

## **MEMulator™ enables faster, lower-cost changes for these Fabrication Process Steps**

### **Material Deposition**

- Physical Vapor (evaporation and sputtering)
- Chemical Vapor (LPCVD and PECVD)
- Conformal (isotropic material deposition on all surfaces)
- Metal Lift-Off (anisotropic)
- Epitaxial Deposition (anisotropic deposition on epi silicon substrates)
- "Snow-fall"
- Straight (on horizontal faces)
- Wafer Bonding
- Electrochemical

### **Defect Detection**

- Checks for voids and air pockets after partial and oval deposition
- Studies the effects of mask misalignments and other process deviations
- Prevents backfilling of cavity voids

### **Material Removal (Etching)**

- Reactive Ion (straight etch through specified thickness)
- Wet Release (undercuts sacrificial layer)
- Wet Isotropic (creates rounded features)
- Wet Anisotropic (creates angled side walls)
- Rate dependent (for selective anisotropic etching)
- Chemical Mechanical Polish (removes material above a specified height)

### **Additional Fabrication Features**

- Multiple protective etch stops
- Etch top, bottom, or both sides of a wafer
- Perform multiple etches with different masks on a single wafer
- Determine the effects of vertical etching coupled with anisotropic etching
- Find and replace materials