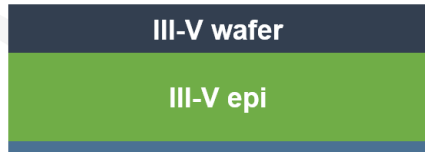


Work 2021~2022.07(QD-LD/ Photo FET)

Wafer bonding



Bonding interface

- Metal - Metal
- Oxide - oxide
- Epi - Epi (direct)

Results

QD-LD

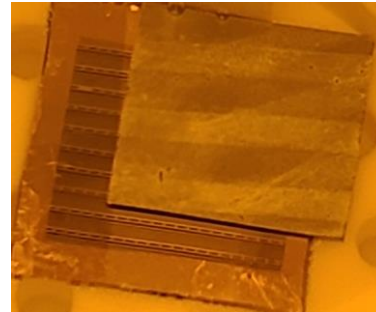
- Epi quality issue
- Metal damaged by HF solution

Photo FET

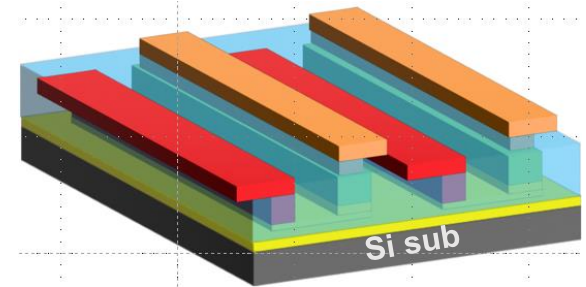
- Oxide change ($\text{Al}_2\text{O}_3 \rightarrow \text{HfO}_2, \text{ZrO}_2$)
- Optical measurement

QD-LD / Photo FET

After wafer bonding



QD-LD structure



After wafer bonding

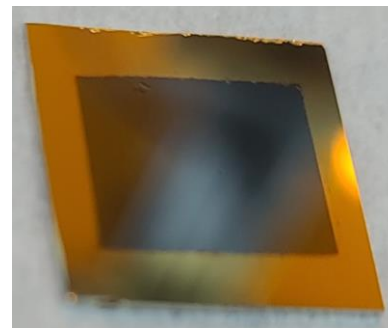
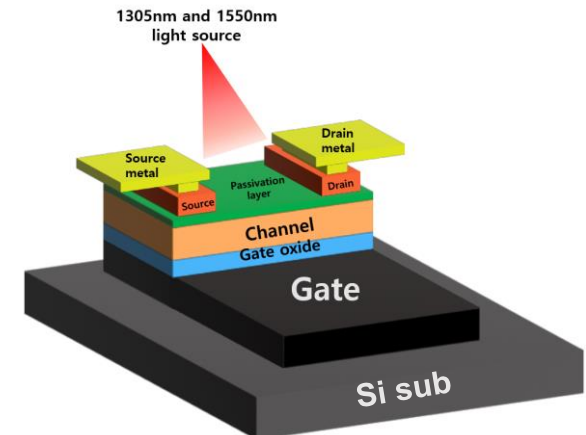
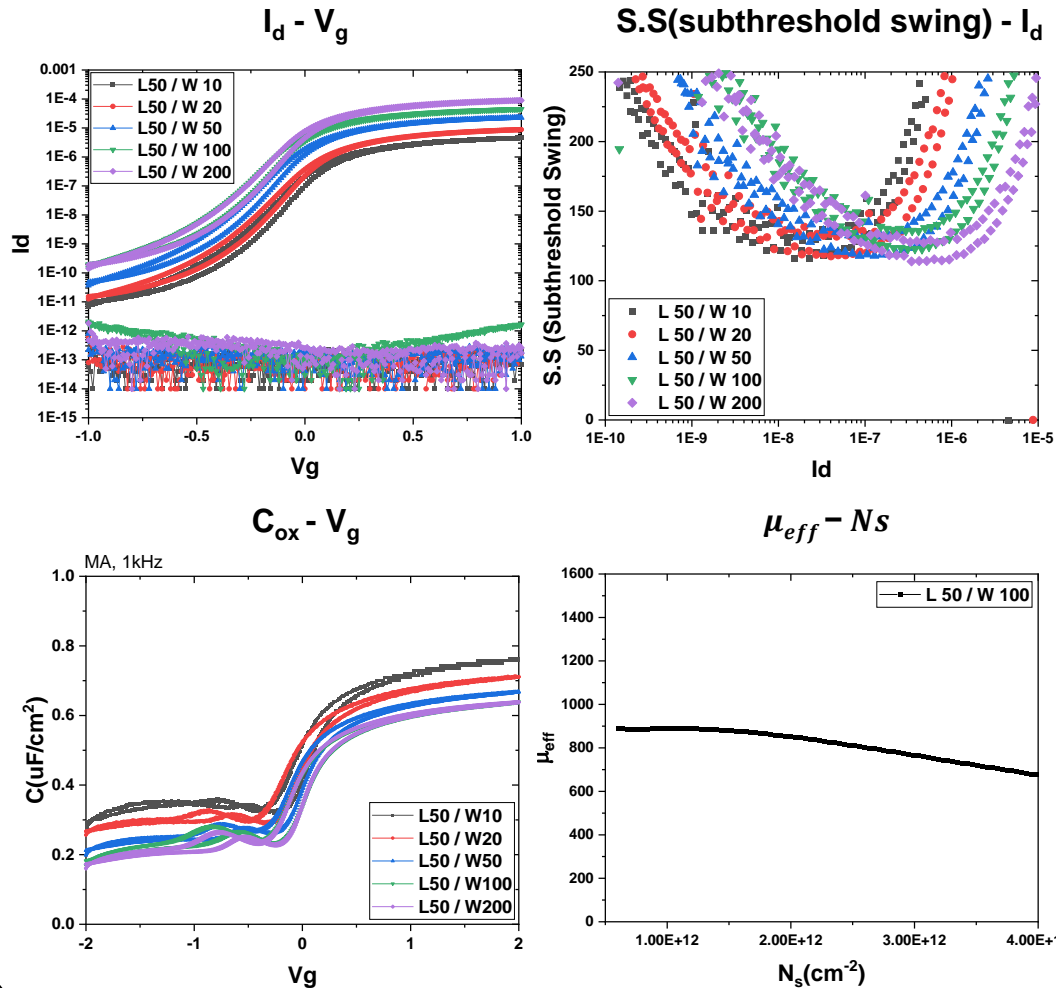


