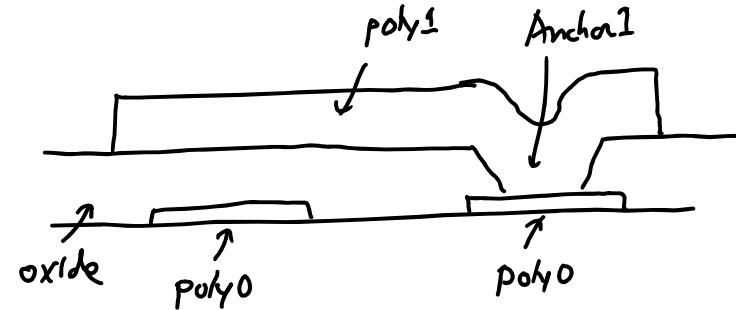


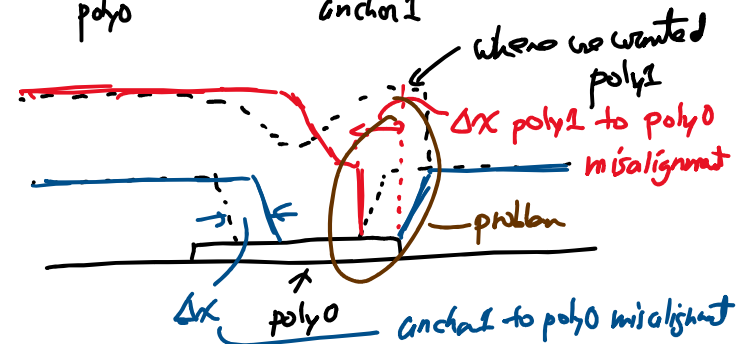
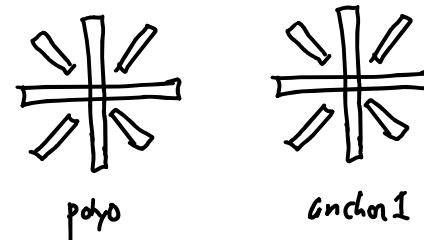
Lecture 9: Bulk Micromachining I

- Announcements:
- HW#2 due Tuesday, 2/25 at 8 a.m.
- Module 6 online
- 
- Today:
- Reading: Senturia Chpt. 3, Jaeger Chpt. 11, Handouts
- 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:
- Through 3D pop-up MEMS in Module 5
- Now, continue in Module 5

Which Layer to Align To?

