Karlsruhe Institute of Technology

IPQ

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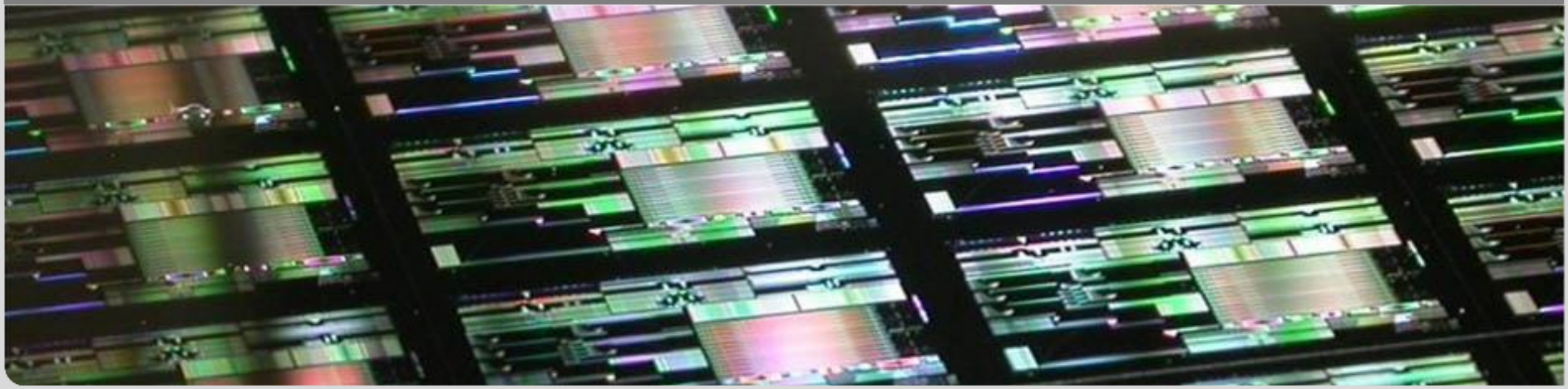
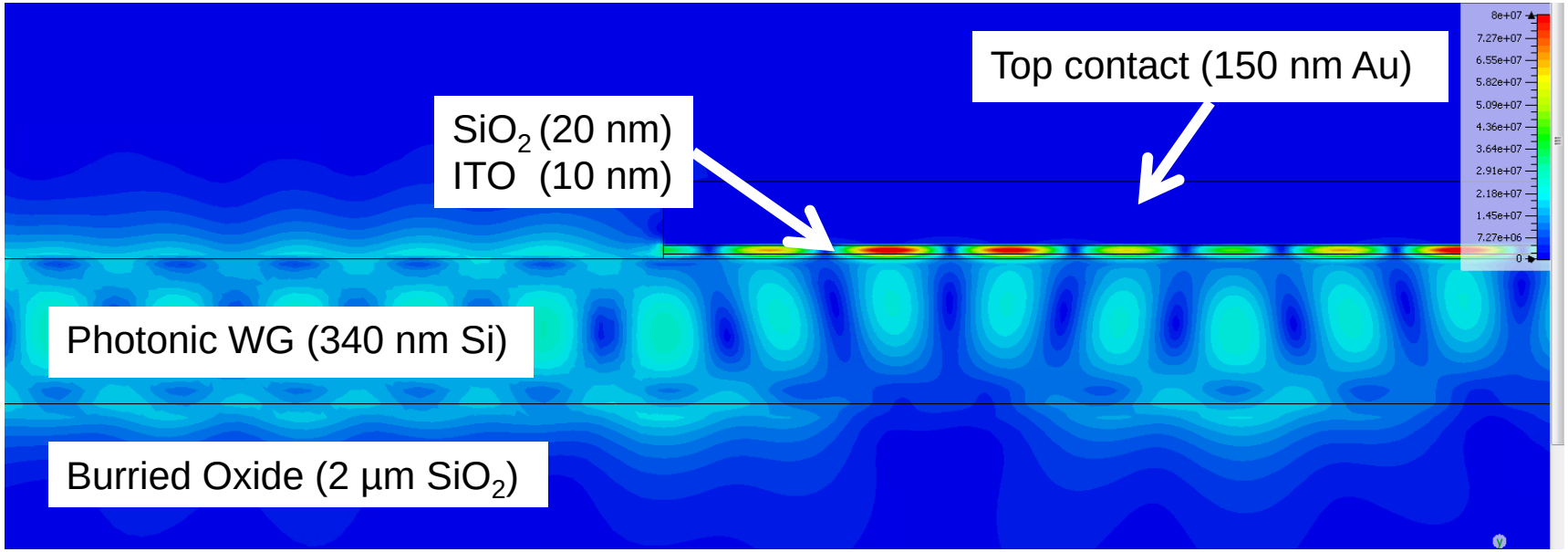
Surface Plasmon Polariton Absoprtion Modulator (SPPAM)