Photo FET structure

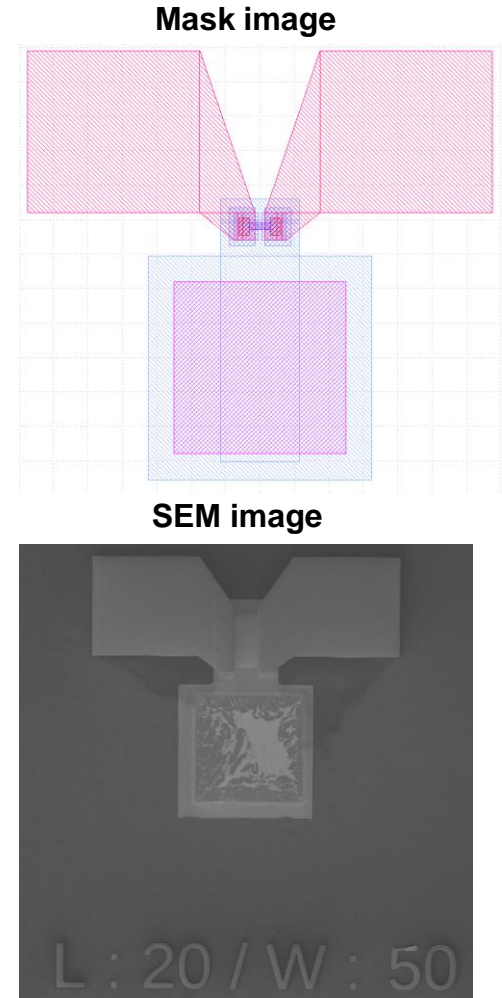


Work 2021~2022.07 (Photo-FET)

Characteristics



Images



Future Plan

Photo FET

- **Optical measurement** plan
- Gate oxide material change (**HfO₂, ZrO₂**)
- Gate oxide material change (**HZO**)

Photo FET (more future)

- Plan to increase light absorption by using **surface plasmon** on the channel surface

QD-LD

- Au/**Pd** on Si will be replaced with Au/**???** On Si.
- **HF** based solution will be replaced with **HCl** based solution for decreasing metal surface damage
- Plan to purchase new QD-LD epi made by **QD Laser**

QD-LD (more future)

- No plans yet