FOR IMMEDIATE RELEASE

ALD Student Award Finalist Talk: “In-situ FTIR Study of Oxygen Source Mixing for Hafnium Oxide Atomic Layer Deposition on Titanium Nitride”

Direct comparison between hydrogen peroxide gas and ozone shows the superiority of Brute® Peroxide for reducing oxidation of titanium nitride substrate during the growth of high K layers.

RASIRC is pleased to announce that the paper titled "In-situ FTIR Study of Oxygen Source Mixing for Hafnium Oxide Atomic Layer Deposition on Titanium Nitride" has been selected as a finalist for the prestigious ALD Student Award. This groundbreaking research will be presented at the ALD/ALE 2024, AVS 24th International Conference on Atomic Layer Deposition, held in Helsinki, Finland, on August 4-7, 2024.

The research, conducted by Jin-Hyun Kim, D. Le, M. Lee, T. Chu, D. Kim, J. Veyan, and J. Kim, from the University of Texas at Dallas, in collaboration with S. Kim from Kangwon University, Republic of Korea, and M. Benham and J. Spiegelman of RASIRC, focuses on the oxidation of the TiN substrate during the atomic layer growth of hafnium oxide using either ozone or hydrogen peroxide vapor from RASIRC Brute® Peroxide.

This innovative approach has shown promising results, highlighting the superiority of hydrogen peroxide gas over ozone or water in the growth of low-temperature ALD oxides. Comparison data presented will include FTIR, electrical results, and growth rate.

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Jeffrey Spiegelman, CEO and Founder of RASIRC, highlighted the impact of this research, stating, "The results prove again that hydrogen peroxide gas is the best oxidant for initiating ALD high K dielectric films on a metal surface. This not only underscores the potential for enhanced film quality but also paves the way for more efficient manufacturing processes in semiconductor fabrication."

Innovative Contributions:

The collaboration between the University of Texas at Dallas, Kangwon University, and RASIRC exemplifies the synergy between academic research and industrial application. By leveraging advanced FTIR techniques, the team has provided valuable insights into the molecular interactions during the ALD process, leading to improved methods for depositing hafnium oxide on titanium nitride substrates.

The successful application of hydrogen peroxide gas in this context highlights its advantages in achieving uniform and high-quality oxide layers, essential for the development of next-generation semiconductor devices. This research contributes significantly to ongoing efforts to optimize ALD processes, ensuring better performance and reliability of electronic components.

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's patented technology enables the manufacture of atomic-scale oxides, nitrides, and metals. Innovative products such as BRUTE Peroxide, BRUTE Hydrazine, and the Peroxidizer® are being used to develop solutions for 6G, AI, IoT, and advanced automation.

What makes RASIRC a unique industry leader is our commitment to solving complex challenges for our customers. Our team of industry experts has a proven track record of being first to market by 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 Information:

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About the ALD/ALE Conference:

The AVS 24th International Conference on Atomic Layer Deposition (ALD 2024) is a premier event that brings together researchers, scientists, and industry professionals from around the world to discuss the latest advancements in ALD technology. The conference provides a platform for sharing cutting-edge research, exploring new applications, and fostering collaborations that drive the field forward.