Institute of Photonics and Quantum Electronics (IPQ), Karlsruhe, Germany
Institute of Microstructural Technology, Karlsruhe, Germany
Institute of Electromagnetic Fields (IFH), ETH Zurich, Switzerland



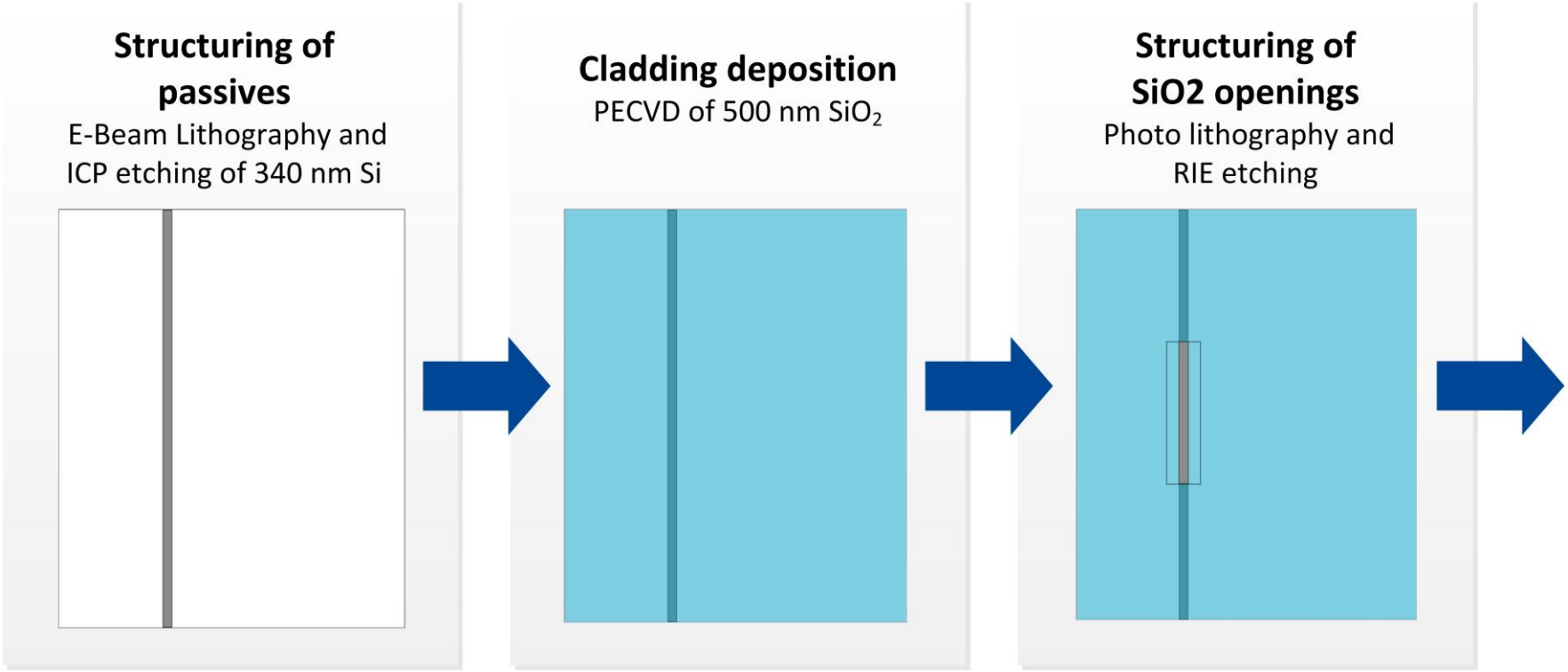
