Special Topics on Basic EECS I Design Technology Co-Optimization

Lecture 23

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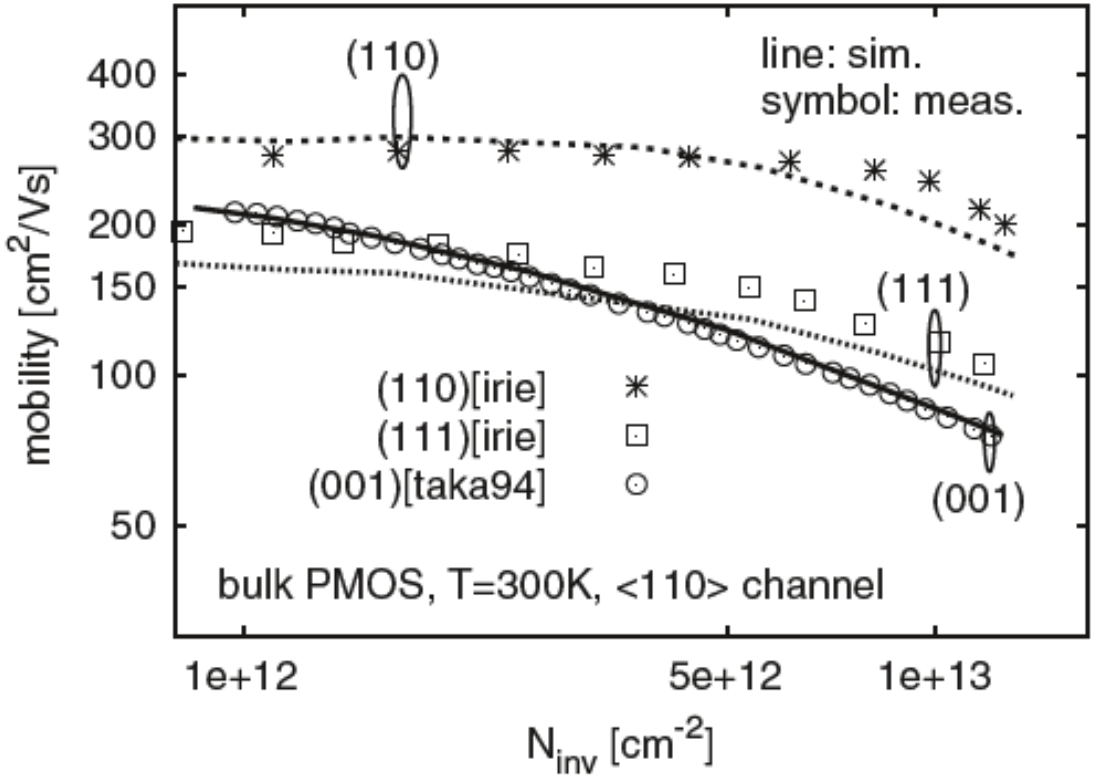
L23

PMOSFET

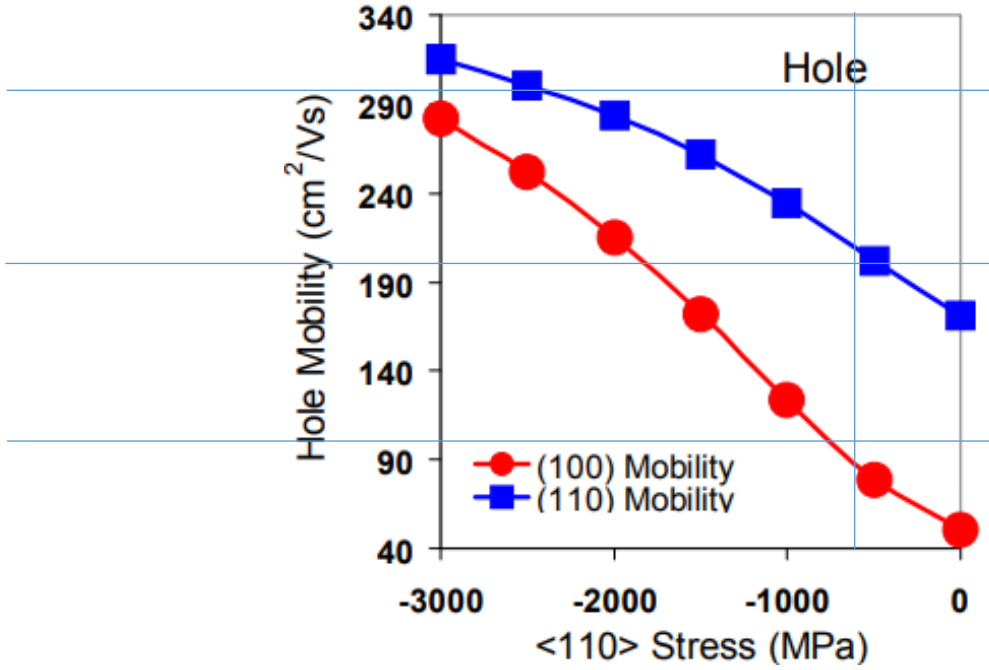
- Hole mobility for different surface orientations
  - The channel direction is <110>.

