

FRAUNHOFER INSTITUTE FOR PHOTONIC MICROSYSTEMS IPMS  
CENTER NANOELECTRONIC TECHNOLOGIES (CNT)



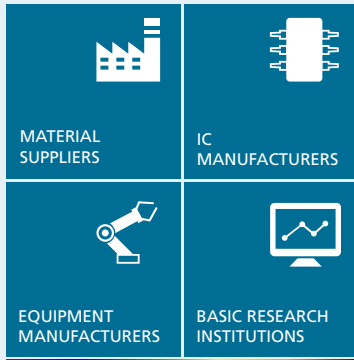
Supply



Processing



Characterization



Fraunhofer Institute for  
Photonic Microsystems IPMS  
Center Nanoelectronic  
Technologies (CNT)

An der Bartlke 5  
01109 Dresden  
Germany

Dr. Lukas Gerlich  
+49 351 2607 3047  
lukas.gerlich@ipms.fraunhofer.de

www.cnt.fraunhofer.de  
www.screening-fab.com

## 300 MM WAFER SERVICES

ENERGY DEVICES

ANALYTICAL SERVICES

SCREENING FAB SERVICES

### WAFER SERVICES

For high volume production (HVM) of semi-conductor devices such as microprocessors, every single process step is of interest for evaluation and optimization. Test vehicles and test wafers are essential for testing developments and new materials under production conditions.

Test wafers enable scientists to react quickly on process changes and transfer chemicals or processes from »Lab to Fab« for HVM.

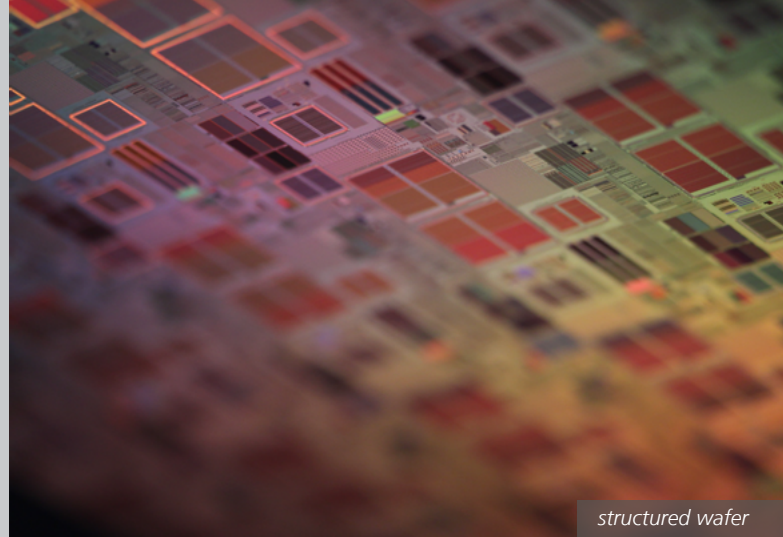
The Fraunhofer IPMS business unit CNT is intensively researching the production and optimization of semiconductor devices and offers a multitude of advantages.

### ADVANTAGES AT CNT

- Established test platform for micro- and nanoelectronic products
- Direct wafer exchange with production lines of manufacturer and supplier
- Industry standard clean room with 300/200 mm equipment
- Independent evaluation, experiment planning from process and equipment experts with over 10 years experience
- Designing of layouts, layer stacks and material properties
- Test wafers from CNT are verified in our metrology system park for a fast realization of further qualification steps on site
- ISO9001 quality and contamination management



blank wafer



structured wafer

# 300 MM WAFER SERVICES

**BLANK WAFER**

**SILICON BASED LAYERS**

- SiO<sub>2</sub> (thermal or chemical formed oxide)
- Organo silicate glass (SiCOH/ULK) [porous]
- SiGe
- Doped amorphous silicon (P,B)

**METALS**

- PVD: Ta(N), Ti(N), Cu, W, Hf(Ox), Si, W, Co, CoFe(B), Ir, Pt, Ru, Mo
- CVD: Co
- ECD: Co, Cu

**ALD BASED OXIDES & NITRIDES**

- Al<sub>2</sub>O<sub>3</sub>
- HfO<sub>2</sub> (doped)
- ZrO<sub>2</sub>
- HZO

More materials upon request

**STRUCTURED WAFER**

**TEST STRUCTURES FOR VARIOUS PROCESSES AT ≤ 28 NM TECHNOLOGY NODE**

- CMP | Plating | Cleaning
- Thin films | STI

**TEST STRUCTURES FOR FUNCTIONAL LAYERS**

- Memory applications (FRAM, RRAM, MRAM,...)
- MIS/MIM Structures

**CUSTOM LAYOUT IMPLEMENTATION E-BEAM LITHOGRAPHY NANOPATTERNIG**

- Small series
- Complementary »Mix & Match« layout

**METROLOGY**

- Layer thickness and uniformity (4-point probing, ellipsometry, XRR, high resolution profilometry)
- Film morphology and structure (AFM [3D], XRD, surface inspection, SEM, TEM, porosimetry)
- Chemical composition & contamination (ToF-SIMS, XPS, TXRF, REELS, ICP-MS, AAS)
- Patterned defect inspection
- Electrochemical monitoring of electrolyte solutions and additives (CVS, LP, EIS, etc.)
- Electrical characterization of functional layers and layer stacks (semi-automatic probing)
- Test wafers are verified in our metrology system park for a fast realization of further qualification steps on site
- Full process catalogue: [www.screening-fab.com](http://www.screening-fab.com)