



Fraunhofer

IPMS

FRAUNHOFER INSTITUTE FOR PHOTONIC MICROSYSTEMS IPMS



Characterization



Processing



Supply



Fraunhofer Institute for
Photonic Microsystems IPMS
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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 semiconductor 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 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 Fraunhofer IPMS are verified in our metrology system park for a fast realization of further qualification steps on site
- ISO9001 quality and contamination management

METROLOGY

- Layer thickness and uniformity
(4-point probing, ellipsometry, XRR, high res. 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

BLANK WAFER

SILICON BASED LAYER

- SiO₂ (thermal or chemical formed oxide)
- Organo silicate glass (SiCOH/ULK) [porous]
- SiGe
- Doped amorphous Si and poly Si (P, B)

METALS

- PVD: Ta(N), Ti(N), Cu
- CVD: Co
- ECD: Co, Cu

ALD BASED OXIDES & NITRIDES

- Al₂O₃
- HfO₂ (doped)
- ZrO₂
- 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
- MIS/MIM structures

CUSTOM LAYOUT IMPLEMENTATION E-BEAM LITHOGRAPHY NANOPATTERNING

- Complementary Mix & Match
- Small volume series

- 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