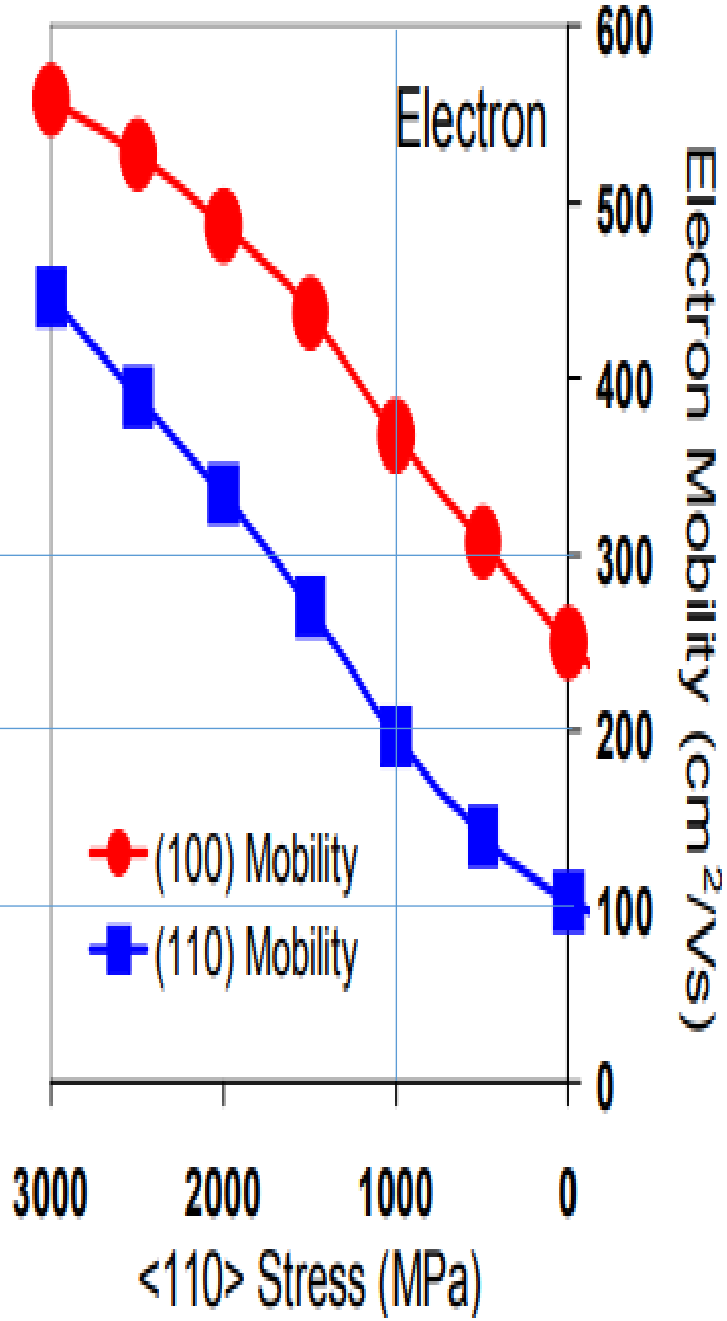


Low-field mobility (Hong, Pham, and Jungemann)

N/P unbalance issue

- Blue (FinFET)
  - Red (Nanosheet)

