



FOR IMMEDIATE RELEASE

RASIRC Presents Two New Molecules for Growth of Low Temperature Nitrides and Oxides

BRUTE gases improve passivation and nucleation for High k Deposition in ALD

San Diego, Calif – July 21, 2016 –RASIRC will demonstrate continued technology leadership in gas delivery for new semiconductor materials and processes with a presentation, posters and exhibit (stand #48) at the 16th International Conference on Atomic Layer Deposition July 24-27 in Dublin, Ireland. The company will discuss how anhydrous hydrogen peroxide and hydrazine can improve key processes and will present initial electrical characterization data for films and MOSCAP structures.

Presentation

RASIRC Chief Technology Officer Dan Alvarez will present “[Novel anhydrous hydrazine deliver for low temperature silicon nitride passivation of SiGe\(110\)](#)” on Monday July 25 in the Precursor Delivery session. This presentation will discuss how anhydrous hydrazine can be used to create a thin layer of silicon nitride that can act as a diffusion barrier or channel passivation layer prior to dielectric deposition in FinFets or MOSFETs. The study focuses on <400C silicon nitride ALD process and shows how further oxidation using anhydrous peroxide provides good nucleation for High k deposition.

“Anhydrous hydrazine gas offers a new path to low temperature passivation and nitridation,” said Alvarez. “This highly reactive molecule shows a higher growth rate, density and reactivity when compared to other plasma free chemistries.”

Poster Session

RASIRC will present the poster “[*Hydrogen peroxide gas for improved nucleation and initiation in ALD*](#)” on Monday July 25 in Joint Poster Session 1. The poster explains the need for a novel oxidant that improves passivation and nucleation density at semiconductor interfaces. The study was performed on SiGe(110) surfaces and provides a direct comparison of equal amounts of water, 30% H₂O₂/H₂O, and anhydrous H₂O₂. A five-fold increase was found in nucleation density for H₂O₂ versus water, and a three-fold increase for H₂O₂ versus 30% H₂O₂/H₂O. An additional comparison was made of H₂O₂ to H₂O by deposition of Al₂O₃ on an Si-H surface. This comparison found denser nucleation and faster initiation for H₂O₂ treated surfaces.

Also during Joint Poster Session 1, Karl Littau of Intermolecular, USA, will present a poster that stems from work done using RASIRC anhydrous hydrogen peroxide. His poster titled “[*Comparison of hydrogen peroxide and ozone for use in zirconium oxide atomic layer deposition*](#)” includes Dan Alvarez and Jeff Spiegelman as co-authors. The study compared RASIRC BRUTE™ Hydrogen Peroxide and ozone as oxidants for zirconium oxide ALD. The effects of the oxidants on ZrO_x growth rate, film composition, crystallography and metal-insulator-metal capacitor dielectric constant and leakage are discussed.

“Results from multiple studies performed at university labs and customer sites have repeatedly shown that anhydrous hydrogen peroxide delivers better surface functionalization and initiation than either water or 30% H₂O₂/H₂O,” said Jeffrey Spiegelman, RASIRC President and Founder. “New materials require new gases, and RASIRC is leading the way through innovative new molecules and gas delivery systems.”

Exhibit Stand

ALD Conference attendees are invited to visit RASIRC in booth #48. Representatives will be available to answer any questions and discuss exciting results from recent customer testing. Stop by to get the latest research papers and see a demonstration model of our unique solvent-based delivery system for safety, used for BRUTE Hydrogen

Peroxide and BRUTE Hydrazine. Also learn about the Peroxidizer® for high-volume ALD. Ask about Hydrogen Peroxide Steam.

About RASIRC

RASIRC specializes in products that generate and deliver gas to fabrication processes. Each unit is a dynamic gas plant in a box—converting common liquid chemistries into safe and reliable gas flow for most processes. First to generate ultra-high purity (UHP) steam from de-ionized water, RASIRC technology can now also deliver hydrogen peroxide gas and hydrazine gas in controlled, repeatable concentrations. RASIRC gas delivery systems, humidifiers, and closed loop humidification systems are critical for many applications in semiconductor, photovoltaic, pharmaceutical, medical, biological, fuel cell, and power industries. Call 858-259-1220, email info@rasirc.com or visit www.rasirc.com.

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