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# Module SCT

Wrap-Up for preparation of the exam  
Prof. Dr. Johann W. Bartha

Inst. f. Halbleiter und Mikrosystemtechnik  
Technische Universität Dresden

Summer Semester 2021

Start lecture here



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Lecture Semiconductor Technology I,  
Prof. Dr. J. W. Bartha

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- 2.3 Conductivity and Doping
- 2.4 Si as the most important material of Microelectronics
  - 2.4.1. Fabrication of pure Silicon
  - 2.4.2. Si Wafer Fabrication

### 3. The Oxidation of Silicon

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- 3.4 Stress and Oxidation

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  - 5.2.5. Healing and Activation
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- 7.5. Tungsten W

### 8. Plasma based Deposition and Etch

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  - 8.1.3. Plasma Properties
  - 8.1.4. Plasma Generation
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0. Introduction/ Lab organization/DMA /SCT1/Motivation
1. Process integration
  - 1.MOS Structure, MOS Capacitor
  - 2.Structure of a MOSFET
  - 3.I/V behavior
2. Circuits in Metal-Gate FET Technology
  - 1.Process sequence of N-MOSFET in Metal Gate
  - 2.From inverter to memory cell
  - 3.SRAM in NMOS Metal Gate
  - 4.The threshold voltage of the MOSFET
    - 1.Parasitic FET
    - 2.Enhancement/Depletion Transistor
    - 3.N-MOS Logic by E/D Transitors
    - 4.Process sequence of the N-MOS E/D Process
3. Self aligned Process
  - 1.Metal Gate -> Si Gate
  2. Channel-Stop & LOCOS Technology
    - 1.Example: Process flow of E/D SiGate LOCOS Inverter
    - 2.LOCOS Variation
    - 3.Shallow Trench Isolation
  - 3.Lightly doped drain
  - 4.SALICIDE
  5. Self Aligned Contacts (SAC)
  6. Resist trimming
4. Transition to CMOS Technology
  - 1.MOS Transistor Types
  - 2.CMOS Inverter
    - 1.Consideration NMOS E/D Inverter
    - 2.Comparison CMOS Inverter
  - 3.CMOS Process flow (Example CMOS 180 nm process)
5. Further Considerations
  - 1.Scaling
    1. Challenges
    - 2.Material Equivalent Scaling
    - 3.Further Concepts

Thank you very much for your attention!

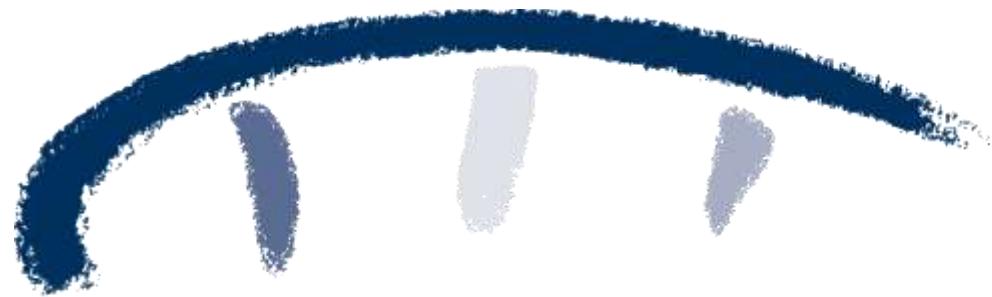
All the very best for the upcomming  
exams!

Thank you very much for your attention!

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exams!

Relaxing vaccion!





**»Wissen schafft Brücken.«**