

Continuous Monitoring of Particles at 20 nm in Critical Semiconductor Process Chemicals **Dan Rodier - Technology Development Manager Particle Measuring Systems**

Real time monitoring of particles as small as 20 nm in ultrapure water and critical wafer cleaning chemicals is essential for controlling defects and maintaining high manufacturing yields in sub-15 nm processes. High purity chemical delivery systems are necessary to control and protect the purity of critical process fluids from the source, through distribution, to the wafer fab cleaning tools. Carefully implemented monitoring strategies are important to ensure that the purity of ultrapure water and process chemicals is sufficiently high to meet wet process defect-density goals.

In high purity fluids, both the contamination level and the stability of the contamination level are important considerations for reducing defects and maintaining process stability. Contamination levels of many ultrapure water systems are relatively low and stable when compared to contamination levels observed in high purity chemical distribution systems. Nanoparticle contamination levels in ultrapure chemical delivery systems are often unstable and poorly controlled when observed at 20 nm, exposing wafers to an elevated and variable source of potential defects.

This paper provides examples of continuous real-time measurement of particles at 20 nm for ultrapure water and process chemicals. Data are presented and discussed, and recommendations made for achieving critical process fluid purity at the wafer point-of-use.

Organized by:

