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RASIRC Presents New Hydrogen Peroxide (H₂O₂) Vapor Source for Pre-Treatment/Cleaning in Atomic Layer Deposition
Shares Test Results at Advanced Semiconductor Manufacturing Conference (ASMC)

San Diego, Calif. – June 27, 2013 – RASIRC® presented a poster on the topic “*New Vaporization Sources for H₂O₂ for Pre-Treatment and Cleaning of ALD Deposition Surfaces*” at the recent Advanced Semiconductor Manufacturing Conference. The SEMI conference was held May 13-16, 2013 in Saratoga Springs, New York.

Defects at or close to the interface between high-k dielectric and channel materials are major concerns for performance and reliability of molecular-level semiconductor devices. Cleaning and surface preparation are important steps in preventing these defects, and are best conducted with dry rather than wet chemistries to ensure complete ALD coverage and avoid etching or structural damage during the process. Hydrogen peroxide delivered with a stable flow rate and sufficient concentration is superior to ozone and water for this application.

“Using H₂O₂ vapor provides several key advantages, including lower process temperature, higher reactivity with precursor materials, and faster process speed via reduced steric hindrance,” said Jeffrey Spiegelman, Founder and President of RASIRC. “New oxidants have been needed in ALD for a long time, but RASIRC is the first company to provide a safe and reliable way to enable H₂O₂ in ALD. ”

Historically, Raoult’s Law caused the concentration of H₂O₂ in the vapor to change over time. Unfortunately most researchers were unaware that the H₂O₂ concentration in the bubbled vapor was in the ppm value not percentage as in the liquid source. This has led to misconceptions on the effectivity of H₂O₂ in ALD. RASIRC technology overcomes these limitations.

RASIRC tests show that hydrogen peroxide in ALD applications achieve much greater density of hydroxyl sites surface coverage for metal nucleation, speeding the deposition process. Hydrogen peroxide has also been shown to remove carbon from Ge and SiGe substrates. The

chemisorption process leads to better interface layers and improved coverage per cycle. Test results were described in the poster.

The *Advanced Semiconductor Manufacturing Conference* provides a venue for industry professionals to network, learn and share knowledge on new and best-method semiconductor manufacturing practices and concepts. “As devices have incorporated layers only three to five atoms thick the need for better cleaning and surface preparation has grown,” said Lita Shon-Roy, RASIRC Director of Marketing and ASMC poster presenter. “Our poster session showed attendees how hydrogen peroxide is now a viable and attractive option for their ALD process.”

More information about hydrogen peroxide vapor delivery systems is available directly from RASIRC.

About RASIRC

RASIRC products purify and deliver ultra-pure liquids and gases. RASIRC technology is the first to generate ultra high purity (UHP) steam from de-ionized water. It reduces cost, increases yield, and improves safety. RASIRC humidifiers, closed loop humidification systems, and steam generators are of critical importance for many applications in the semiconductor, photovoltaic, pharmaceutical, medical, biological, fuel cell, and power industries. Call 858-259-1220, e-mail info@rasirc.com, or visit www.rasirc.com.

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