

Services for Failure Analysis



Failure Analysis



Why Work with Us?



In-depth Analysis of the Failed Device
Comprehensive physical & electrical analysis



Fast Turnaround Time
Typically 4-7 business days



Free Engineering Consulting
For best analysis methodology



Affordable Price
Up to 40% lower than industry pricing



PHEMOS-1000 Emission Microscope

Failure Analysis Test Types

Non-destructive imaging & electrical test

Optical localization of failure using latest methods like PHEMOS or ORBIRCH

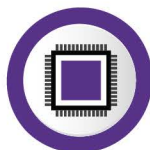
In-depth root cause analysis using TEM+EELS, SCM/SSRM or nano-probing

Nano-probing of the failed device after adding probing pads or nano sized probes

Industries



AUTOMOTIVE



IC CHIP



LED



- Specialized in memory, logic, LED, and MEMS devices
- Serving industry leaders with solid solutions
- 24 hours/7 days running lab
- 35+ years of experience in FA

Key Customers



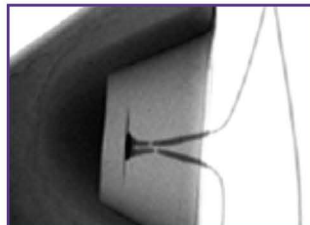


Level	Analysis Process	Analysis Equipment	Purpose	
Level 1	External Inspection	Low/High Power Scope	Outside surface analysis	
	Electrical Test	Pin or Wafer Level Electrical Testing	Confirm fails at pin/wafer levels like I-V curve, static DC biasing, memory array test, etc.	
	Non-Destructive Analysis	Regular X-ray Imaging		Inspection of wiring & die
		3-D X-ray Imaging		X-ray computed tomography
		Confocal Scanning Acoustic Microscope (C-SAM)		Package delamination and chip crack inspection
	Decapsulation	Chemical/Mechanical Method	Package removal	
Level 2	Optical Fail Localization	Photon Emission Microscopic Analysis (PHEMOS) & Thermal Emission Microscopic Analysis (THEMOS)	To pinpoint failure locations by detecting weak light (PHEMOS) and heat emission (THEMOS)	
		Optical Beam Induced Resistance Change (OBIRCH)	To find defects near IR beam induced heat change	
		Backside IR Imaging	Optical failure imaging of SiP, CSP and flip chip, etc.	
	Liquid Crystal Analysis		To find failures from abnormal leakages or hot spots	
Level 3	Fail Root Cause Imaging	Focused Ion Beam (FIB) Cross Section	Nano-level imaging of failure root causes using SEM, TEM and EDS/EELS for compositional element analysis	
		Scanning Electron Microscope (SEM)		
		Transmission Electron Microscope (TEM) & EDS/EELS		
	Advanced Failure Spot Analysis	Energy Dispersive X-ray Spectroscopy (EDS) & Electron Energy Loss Spectroscopy (EELS)	Compositional analysis of failed location with SEM or TEM	
		Atomic Force Microscopy (AFM) & Scanning Capacitance Microscopy (SCM) & Scanning Spread Resistance Microscopy (SSRM)	Surface failure, P or N dopant type, area/profile scanning of the resistance	
	Micro-Probing of the Failed Spot/Bits	Micro-probing by making pads or ~ 5 nm size probe at failed spots or in the memory array		

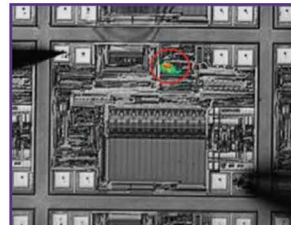
C-SAM



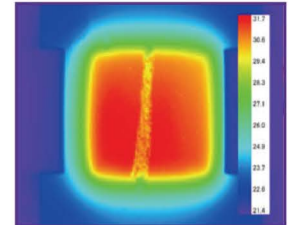
X-ray



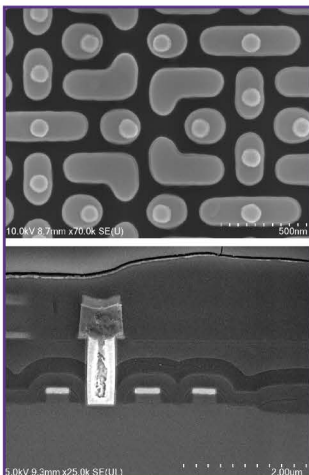
OBIRCH



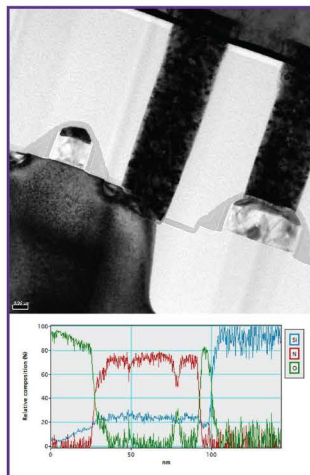
PHEMOS



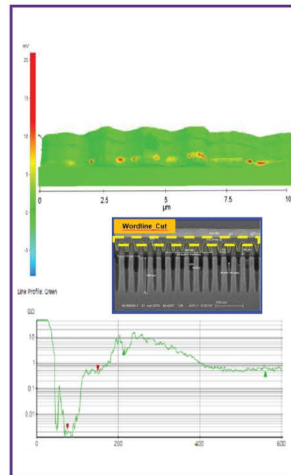
SEM



TEM+EELS



SCM & SSRM



Nano-Probing