Design

Electric Field (CST simulations), here no voltage applied

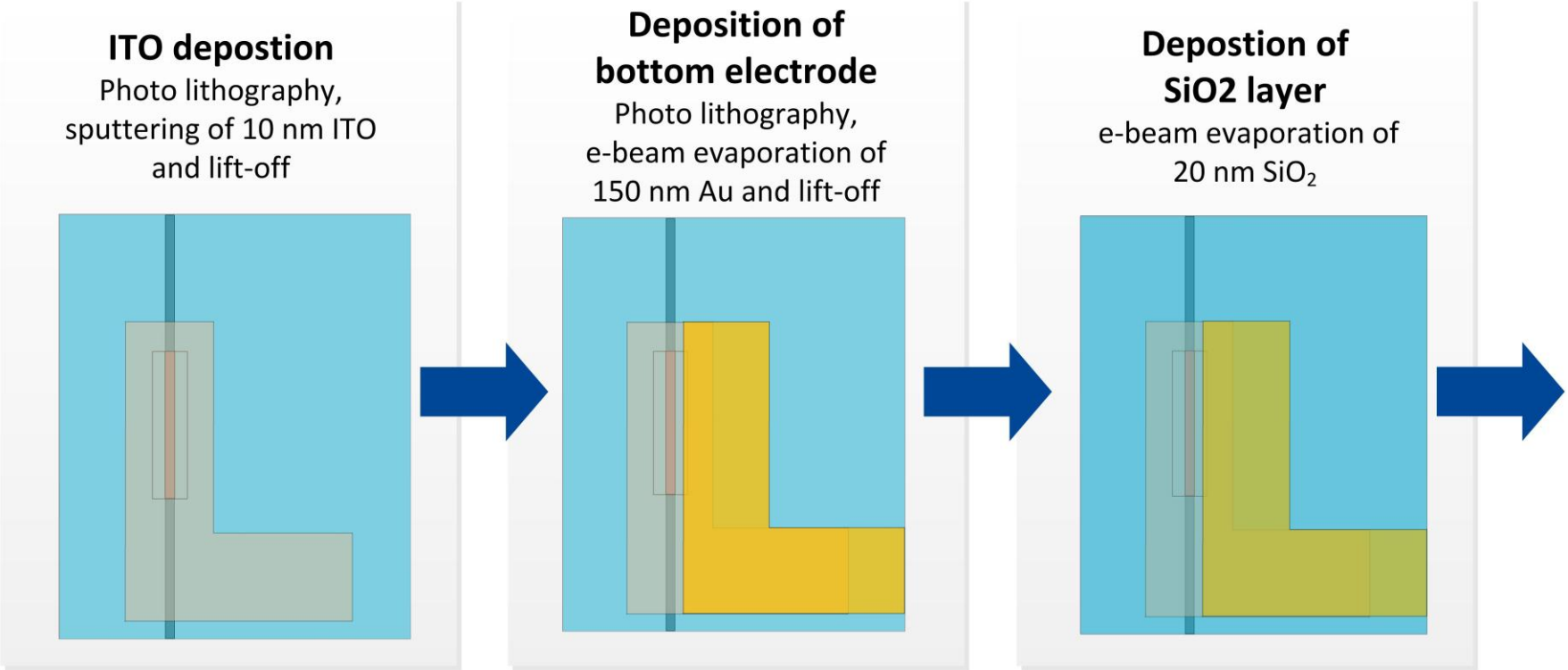


Working principle: carrier density of ITO may be switched by applying an electric field → absorption of ITO modulated

