

ECE6450 Homework #6

- 1.) A 1000 liter/sec turbo pump is used to pump a process chamber. It is connected to a large vacuum chamber (infinite conductance) through a tube that is 2 feet long and has an inner diameter of 4 inches. What is its effective pumping speed in liters/sec.
- 2.) A process gas is to be introduced into the chamber from problem 1 and the chamber must be maintained at 1×10^{-4} torr. A.) What is the maximum flow rate (in sccm) of gas the pumping system can handle? B.) Repeat the problem for the pump connected directly to the chamber.
- 3.) A wet chemical etch is desired that will etch a via hole through a silicon wafer for integration into a low inductance, high frequency circuit. If a 482 $\mu\text{m}/\text{min}$ etch rate is desired, what is the volume ratios of hydrofluoric, nitric and acetic acids required?