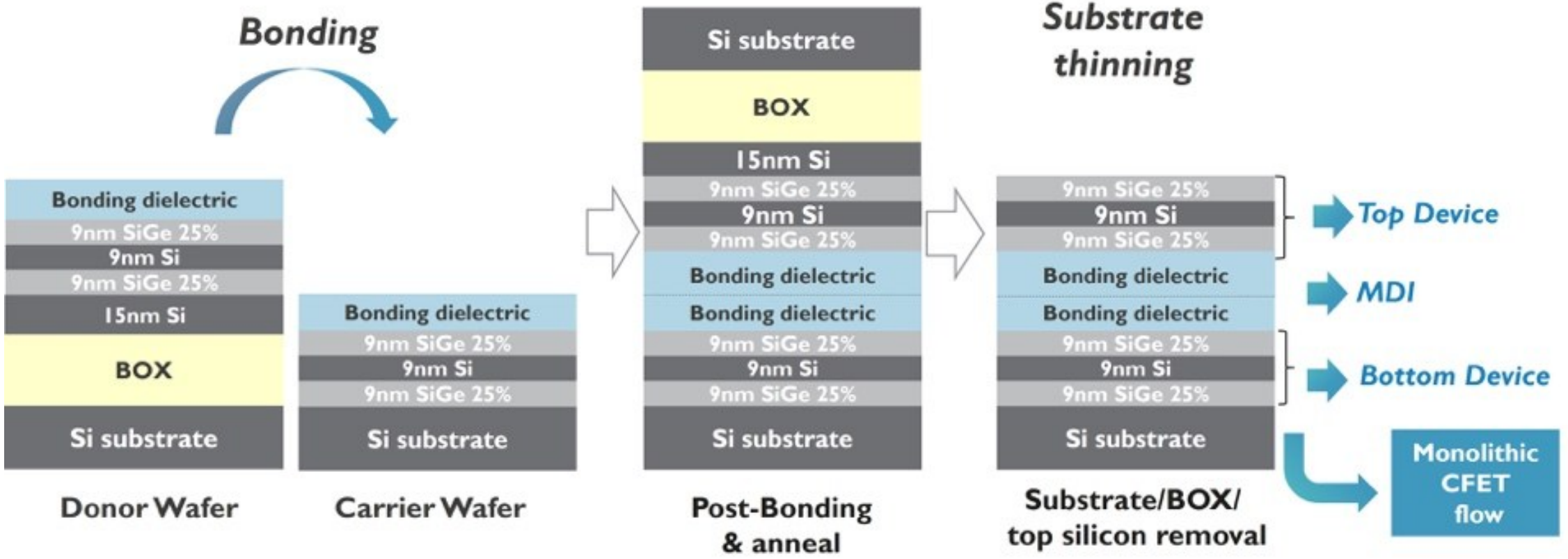




Simulated mobility as a function of stress
(P. Packan et al., Intel)

IMEC's presentation @ IEDM 2025

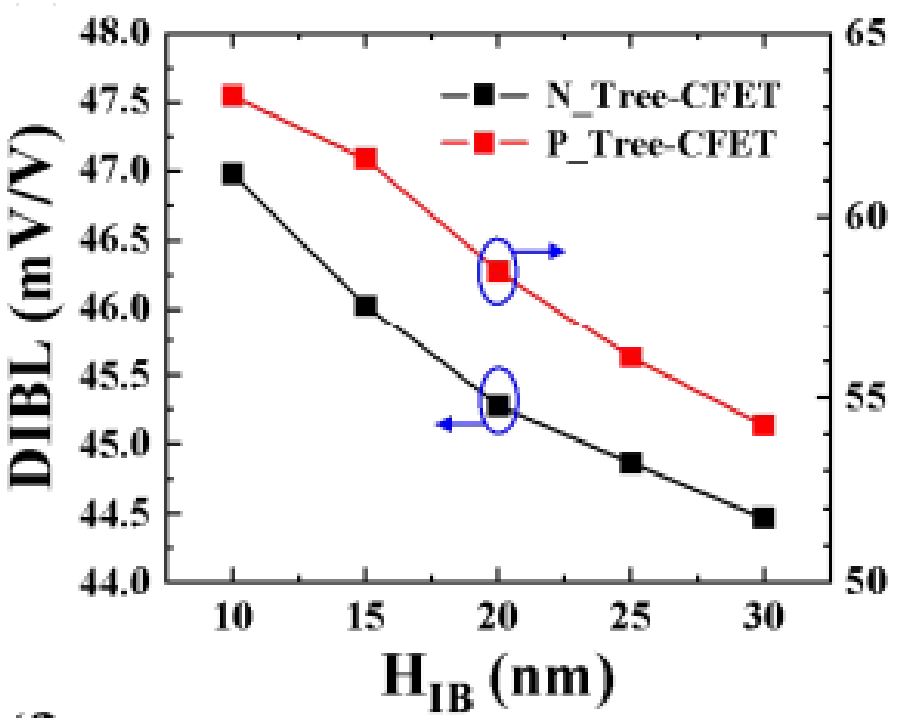
- 2.2 Hybrid channel monolithic-CFET with Si (110) pMOS & (100) nMOS



