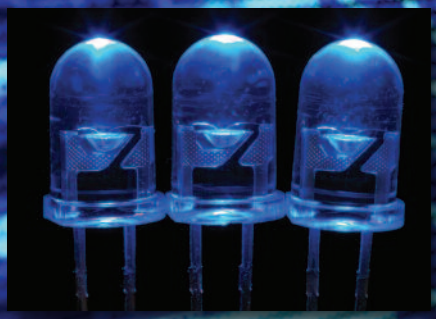
MATHESON

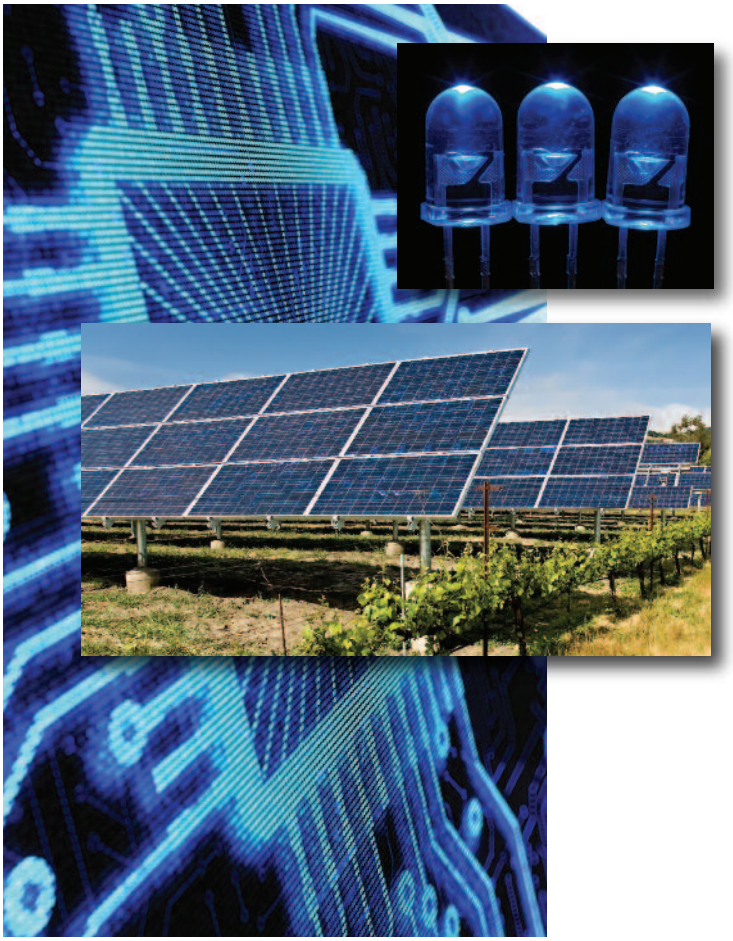
The Gas Professionals



Advanced Technologies for Global Electronics

ENGAGE THE MATHESON EDGE™

ENABLING DEVELOPMENTS IN GLOBAL ELECTRONICS



MATHESON is dedicated to developing advanced, enabling technologies in the areas of Electronics, Photovoltaics, and Compound Semiconductor materials, delivery equipment, and process applications. Combining our expertise in core competencies of purification, packaging, and analysis with process and materials development, we can enable your efforts to develop optimized, cost effective solutions for your technologies. Our efforts are energized through ongoing collaborative efforts with strategic alliances, national labs, universities, and key customers, combining expertise and capabilities to further enhance our development efforts in meeting your future requirements.

Our dedicated, knowledgeable researchers are experts in the areas of material, analytical, and chemical sciences with industry experience in etching, deposition, and doping applications. Research and development activities are conducted at our Advanced Technology Center in Longmont, Colorado.

