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RASIRC

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China Grants Patent to RASIRC for BRUTE® Hydrazine

Invention enables safer, low temperature processing of next generation semiconductors

San Diego, Calif – March 4, 2022 – RASIRC announced that China has granted patent number CN 109152990 B related to the delivery of anhydrous hydrazine gas to process. This patent is part of family of patents around hydrazine, water, and hydrogen peroxide to enable safer and low temperature processing of next generation devices for microelectronic applications.

The patent covers how hydrazine can be mixed with a solvent, making it safer and easier to store. Typically, a mixture would interfere with the ability to deliver hydrazine as process gas. However, with a very high boiling solvent the vapor from the mixture is greater than 99.999% pure hydrazine. This method combined with RASIRC proprietary purification techniques enables RASIRC to safely deliver high purity hydrazine with water vapor below 100ppb.

“Governmental limitations on Anhydrous hydrazine have prevented commercialization of hydrazine in semiconductor and other thin film processes,” said RASIRC Founder and CEO Jeffrey Spiegelman. “Through the creation of BRUTE Hydrazine, hydrazine gas can now easily be integrated into existing semiconductor nitride processes that were not able to work with ammonia or plasma. This will enable next generation nitride and metal films such as titanium nitride, ruthenium, and cobalt.”

Advantages of BRUTE Hydrazine Gas

- Highly reactive, enabling thermal ALD at temperatures below 400°C
- No line of sight required, providing uniform films on high aspect ratio structures
- No oxygen or carbon, eliminating contamination
- Fewer device defects
- Better electrical performance
- Safer than 100% anhydrous hydrazine
- Enables easier transportation, logistics, and material handling

BRUTE Hydrazine

BRUTE Hydrazine enables uniform nitride deposition for titanium and early transition metals at low temperature. BRUTE Hydrazine may also be used as an atomic hydrogen source, where metals such as Ru, Cu, and Co may be cleaned and reduced. BRUTE Hydrazine has been formulated with a higher flash point for safer handling.

About RASIRC

RASIRC transforms liquids into dynamic gases that power process innovation in semiconductor and adjacent markets. By commercializing molecules for lower temperature processes, RASIRC patented technology enables the manufacture of atomic-scale oxides, nitrides, and metals. Innovative products such as Brute Peroxide, Brute Hydrazine, the Peroxidizer, and the Rainmaker Humidification Systems are being used to develop solutions for 5G, AI, IOT, and advanced automation.

What makes RASIRC a unique industry leader is our technical expertise and commitment to solving complex industry challenges for our customers. Our team of industry experts has a proven track record of beating larger competitors to market by efficiently delivering state of the art technology that reduces cost, improves quality, and dramatically improves safety. With our customers at the forefront of all we do, we continue to research, develop, and design innovative products that purify and deliver ultra-pure gas from liquids for the semiconductor and related markets. Contact RASIRC to help solve your complex problems.

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