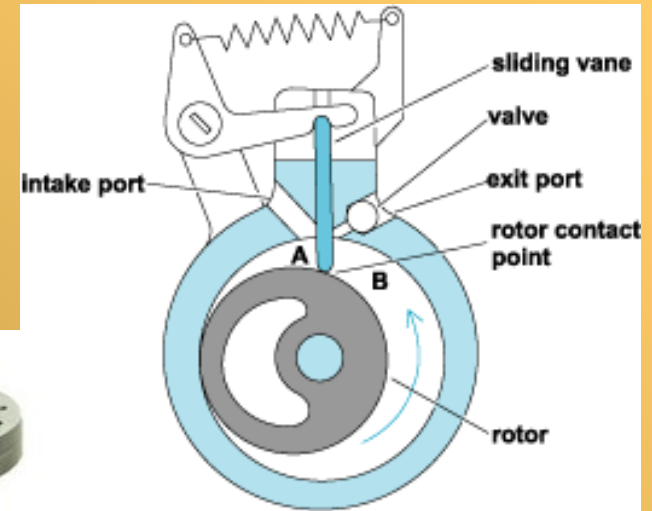


Rotary Vane Pump ($760-10^{-3}$ Torr)

Gas enters through intake port and is forced out through the exit port as volumes A and B expand and contract.



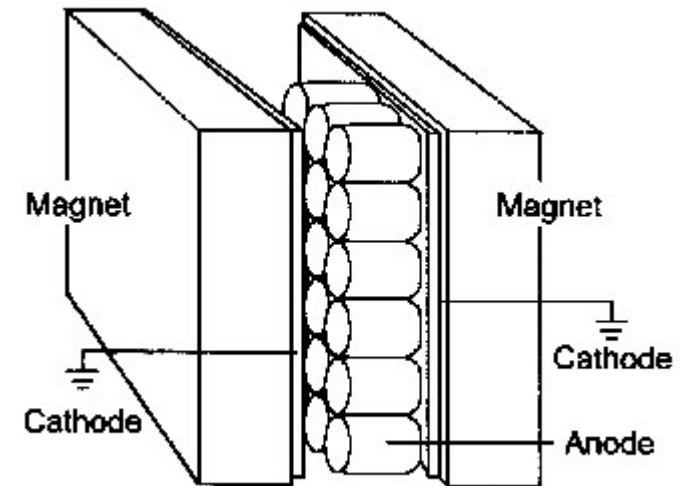
Turbomolecular Pump ($10^{-2}-10^{-11}$ Torr)

Inclination of the high speed stator blades give incident gas molecules a high velocity away from the UHV region.



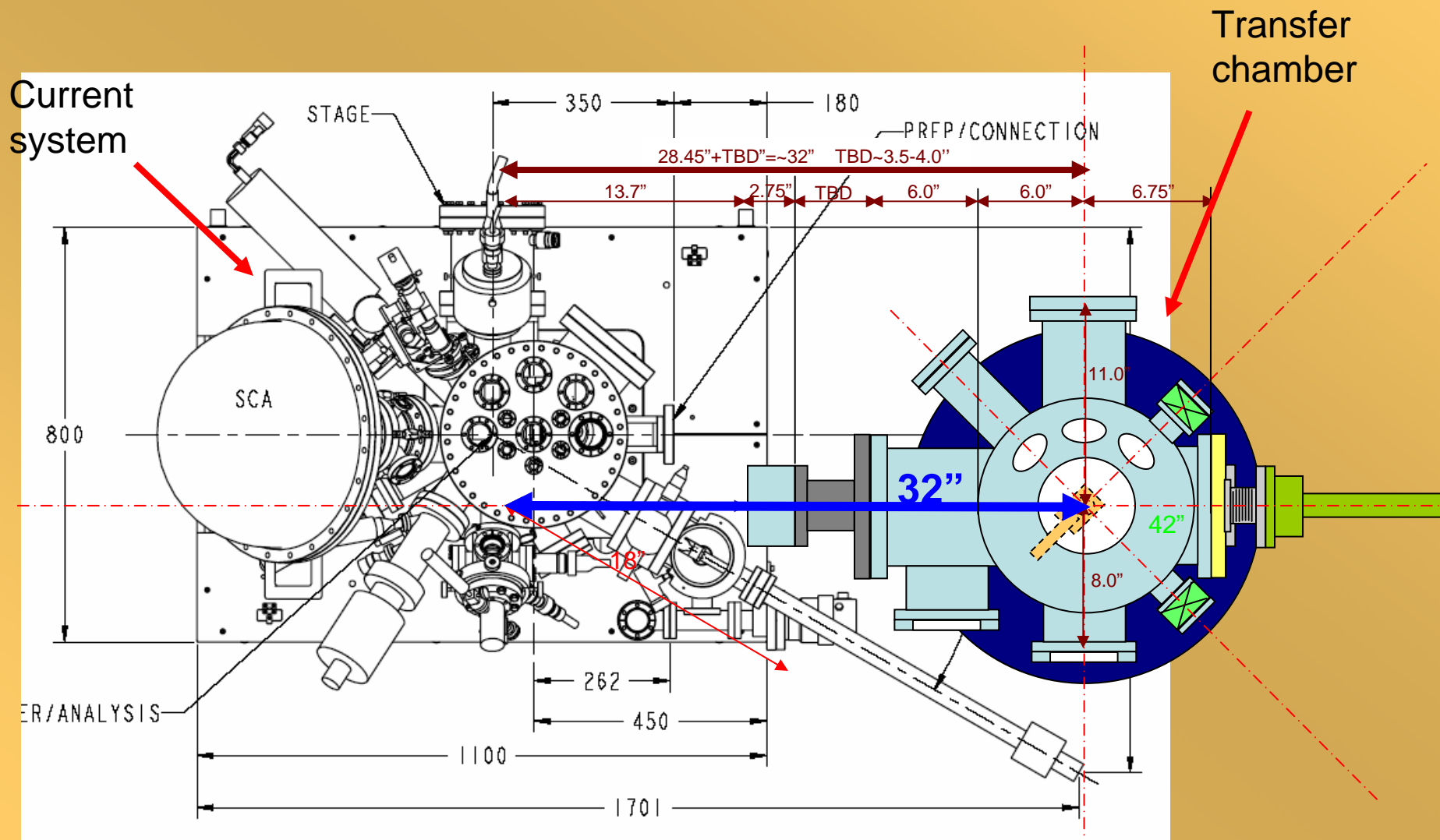
Ion Pump ($10^{-4}-10^{-12}$ Torr)

