

Analytical Insight

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Wipe Analysis to Determine Metal Contamination on Critical Surfaces

On-wafer metallic contamination is detrimental to the fabrication and performance of semiconductor devices. Metals such as Fe, Cr, and Cu can dissolve in silicon and form silicides. Wafer oxidation rates can be affected by Al contamination, while Ni can increase Si etch rates. The presence of mobile ions such as Na⁺ and K⁺ in gate-oxide or oxide-semiconductor interfaces can result in threshold voltage shifting of transistors. Metals can also degrade the insulating and capacitive properties of dielectrics.

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Latest Advances and Innovative Solutions for High Purity Gas and Cleanroom Air Sampling

Airborne molecular contamination (AMC) and surface molecular contamination (SMC) are collected in various ingenious ways. Methods are available to detect the trace presence of metals, anions, cations and organic chemicals to less than 50 pptv. Sampling methods include pumped sampling for cleanroom air; special flow control manifolds for Clean Dry Air (CDA) and Ultra-High Purity (UHP) gases; and staged witness wafers for airborne organic materials.

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Analysis of Non-Volatile Inorganic Compounds using High-Performance Liquid Chromatography (HPLC)

The characterization of chemicals is of high importance for the semiconductor community as in most cases high purity chemicals are needed, and being able to determine any impurities is vital to ensure process success and stability in the fab. Liquid chromatography has been used for many years, typically in the form of Ion Chromatography (IC) and detection of anions (Cl⁻, NO₃⁻, etc) or ammonium (NH₄⁺) in Ultrapure Water (UPW).

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About us

Air Liquide - Balazs NanoAnalysis
46409 Landing Parkway
FREMONT, CA 94538
Phone: 510-624-4000
Fax: 510-657-2292

Any Question?

Feel free to contact us by mail
info@balazs.com

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Upcoming Events

Semicon West Exhibit
San Francisco
July 9th - 11th