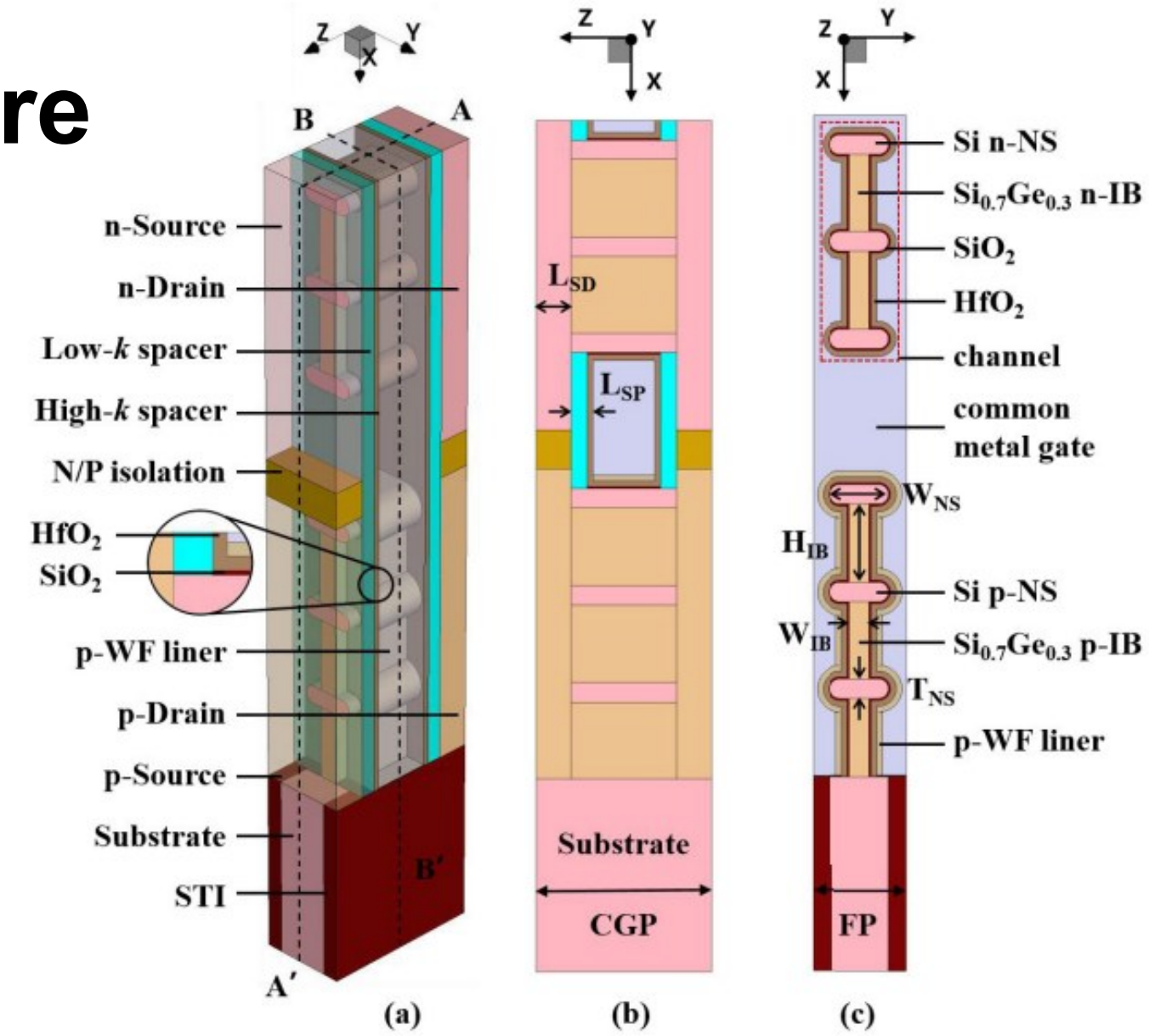
Press release (IMEC)

Alternative structure

- TreeFET & FishboneFET
  - Nanosheet (15nm X 5 nm)
  - Interbridge



Simulated DIBL



Structure of Tree-CFET (J. Zhao et al., East China Normal University)

Thank you!