FAB

Failure Analysis Capabilities

Generic Failure Analysis Flow

1. Problem – Review
2. Die Access
3. Cleaning
4. Special Measurements
5. Non- destructive Investigations
6. Destructive Investigations
7. Report
8. Review
9. Evaluation of the Results

External Investigations

Failure Analysis Capabilities (1/3)

X FAB

Capability	Available in-house at X-FAB	Access through external lab
Sample preparation	• Decapsulation • Cross Section • Wafer Cleaving • Micro Cleaving • Sawing • Wet Etch Delayering • Parallel Polishing • Ion Polishing • Sputter Coating • FIB Modification • STEM Lamella Preparation • Sample Cleaning	• Decapsulation (adv. techniques) • Assembly • Plasma FIB

Failure Analysis Capabilities (2/3)

X FAB

Capability	Available in-house at X-FAB	Access through external lab
Physical failure / material analytics (Combination with environmental stress tests possible)	• IR/VIS/UV Microscopy • Laser Scanning Microscopy (LSM) • Focused Ion Beam (FIB) • Scanning Electron Microscopy (SEM) • Scanning Transmission Electron Microscopy (STEM) • Transmission Electron Microscopy (TEM) • Energy Dispersive X-ray Spectroscopy (EDX) • Secondary Ion Mass Spectroscopy (SIMS) • Electron Beam (EBSD)	• X-ray Microscopy • Scanning Acoustic Microscopy (SAM) • Transmission Electron Microscopy (TEM) • Atomic Force Microscopy (AFM) • Energy Dispersive X-ray Spectroscopy (EDX) • Secondary Ion Mass Spectroscopy (SIMS, TOF-SIMS) • Auger Electron Spectroscopy (AES) • X-ray Fluorescence Spectroscopy (IXRF) • Liquid Crystal Analysis (LCA) • Vapor Phase Decomposition (VPD-ICPMS, VPD-TXRF)

Failure Analysis Capabilities (3/3)

XFAB

Capability	Available in-house at X-FAB	Access through external lab

Electrical failure analytics
 	
(Combination with environmental stress tests possible)
	• Electrical Characterization
	  • Micro Probing
	  • Nano Probing
	• Electron Beam (EBIC/EBAC)
	• Voltage Contrast
		• Optical Beam Induced Resistivity Change (OBIRCH)
		• Emission Microscopy (EMMI)
		• Lock-In Thermography (LIT)
		• Spreading Resistance