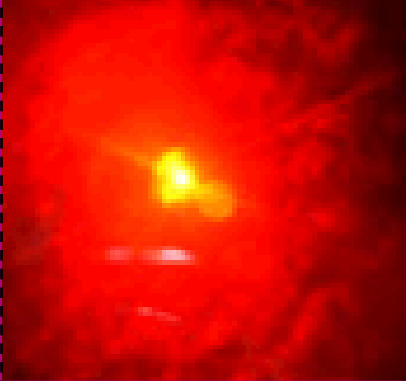


SARISTM Material Analysis



Laser Ablation ICP-MS

SARISTM Laser Ablation ICP-MS is a unique analytical technique developed by Balazs that combines high-power laser beam technology to ablate a sample with the high mass resolution capability of the ICP-MS to perform elemental survey and identification of the material.

The key advantage of SARIS is its ability to perform quantitative Failure Analysis without sample pre-treatment. This makes SARIS an ideal quick “first look” technique for major, minor, and trace constituents in solid materials. Another highlight is the wide range of materials it can analyze - conductive and non-conductive, homogeneous and heterogeneous, inorganic and organic, transparent and non-transparent, as well as refractory materials.

HIGHLIGHTS

Survey analysis	Depth information	Conducting material
Quantitative	Small analytical area	Insulating material

KEY APPLICATIONS

Protocol development at Balazs has culminated in diverse applications to monitor and identify impurities that may be introduced purposely or through contamination sources during manufacturing, packaging, and handling. Characterizing these defects is critical to identify the root cause for yield optimization.

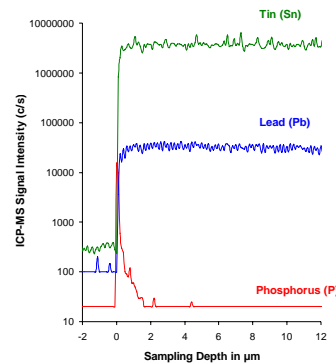
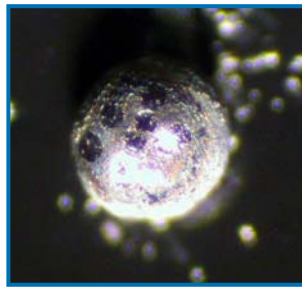
Back-End Materials	Insulators and Ceramics	Polymeric Materials
Bonding Wires	Low-k Materials	Powders
Components	Medical Devices	Quartz
Fiberglass	Mirrors/Optics/Detectors	Refractory Crystals
Films	Nanomaterials	Silicon Carbide (SiC)
Graphite	Particles	Wafers (Films)

TECHNICAL PARAMETERS

- Qualitative 85-element analysis with a DL of 0.0001% (w/w)
- Quantitative 25-element analysis with a DL of 0.1-100 ppm (µg/g)
- Depth profiling with 0.1 µm resolution
- Localized analysis with 5 µm spatial resolution Trace Metals

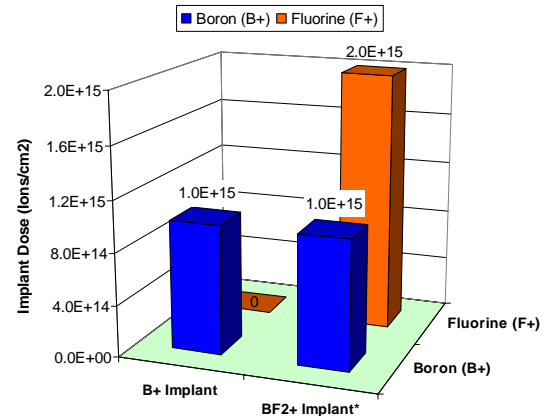
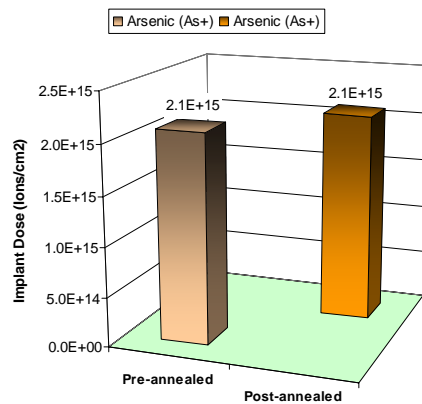
IDENTIFICATION – Solder bump

Survey analysis followed by depth profiling of a solder bump revealed the material was a tin and lead based alloy with a contamination build-up of phosphorus at the surface that affected its adhesion property.



QUANTITATION – Ion implantation

SARIS provides accurate dose quantitation as illustrated by (left) “as implanted” and annealed As⁺ ion implants and; (right) B⁺ and BF₂⁺ ion implants with no ion yield effect from the high fluorine concentration.



* F+ doses were provided by ion implantation company

DEPTH PROFILING – Ceramic material

The elemental survey and depth profiling capabilities of SARIS are essential for material Quality Control. Surface and sub-surface contaminants may be identified.