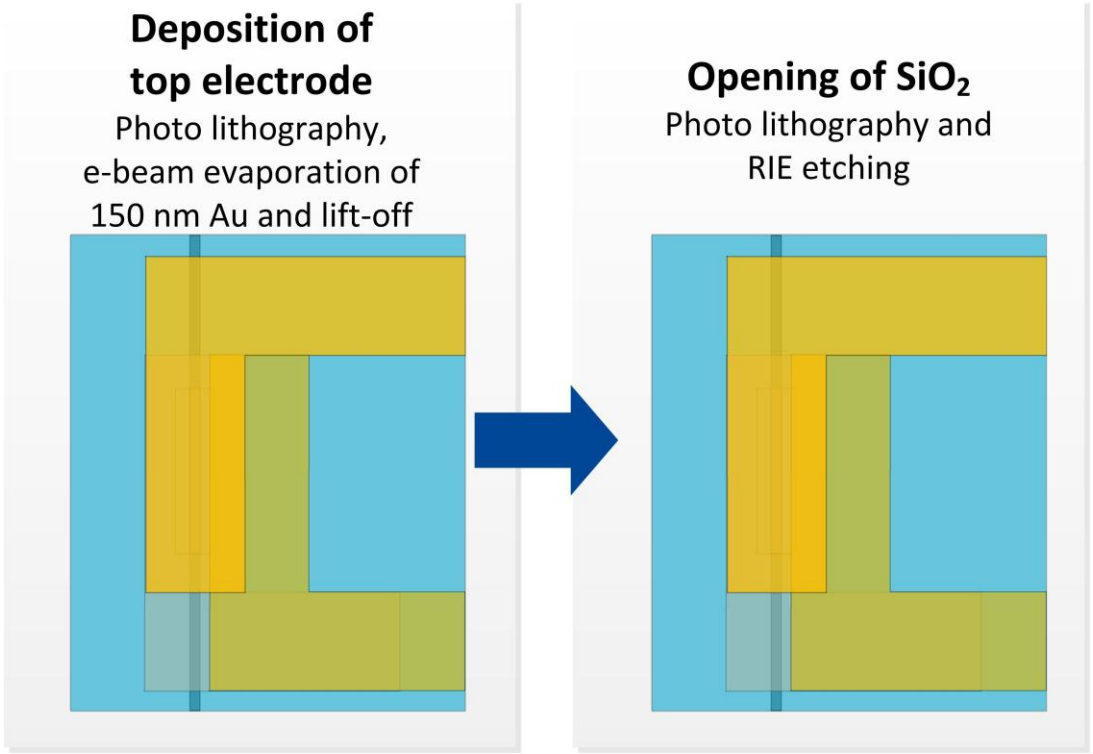
Fabrication Process



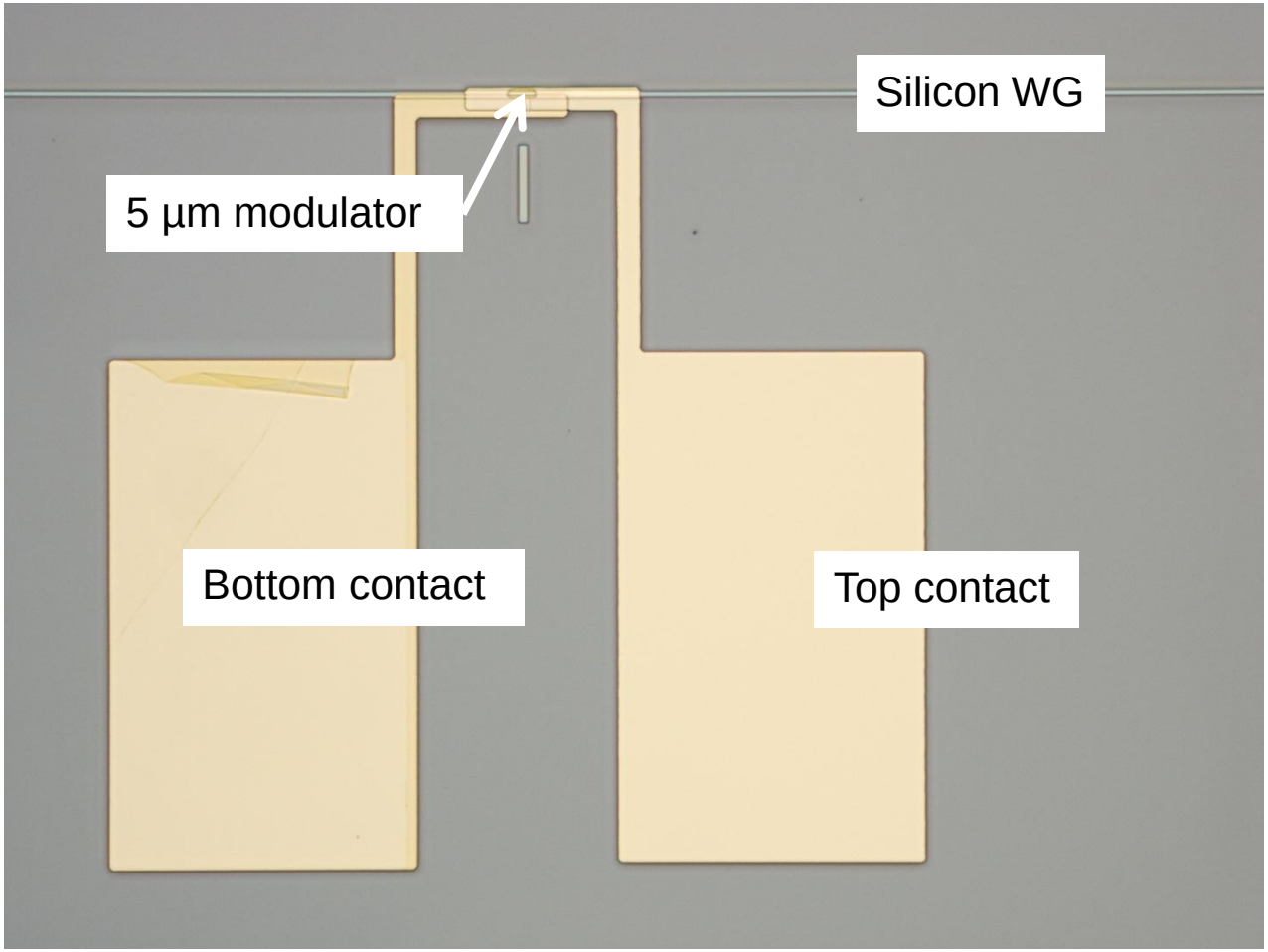
Fabrication Process



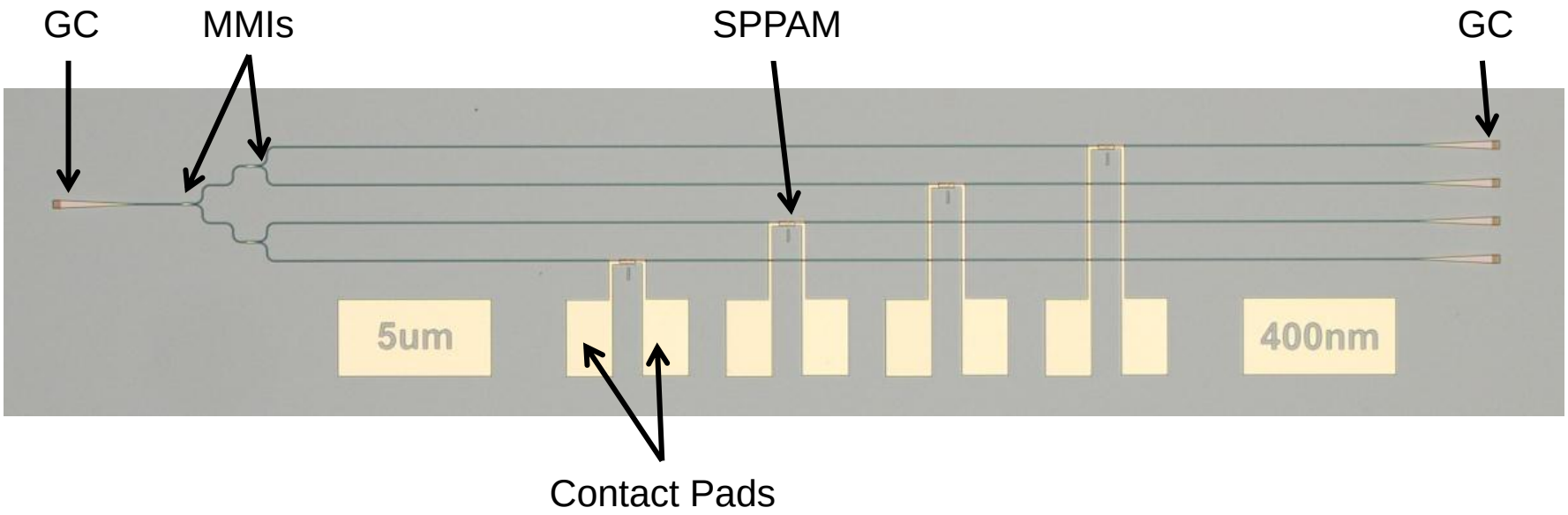
