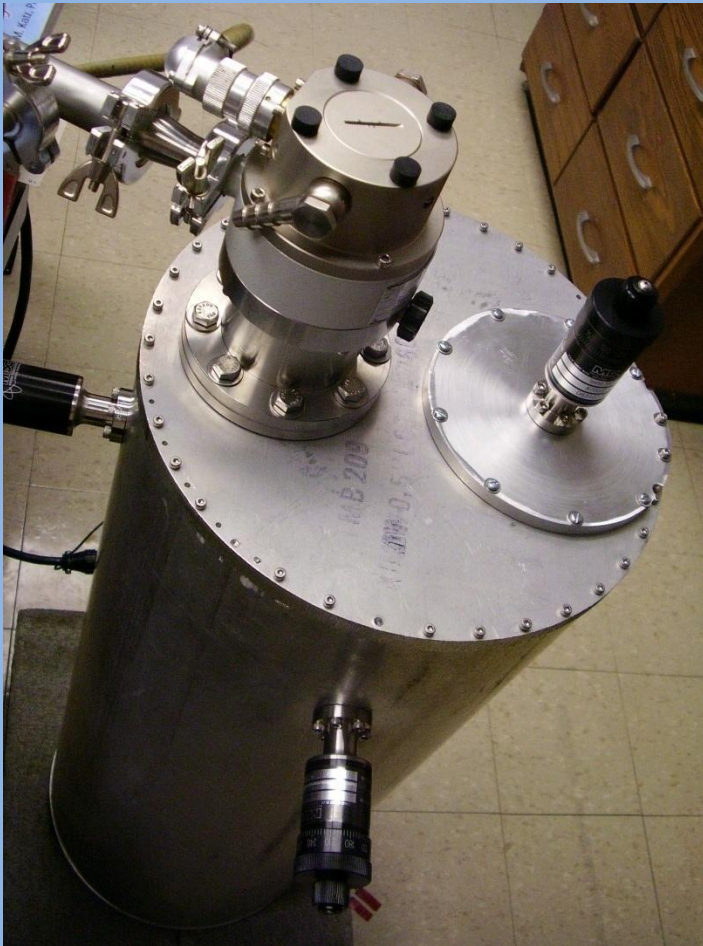
- Ionized Evaporate Monitoring



Apparatus



Apparatus



Future Work

- Baking
- Shielding
- Evaporation Hardware
- Rate Monitoring Device
- Ion Gun