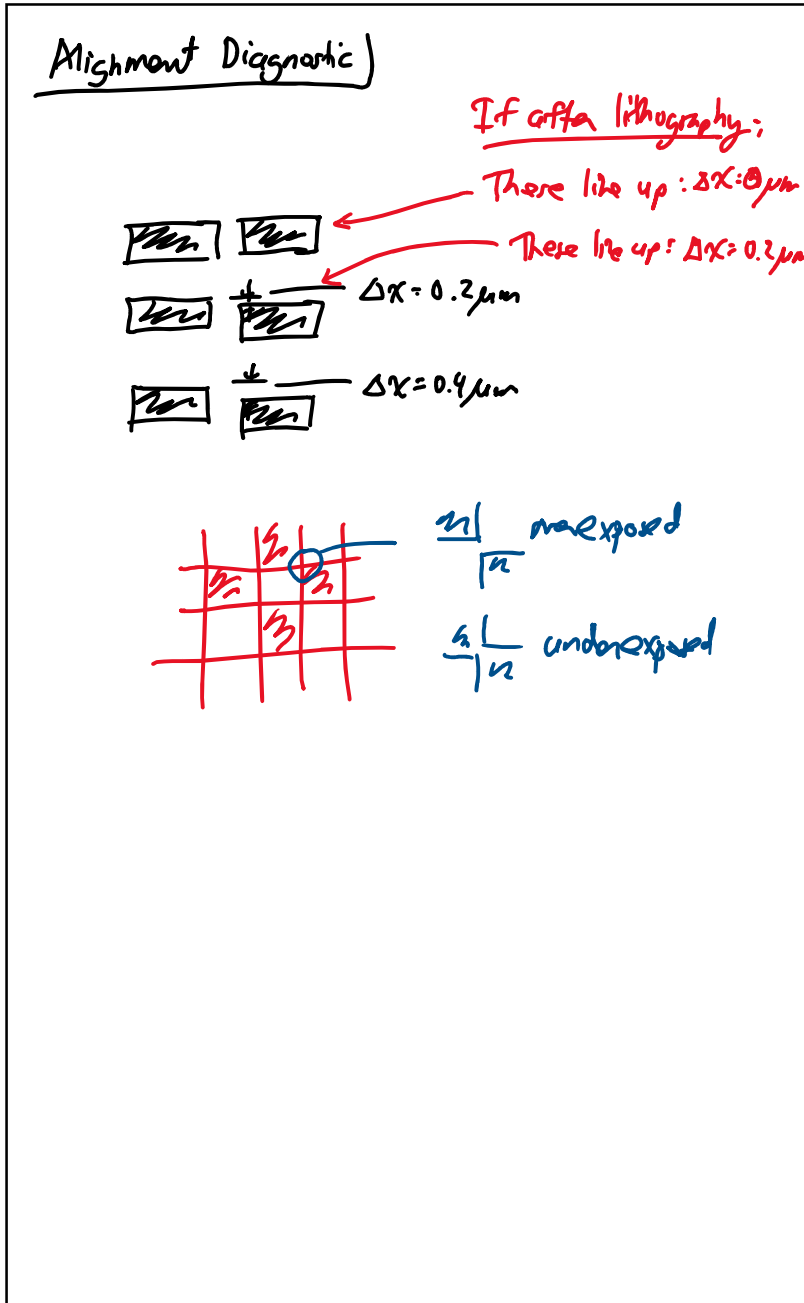


Alignment Keys:

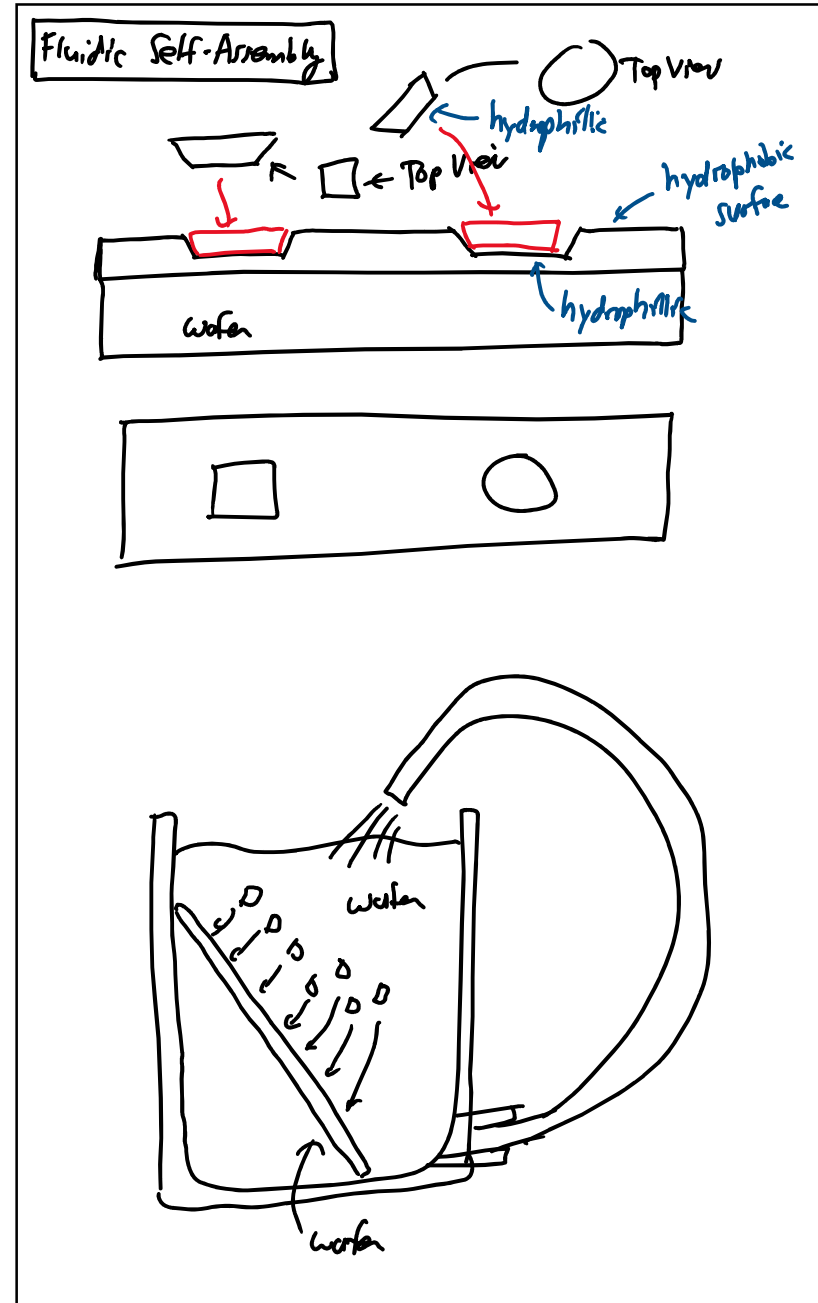


Align poly1 → poly0 : possible to get 2X offset

Or Align poly1 → anchor1 → can only get 1X offset  
 ✓ → better!



3



4