Overview
Our sponsor needs to study uncontaminated lithium in a Scanning Electron Microscope (SEM). Lithium is highly reactive; it spoils in air and combusts with water. He presently studies lithium in his argon chamber in his lab, which is about a 2 minute walk from the SEM.

Final Design
• Aluminum body
• 304 stainless steel sample platform
• Embedded pressure-reactive actuators
• Hinged lids with butyl seal

Manufacturing and Assembly
• Aluminum body CNC machined by 3rd-party manufacturer
• Stainless steel platform and butyl seals machined by team
• Lids and latches 3D printed in machine shop
• Entire vessel assembled by hand

Our Mission
Design and build an airtight vessel that can transfer a lithium sample from the argon chamber in EIS-211 into the SEM without spoiling, and open in a 100 to 10 Torr vacuum pressure window to expose the sample to the scanning electron beam without remote or electronic feeds.

Results
60% of the opening mechanism works. Progress stopped mid-testing and function in SEM is to be determined.