High voltage causes anode to emit electrons, which ionize gas molecules as they travel toward the cathode. Ions remain trapped on cathode.

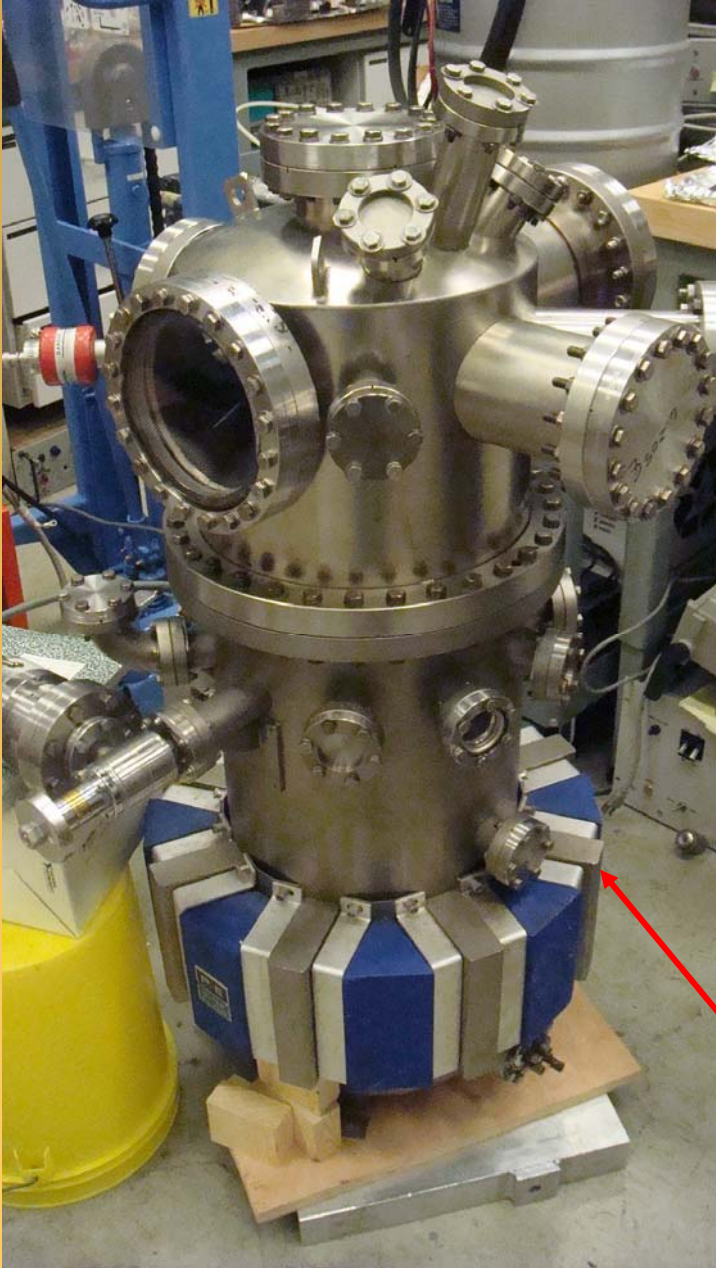


Transfer Chamber

We plan to expand the XPS system to include chambers for in situ growth and other surface analysis techniques.



