FOR IMMEDIATE RELEASE

**RASIRC Releases Technical Report on Hydrogen Peroxide Gas Delivery for ALD, Annealing and Cleaning in Semiconductor Processes**

*Peroxidizer® delivers up to 50,000 ppm vapor from 30% liquid source*

San Diego, Calif – June 23, 2016 – RASIRC released a white paper on the Peroxidizer, the first commercial vaporizer to deliver high concentrations of hydrogen peroxide gas to semiconductor processes at low temperatures and/or low pressures. In the Peroxidizer, a hydrogen peroxide liquid pervaporates across a membrane. This enables generation of a stable and high concentration of $H_2O_2$ gas with minimal susceptibility to downstream process conditions. The Peroxidizer only needs standard semiconductor grade liquid $H_2O_2$ to support a wide range of process and $H_2O_2$ delivery conditions.

"Hydrogen peroxide gas is a powerful and versatile oxidant for processing new materials needed for fabrication of 3D structures," said Jeff Spiegelman, RASIRC President and Founder. "The Peroxidizer is the first new breakthrough in process oxidants since the ozone generator. We are just starting to understand its value for next generation semiconductor manufacturing."

Chemicals used today for thin film oxidation do not meet future manufacturing challenges. In one way or another, traditional oxidants, including water, ozone and $O_2$ plasma, are deficient when fabricating these new device structures under atomic level constraints.

"New thin film layers are no longer planar, but are three dimensional shapes with very high aspect ratios (150:1). This creates inverted skyscrapers on an atomic layer," said Spiegelman. "Processing at the bottom of these deep structures is nearly impossible. Chemicals must be stable enough to reach the bottom then react when the oxidant gets to the target site. This precludes the use of plasma."

Semiconductor processes affected include atomic layer deposition, annealing, wafer cleaning, thermal oxidation, thin film growth, etching, and interface layer passivation.

The Peroxidizer delivers hydrogen peroxide gas in stable, high concentrations from 12,500 to 50,000 ppm, which equates to 1.25 to 5% gas by volume. The system handles gas flows of 5 to 30 slm in vacuum or atmospheric conditions.

**Download the report** "*Hydrogen Peroxide Gas Delivery for Atomic Layer Deposition, Annealing, and Surface Cleaning in Semiconductor Processing*".

**For more detail** on the Peroxidizer, visit http://www.rasirc.com/peroxidizer.

**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 steam from de-ionized water, RASIRC

technology can now also deliver hydrogen peroxide and hydrazine gases in controlled, repeatable concentrations. RASIRC gas delivery systems, humidifiers, closed loop humidification systems, and steam generators are critical for many applications in semiconductor, photovoltaic, pharmaceutical, medical, biological, fuel cell, and power industries. Call +1(858)259-1220, email info@rasirc.com or visit http://www.rasirc.com.

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