Fabrication Process



Optical Microscope Image
Single Device

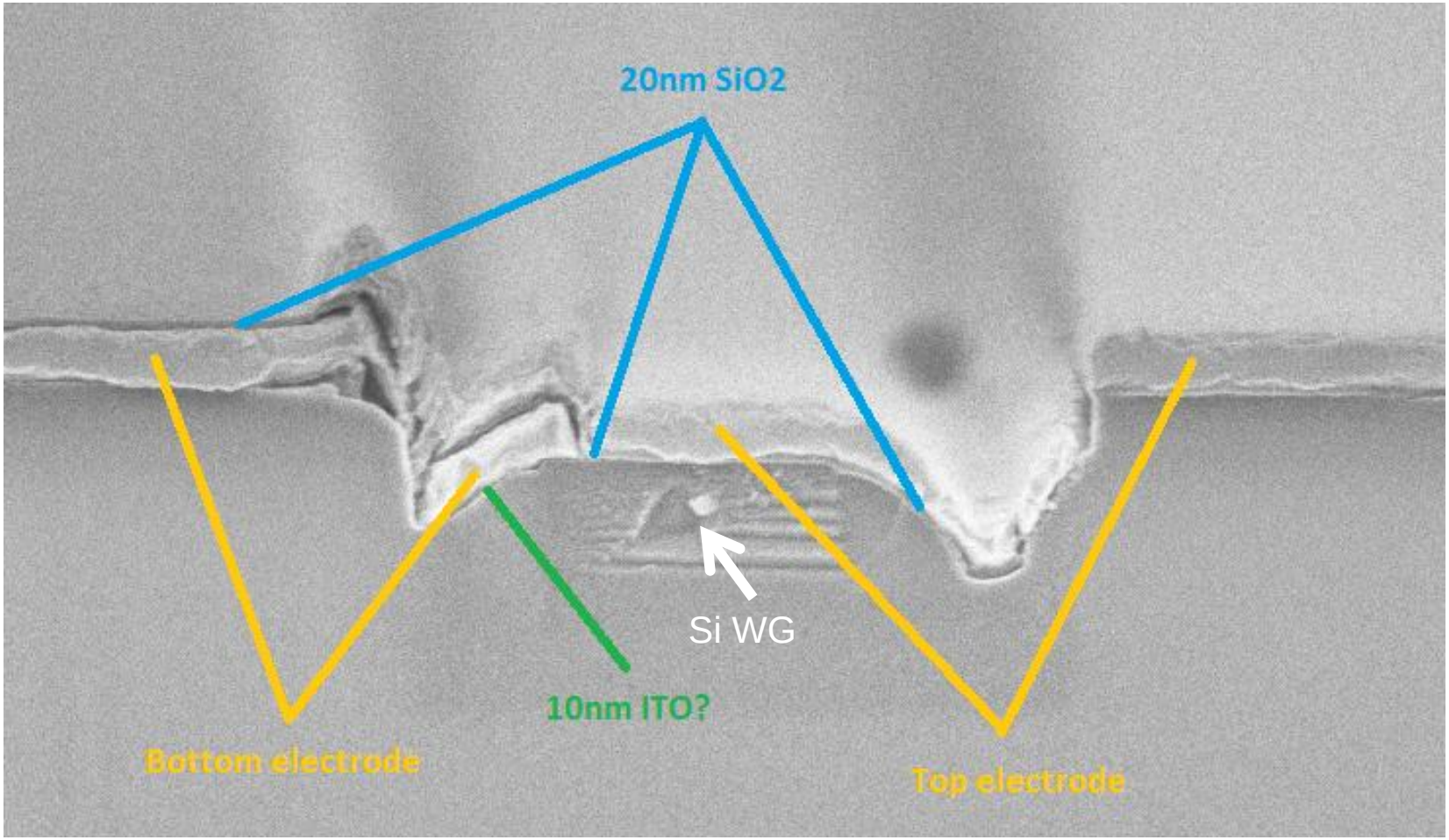


Optical Microscope Image
