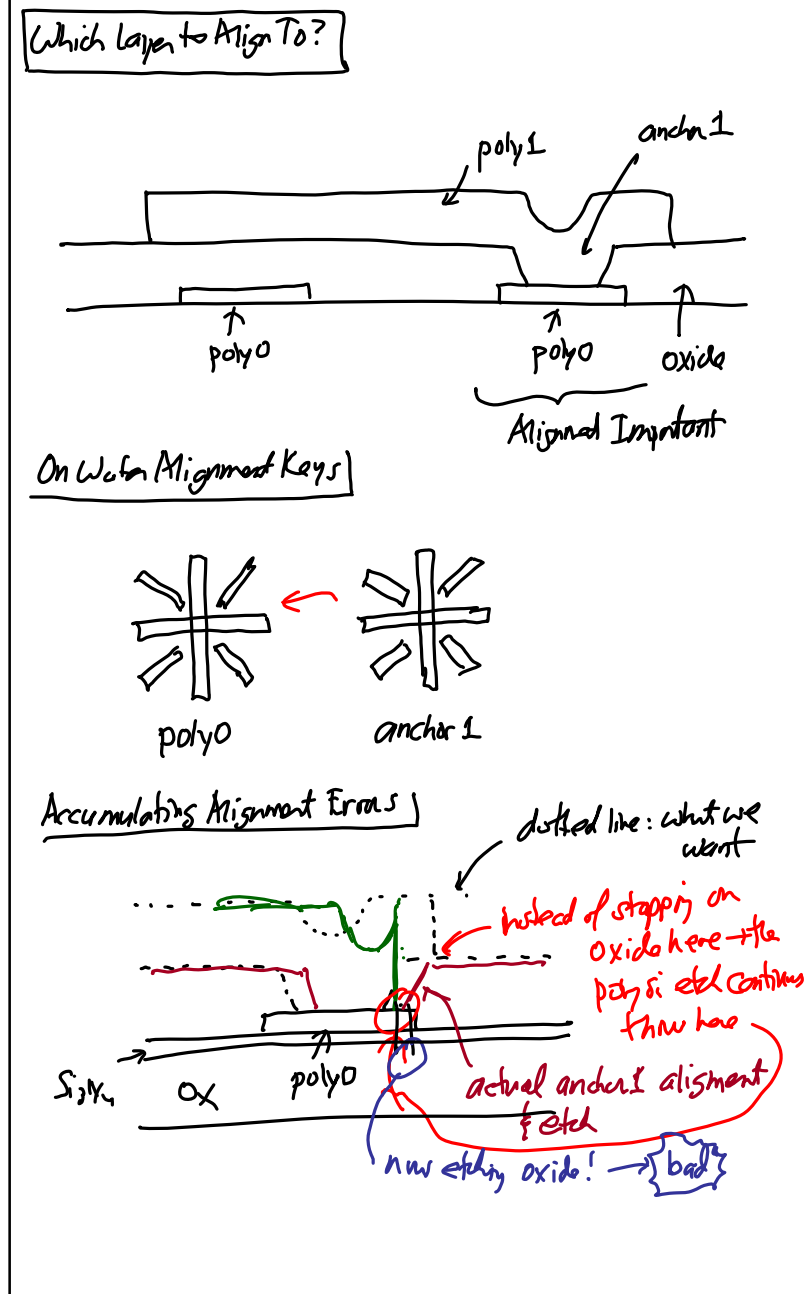


Lecture 10: Bulk Micromachining

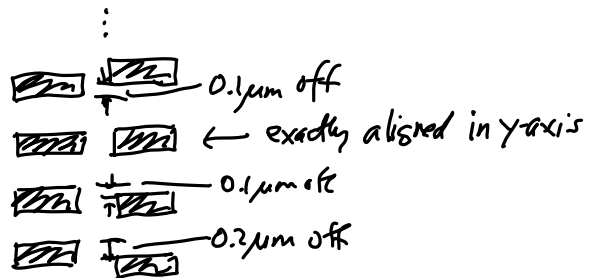
- **Announcements:**
- HW#3 online and due Tuesday, 2/27, at 10 a.m.
- Lecture Module 6 on "Bulk Micromachining" online
-
- **Today:**
- Reading: Senturia Chpt. 3, Jaeger Chpt. 11, Handout: "Surface Micromachining for Microelectromechanical Systems"
- Lecture Topics:
 - ↳ Polysilicon surface micromachining
 - ↳ Stiction
 - ↳ Residual stress
 - ↳ Topography issues
 - ↳ Nickel metal surface micromachining
 - ↳ 3D "pop-up" MEMS
 - ↳ Foundry MEMS: the "MUMPS" process
 - ↳ The Sandia SUMMIT process
- Reading: Senturia Chpt. 3, Jaeger Chpt. 11, Handouts: "Bulk Micromachining of Silicon"
- Lecture Topics:
 - ↳ Bulk Micromachining
 - ↳ Anisotropic Etching of Silicon
 - ↳ Boron-Doped Etch Stop
 - ↳ Electrochemical Etch Stop
 - ↳ Isotropic Etching of Silicon
 - ↳ Deep Reactive Ion Etching (DRIE)
-
- **Last Time:** Going through Module 5
- Looking at alignment ... continue with this ...



Alignment Choices: (for the poly 1 mask)

- ① poly 1 \rightarrow anchor 1 \rightarrow this is best ✓
- ② poly 1 \rightarrow poly 0 \rightarrow accumulate error ✗

Alignment Diagnostic



⋮ \Rightarrow after alignment, the visually
y-axis-aligned boxes tell how
much y-axis alignment
error you have!