Chemicals and Materials

Chemical and Material Evaluation Minimizes Process Contamination

Chemical characterization and process contamination identification are critical for incoming quality control. The point of distribution (POD), and the point of use (POU) are key check points for ensuring that chemical species are at the proper concentration for semiconductor process steps.

Balazs™ NanoAnalysis utilizes state-of-the-art procedures and instrumentation to analyze the gases, chemicals and materials used in photovoltaic and semiconductor, disk drive, optoelectronic, LED, laser, flat panel display and other high technology processes. Balazs™ specializes in the application of inductively coupled plasma mass spectrometry (ICP-MS) for ppb/ppt determination of metallic impurities in all required matrices. Other chemical analyses are available for identification of additional constituents within the sample, including ICP-OES, Ion chromatography, GC-MS, FTIR and GD-OES.

Balazs™ offers critical trace metal analysis by ICP-MS for low level and ultra low level detection limits in:

- Processing chemicals
- Etchants (wet and reactive ion etching)
- Cleaning chemicals (acids, bases, solvents)
- Photoresist materials (resists, edge bead removers, developers, ARCs)
- Dielectric materials, thin films, films stacks and advanced precursors
  - Low-k
  - High-k
  - Metal/barrier
  - Low T silicon, nitride
  - Ferroelectrics
  - Phase change memory
- Strippers
- Solvents
- Copper processing chemicals
- Selected CMP slurries
- Performance and other chemicals
- Parts: ceramics, gaskets, o-rings, polymers, quartz, graphite, sapphire
Trace Metal Packages

- 16 elements: Li, B, Na, Mg, Al, K, Ca, Ti, Cr, Mn, Fe, Ni, Cu, Zn, Sn, Pb
- 30 elements: 16 elements plus Be, V, Co, Ga, Ge, As, Sr, Zr, Mo, Ag, Cd, Sb, Ba, Au
- These packages are designed to cover the typical sources of contamination
- Other elements and packages available by request
- Analyses via high resolution and various collision-cell ICP-MS technologies

Special Analyses

- Identification of organic impurities in solvents by GC-MS
- Assay by titration or chromatography
- Low level anions by ion chromatography in chemicals
- Particle Sizing and Counting (0.3 μm -10 μm)
- Wet bench material qualification program
- Other chemical analyses available as needed

Other Support Services

- Chemical sampling kits with pre-cleaned bottles
- Sampling service on-site, 1 hour minimum
- Pure liquid sampler for contamination-free sampling

Chemical Groupings

**Group 1**

- 1-Methyl-2-Pyrrolidone (NMP)
- 2-Propanol (IPA)
- Acetic Acid
- Acetone
- Ammonium Hydroxide(NH₃OH)
- Cyclohexanone
- Ammonium Fluoride Solution (NH₄F)
- Hexamethyldisilazane (HMDS)
- Hydrochloric Acid (HCl)
- Hydrofluoric Acid (HF)
- Hydrogen Peroxide (H₂O₂)
- Methanol (MeOH)
- Methyl Ethyl Ketone (MEK)
- Methyl Isobutyl Ketone (MIBK)
- Mixed Acid Etchants (MAE)
- Piranha (H₂SO₄:H₂O₂:HOAc)
- n-Butyl Acetate (NBA)
- Nitric Acid (70% HNO₃)
- PGMEA
- SC1 Cleaning Solution (NH₄OH:H₂O₂:H₂O)
- SC2 Cleaning Solution (HCl:H₂O₂:H₂O)
- Organic Solvents (B.P. < 175°C)
- Sulfuric Acid (H₂SO₄)
- Buffered Oxide Etchants (BOE)
- Tetramethylammonium Hydroxide (TMAH)

**Group 2**

- Non Ionic Surfactants
- Organic Solvents (B.P. > 175°C)
- Resist Strippers
- Ethylene Glycol
- Negative Photoresists
- Positive Photoresists
- Polymide Solutions
- CMP (Silica Slurries)
- Spin-on-Glass (SOG)
- Spin-on-Boron (SOB)

**Group 3**

- Photoresist Resins
- Photosensitizers
- Polymide Resins
- Polymeric Materials
- Polyethylene
- Polyfluoroarbons
- Polypropylene
- Epoxy Resins
- Silicon Dioxide Powder
- Waxes
- Boron Metal *
- Quartz

* Special pricing