Four Channel Array (50 µm ptich)

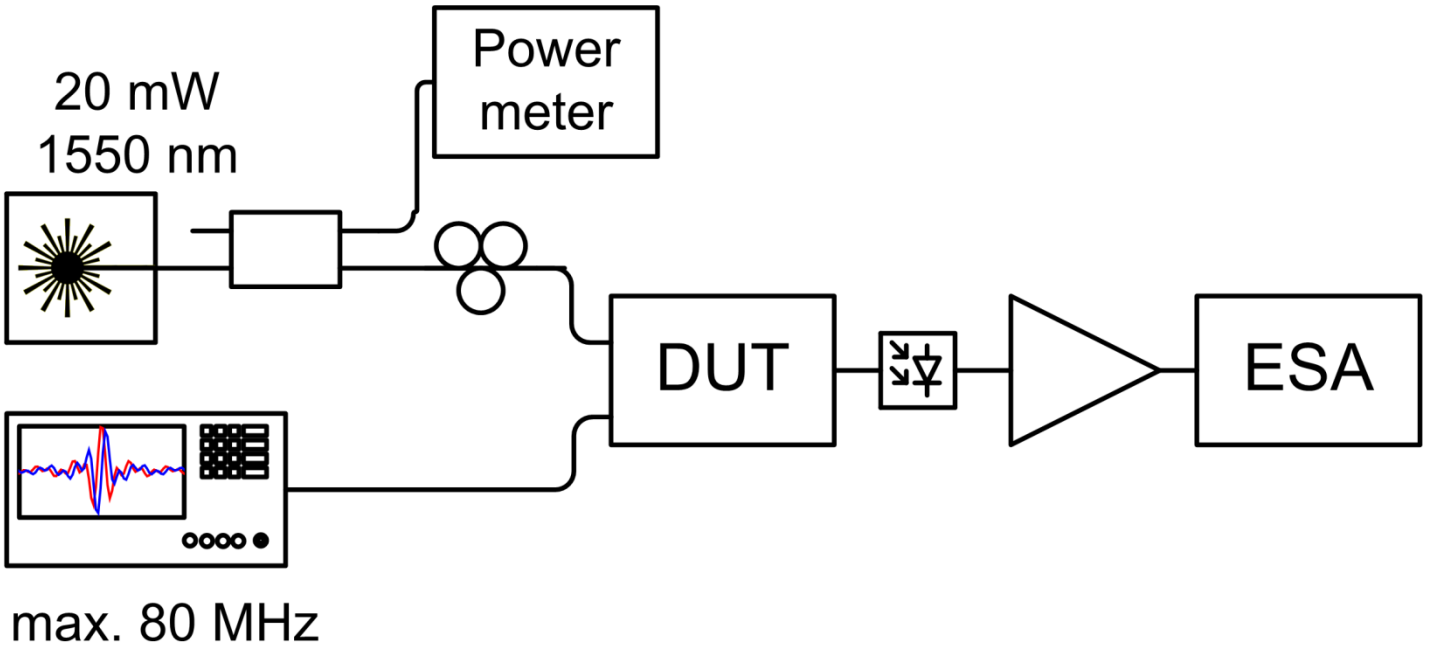


- Arrays of 2 and 4 channels with pitches of 35 µm, 50 µm, 250 µm
- 3, 5, 10, 20 µm long devices

SEM Image
Cross Section



Characterization (in progress)



Characterization (in progress)

10µm long device, sin ±1 V, 80 MHz