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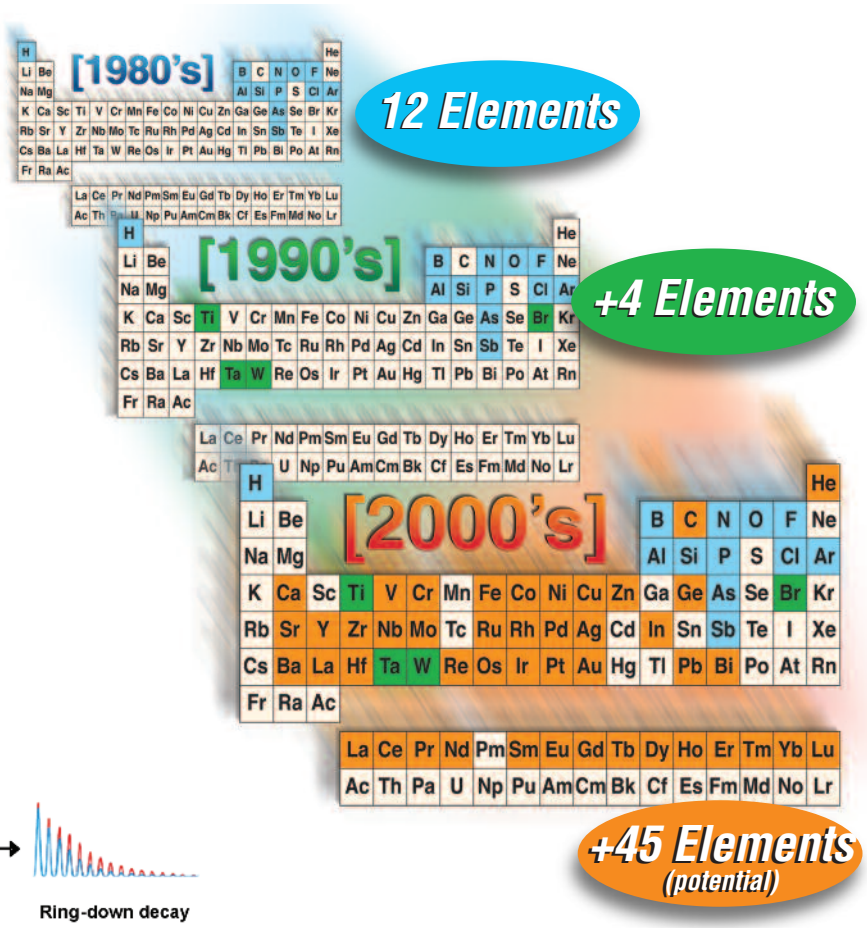
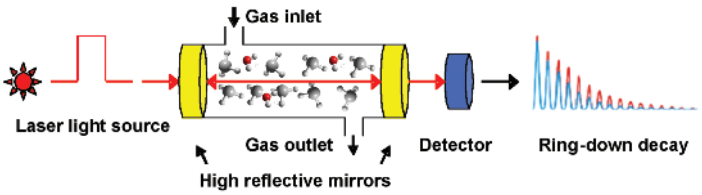
Materials - Enabling Materials Development

- Identification and synthesis of new materials required to enable development of the next generation devices (IC, PV, LED, III-V, etc)
- Development and characterization of new precursors for deposition of required materials for High K, low temperature, doping, and strained technologies
- Innovative purification technologies to remove critical impurities including metals that impact product optimization
- Analytical capabilities to measure sub ppm/ppb impurities and metals in reactive and inert chemistries and new materials





Advanced Cavity Ring-Down Spectroscopy to measure and control critical impurities.

Packaging - Enabling Consistent, High Purity Delivery of Materials

- Development of unique, innovative cylinder packaging materials to preserve material compatibility and extend shelf life
- Implementation of the thermodynamics of chemical reactions, kinetics of decomposition, surface roughness effects, and passivation to better deliver materials at the highest purities, consistently
- Innovative delivery equipment for gas, liquid and solid precursors to provide required purities, flows, and consistency
- Point of use purification technologies that enable process consistency, higher throughput, higher yields, and lower overall processing costs

Point of use purification to assure process consistency.

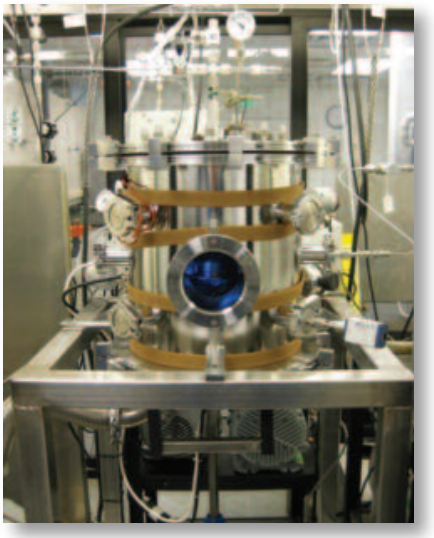
Highly polished internal surface of a nickel lined cylinder.

Material specific NANOCHEM® in line purification.

Process Development - Enabling Your Process Through Optimization and Understanding

- Ongoing collaborations with national labs, universities, and alliances, bringing the best of materials, equipment and process knowledge to develop optimized processes
- State of the art research labs and tools to fully evaluate, characterize, and optimize new molecules for etching, cleaning, and deposition processes
- Development of new analytical techniques to fully characterize and measure effluent analysis from process chambers and abatement equipment

State-of-the-art production ready tools used to fully characterize new molecules and processes.



Controlled reaction chamber for initial process/material feasibility research and characterization.

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BR-136 10/2021

Printed in USA