



# E-beam Evaporation

- Electron beam evaporation is a physical vapor deposition (PVD) process allowing for thin film deposition of materials what are harder to deposit using thermal evaporation (such as Au and Ti).
- The electron beam is generated by applying a current to a filament inside the vacuum chamber and using high electric field to extract the electrons from the filament and electromagnetic coils to form the desired shape of the beam.
- The substrate sits across from the crucibles consisting of the material used for coating. The beam is focused on the inside of the crucible, heating and melting the pallets inside.
- The chamber is kept under vacuum prior to and during the deposition process.
- The thickness is measured in-situ using a crystal thickness monitor using the correlation between the oscillation frequency and the crystal's mass (increased as material is deposited on it). An electronic instrument converts the frequency data to thickness data.

