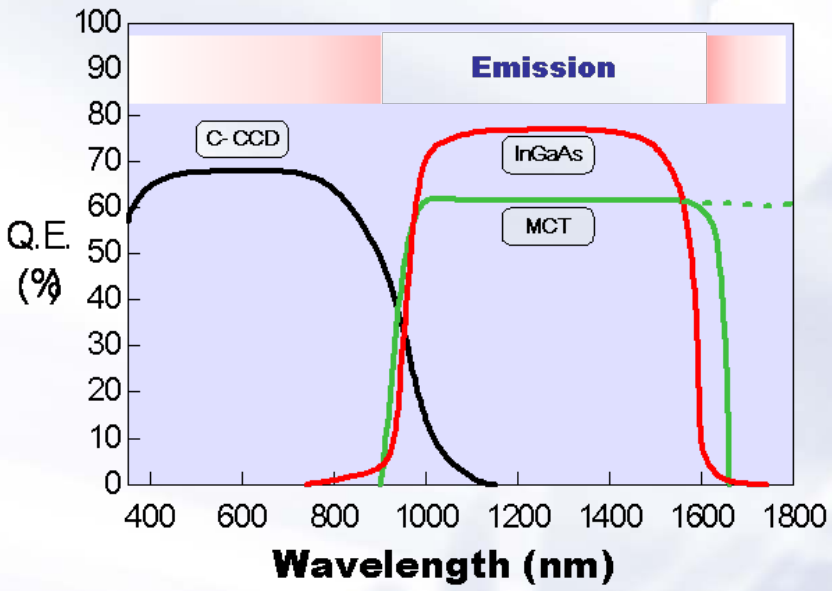
MASER ENGINEERING

PEM-OBIRCH analysis service

MASER Engineering provides high magnification failure localisation using photon emission microscopy (PEM) and Optical Beam Induced Resistance Change (Obirch). The system is equipped with a laser for back-side laser patterning inspection.

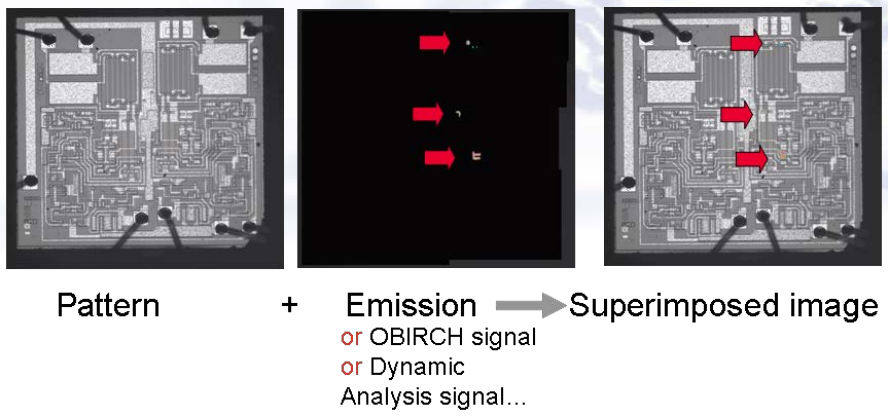
HAMAMATSU PHEMOS 1000:

- PEM and OBIRCH for fault localisation
- Equipped with double sided prober for front- and back side analysis
- 6 probe needles for front side probing
- 4 probe needles for back side probing
- PEM analysis using a CCD and an InGaAs camera



FAULT LOCALISATION:

- IC in active electrical failing mode
- Emission microscopy of p-n junctions
- Thermal laser stimulation of metal interconnections
- Photon laser stimulation of p-n junctions
- Comparison between failing an reference device