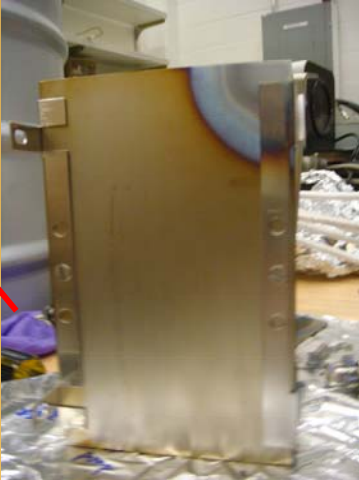
Transfer Chamber



He Leak-Tester



Bad ion pump element



Faulty Turbo

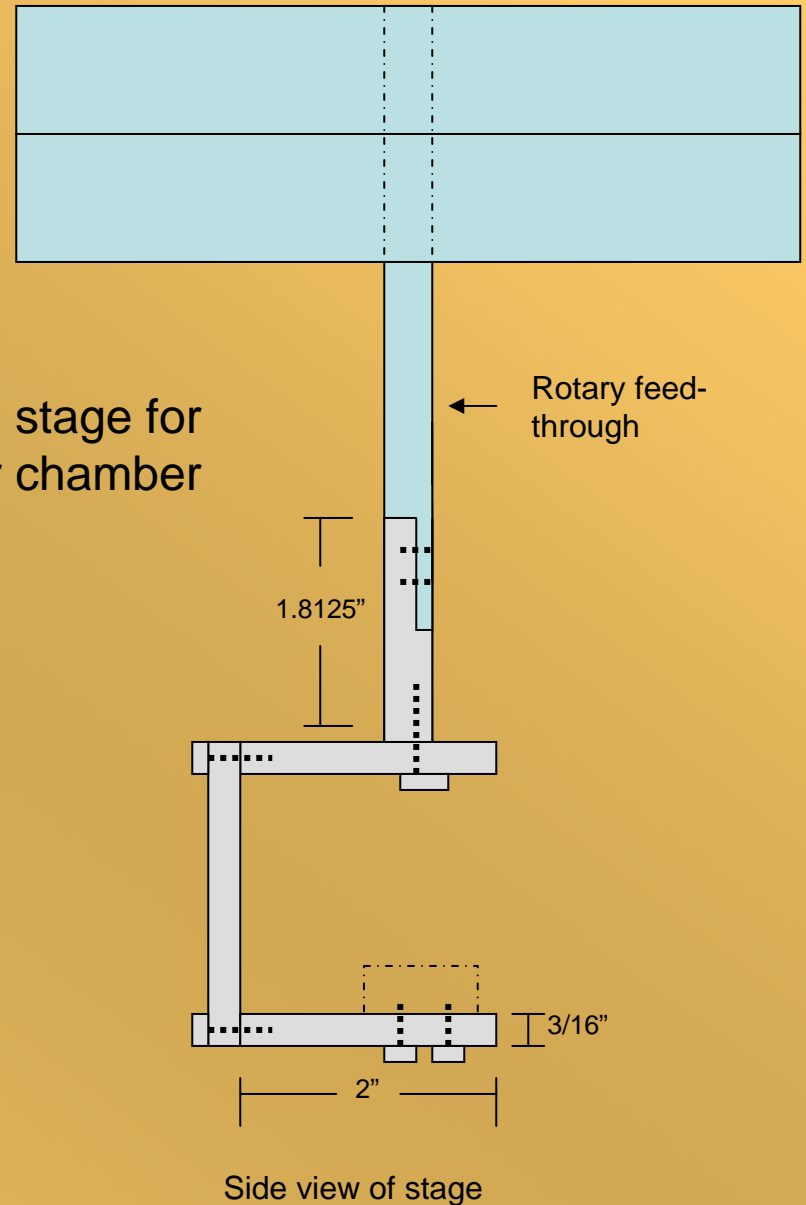


Machining Projects



Omicron compatible PHI
sample holder

Sample stage for
transfer chamber



Side view of stage