FOR IMMEDIATE RELEASE
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RASIRC Nitride Wizard Models Precursor Reactivity with Ammonia and Hydrazine
Web-based tool reduces experimentation time and cost in ALD and CVD processes

San Diego, Calif – March 30, 2022 – RASIRC today announced the immediate availability of its new ALD Nitride Wizard™ for rapid precursor candidate selection. Available through the RASIRC website, this free tool models reaction energetics for a wide range of precursors with NH_3 and N_2H_4. For the first time, researchers can quickly screen molecular reactivity without setting up experiments in the lab, which results in a short list of precursors for actual experimentation.

Ammonia has been the first choice as co-reagent for nitrides in the past. However, its poor reactivity at low temperatures has made evaluation of other nitrogen sources necessary. The ALD Nitride Wizard provides a reactivity comparison between NH_3 and N_2H_4 with a wide range of precursors. Reaction energetics for each reaction pair make it easy to select the best precursor and nitride source for an application.

The ALD Nitride Wizard allows users to select the metal and ligand structures desired, and then provides reaction energetics. Each metal ligand pairing is created in real time on the screen and displayed as a 3D construct to help visualize mobility and steric hindrance of each candidate metal precursor. The wizard compares the reactivity of ammonia and hydrazine for 378 different precursors created from 7 different metals and 54 different ligands. By rapidly screening a wide range of candidates, the model directly reduces the expense of precursor attainment and experimental testing.

“Theoretical models can be used to screen potential precursors quickly, easily, and without material costs,” notes RASIRC Founder and CEO Jeffrey Spiegelman. “The ALD Nitride Wizard can greatly reduce both cost and time to achieve ALD film goals.”

The ALD Nitride Wizard can save thousands of hours in the laboratory. Typically, each precursor lab experiment requires a day for installation, another to run samples and a third to remove the precursor and clean the chamber. Film data analysis takes another 1-2 days depending on scope. Running both ammonia and hydrazine for direct comparison could take an additional day if the ALD tool requires change out. In contrast, the ALD Nitride Wizard provides relative reactivities of different reactions. This

allows the researcher to screen a handful of the best candidates, reducing laboratory work to the most favorable for any given material.

Details on the ALD Nitride Wizard are available in the paper "*Nitride Wizard Models Precursor Reactivity with Hydrazine and Ammonia for Improved Economics in Atomic Layer Deposition*" available on the RASIRC website.

BRUTE Hydrazine
BRUTE Hydrazine enables uniform nitride deposition 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 and storage.

About RASIRC
RASIRC transforms liquids into dynamic gases to 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 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 being first 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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