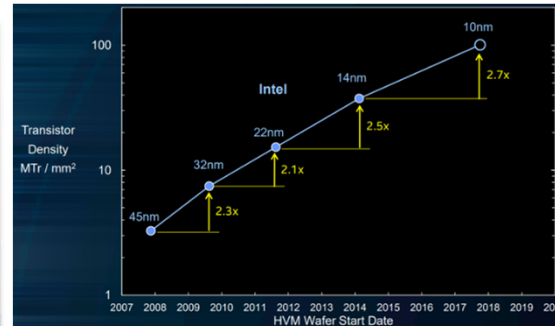


Use of Diagnostic Instruments to Develop the Next Generation of Plasma Etch and Deposition Tools

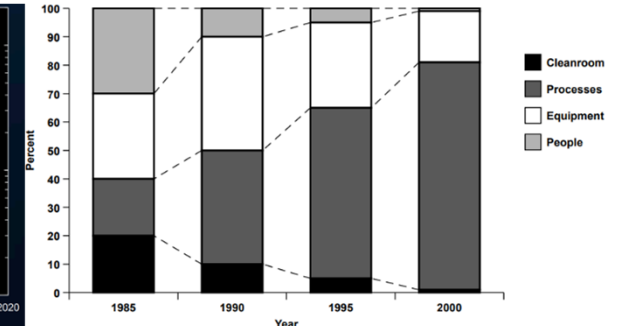
John Scheckel, Artem Biryukov, Janaye Marshall, Zhe Mi, Crystal Pereira, and Riley Foss

Problem: Reliability and yield are two critical challenges during die shrinking, because this involves changing microprocessor designs and manufacturing processes.

Most interactions between the plasma and the probe cannot be measured directly



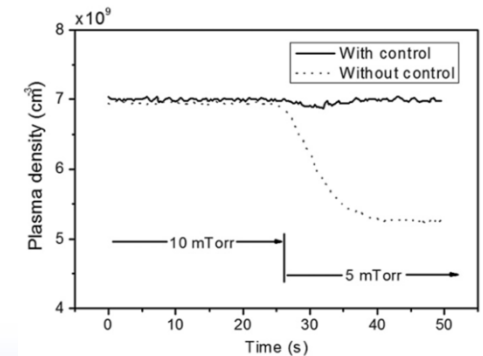
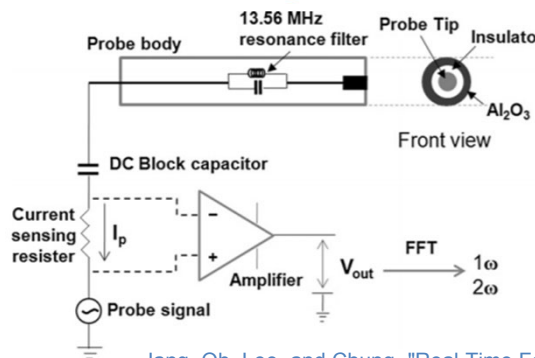
Intel <https://newsroom.intel.com/newsroom/wp-content/uploads/sites/11/2017/03/Kaizad-Mistry-2017-Manufacturing.pdf>



Yield and Yield Management <http://smithsonianchips.si.edu/ice/cd/CEICM/SECTION3.pdf>

Principles: Quasineutrality, Langmuir Probe, Power Input and Pressure of Chamber, Bohm Velocity, Plasma Sheath, Plasma Potential, Debye Length, Plasma Frequency, Electron Temperature

Solution: Floating Probe



Jang, Oh, Lee, and Chung. "Real Time Feedback Control of Plasma Density Using a Floating Probe in Semiconductor Processing." *Current Applied Physics* 13.1 (2013): 76-79. Web.