

Introducing the **GaNomite™**

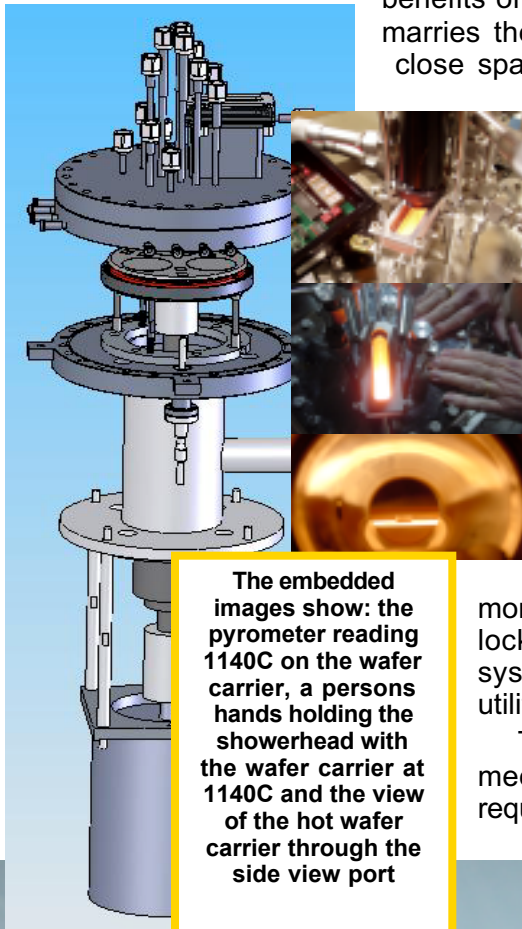
www.structuredmaterials.com

Structured Materials Industries, Inc. (SMI) has released a new series of **SpinCVD™** reactors and systems for GaN film deposition -- the **GaNomite™**. These systems are geared to economically address manufacturer and researcher needs alike. **GaNomite™** systems represent an advancement in state-of-the-art nitride MOCVD reactors. The **GaNomite™** implements the

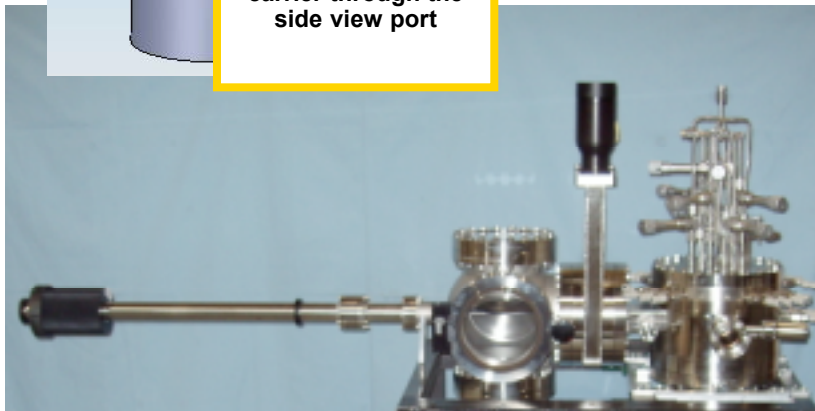
benefits of **SpinCVD™** high speed rotation to streamline gas flows, marries the benefits of multi-zone substrate heating with relatively close spacing of the showerhead to the deposition plane combined with direct control of radial distribution of reactants to minimize pre-reactions while maximizing uniformity of thickness and composition. Combined with these features is a unique patent pending showerhead with integrated high heat load water cooling to further prevent gas pre-reactions. Importantly, the showerhead supports a wide range of optical in-situ monitors. While minimum pre-reactions means maximum uptime, the reactor as a whole is designed for simple servicing to minimize downtime.

The system offers all the state-of-the-art features associated with modern MOCVD operation, including: real-time process monitors and controls, fast-pressure balanced gas and vapor switching manifold, pressure controlled idle/run bubbler sources, bubbler dopant dilution sources, option for in-situ mass transport monitoring, process, inert and reducing gas purifiers, a load-locked wafer platter transfer system, dry or wet pumping systems, unified framing with door and access panels, and utilities among several other features.

The SMI **GaNomite™** system is designed to adapt from meeting the researchers needs to manufacturers production requirements.



The embedded images show: the pyrometer reading 1140C on the wafer carrier, a persons hands holding the showerhead with the wafer carrier at 1140C and the view of the hot wafer carrier through the side view port



Advanced System Features

Most advanced reactor/showerhead design
Proprietary **GaNomite™** showerhead
In-situ process monitoring
Wafer transfer system, Exhaust system
R&D to production scalability
5" to 16" diameter wafer carriers
(3x2" wafers to 38x2" wafers)
Gas, Bubbler & Dilution sources
Super-fast pressure and flow balanced switching manifolds
Gas purification systems
Integrated utilities and electronics framing



STRUCTURED MATERIALS INDUSTRIES, INC.

201 Circle Drive North, Unit 102/103, Piscataway, NJ, 08854, USA

e-mail: sales@structuredmaterials.com; www.structuredmaterials.com

Voice: 732-302-9274; Fax: 732-302-9275

Introducing the *GaNomite*TM

www.structuredmaterials.com

The *GaNomite*TM Advantage for MOCVD

- Independent radially distributed precursor injector (III's, V's, N's, carrier)
 - Increases efficiency and uniformity while minimizing pre-reactions
- Showerhead face is water cooled
 - Minimizing pre-reactions and showerhead coatings
- No liquid cooling channel welds exposed to process gasses
 - Eliminates any potential H₂O leaks into the reactor
- Full width optical access
 - Maximizes in-situ monitor options
- Uniform carrier gas flow
 - Maximizing uniformity and minimizing pre-reactions
- Close space vapor transport
 - Maximizing efficiency and minimizes pre-reactions
- Uniform heating
 - Maximizing uniformity and minimizing pre-reactions
- Unique low contamination high temperature filament assembly
 - Maximizing filament life and minimizes contamination
- Water cooled reactor and base plate
 - Keeps reactor clean
- High speed rotation
 - Maintains streamlined flow - maximizing efficiency and uniformity and preventing pre-reactions
- Short delivery lead time
 - Gets the customer up and running fast
- Easy conversion to other material systems, such as: III – V's, II-VI's, Chalcogenides, carbides, oxides and ALD operation



STRUCTURED MATERIALS INDUSTRIES, INC.

201 Circle Drive North, Unit 102/103, Piscataway, NJ, 08854, USA

e-mail: sales@structuredmaterials.com; www.structuredmaterials.com

Voice: 732-302-9274; Fax: 732-302-9275