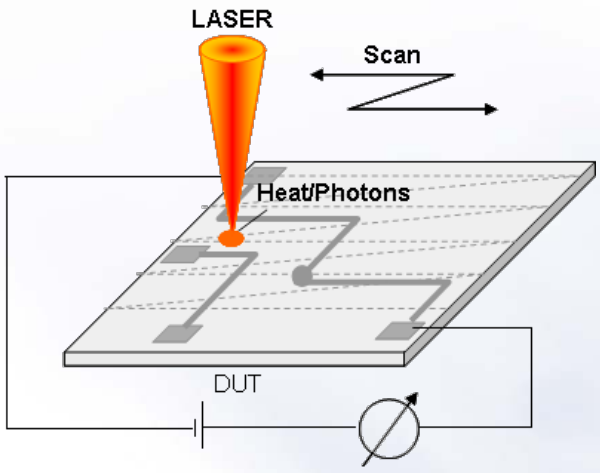


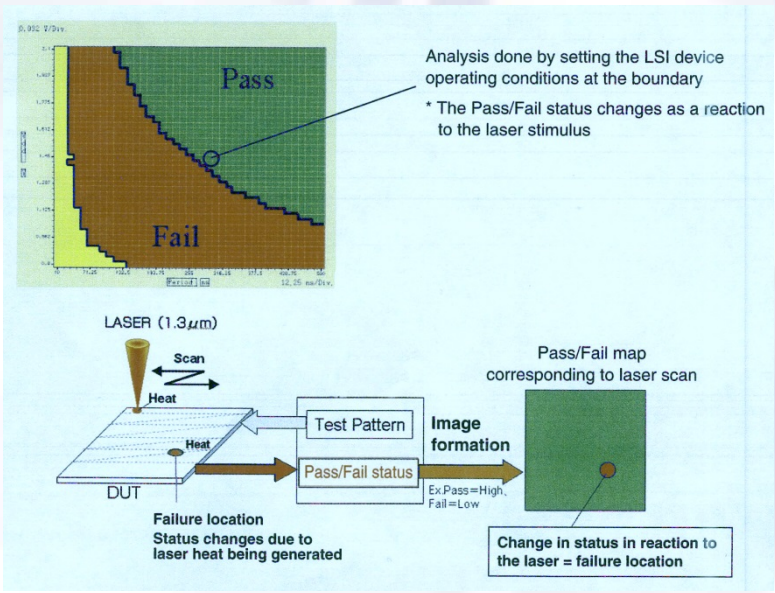
BACK- AND FRONT SIDE PEM ANALYSIS:

- Front/back side PEM with CCD camera
- Front/back side PEM with InGaAs camera
- Backside analysis advised for multiple metal stack devices and small process nodes (<130 nm)
- InGaAs camera is used for more advanced process nodes (90nm, 45nm and 40nm)

MASER ENGINEERING

PEM-OBIRCH analysis service



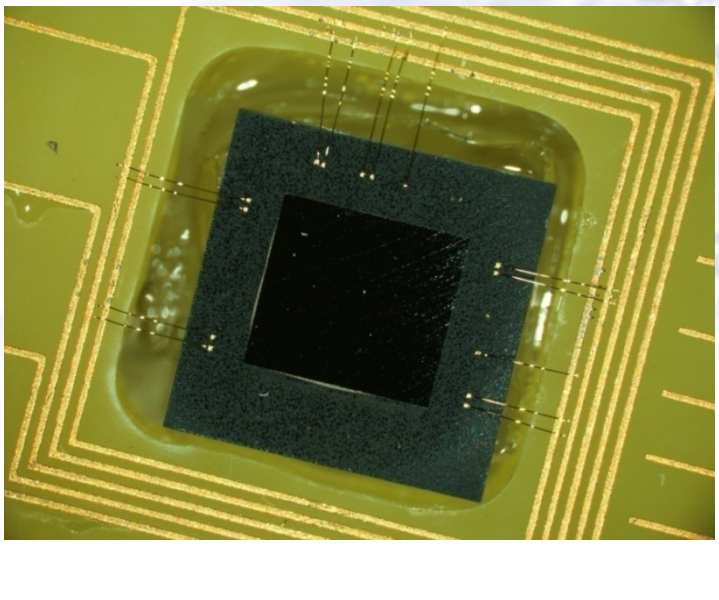


OBIRCH ANALYSIS:

- Defect localisation in conductive material of an IC (not for electrical and yield influencing defects)
- Device in active electrical mode during analysis
- SEI (Seebeck Effect Imaging):
  - No supply voltage applied
  - An electromotive force (e) appears at interfaces of two different materials while heated

SOFT DEFECT LOCALISATION:

- Analysis technique where changes in pass/fail conditions are monitored while a laser as scanned across the die
- Potential to locate failing nodes for functional fails that are dependant of:
  - Temperature
  - Frequency
  - Voltage



SAMPLE PREPARATION:

- Front side and back side analysis
- Laser and wet chemical decapsulation of packages (also on application boards)
- Die extraction from package for re-bonding
- Mechanical micro polishing of samples
- Wire bonding and re-bonding

For more info please visit www.maser.nl
For inquiries please contact : info@maser.nl or call +31 53 480 26 80