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SAMPLE FABRICATION OF NIOBIUM THIN FILMS

Elizabeth Montesano

Mentor: Erik Henriksen

Over the summer, I worked I the Henriksen research group developing a recipe to create strain-free niobium samples. In order to make the samples, I was trained to work in the clean room on the physical vapor deposition (PVD) system (also known as a sputter coater), used to deposit thin metallic films. I used the sputter coater in the clean room to deposit niobium onto a thin film of Kapton (a high temperature polymer) in a vacuum chamber. To develop a strain-free recipe, I looked at Henriksen's previous research (dating to the late 1990s) on the topic to guide the experiments I ran. In the experiments, I systematically varied the deposition rates and background argon pressures, while depositing niobium films of identical thickness onto Kapton strips. By noting whether the films bend up or down after deposition, the intrinsic tensile or compressive strain of the film can be determined. I aimed to make films that did not bend in any way after the deposition to achieve strain-free niobium films.