



<http://www.kymatech.com>  
sales@kymatech.com

Kyma Technologies, Inc.  
8829 Midway West Rd.  
Raleigh NC 27617  
Phone: 919.789.8880  
Fax: 919.789.8881

## **Kyma Technologies Announces Improved and Expanded Native Gallium Nitride Product Line**

Raleigh, NC / March 20, 2006 - Kyma Technologies, Inc., a leading supplier of low defect density native gallium nitride (GaN) substrates, today announced the availability of improved semi-insulating (SI) GaN substrates and the addition of a new product line based on non-polar and semi-polar GaN substrates.

Kyma's improved SI GaN substrates are characterized by highly uniform electrical resistivities above  $10^5$  ohm-cm. According to Dr. Ed Preble, Kyma's vice president of engineering, Kyma has optimized its SI GaN boule growth process to effectively eliminate the conductive regions which can limit the resistivity uniformity of SI GaN substrates. Dr. Preble commented, "Based on several different sets of electrical characterization data from our collaboration partners, we realized we needed to eliminate the effects of certain conductive defects. We believe our new SI GaN products will enable our customers to attain better high frequency transistor performance and to benefit from better electrical isolation between adjacent devices."

Kyma's new non-polar and semi-polar products were developed in response to broad industry excitement over the potential for such orientations to lead to new and improved nitride semiconductor devices across a broad range of device types. By eliminating or reducing the presence of built-in electric fields in the device layers grown on top, non-polar and semi-polar GaN substrates have the potential to enable higher operating efficiencies in optical devices including blue, green, and ultraviolet laser diodes and light emitting diodes. (LEDs) Also, by eliminating the presence of induced charge that is a well known feature of many polar GaN structures, non-polar and semi-polar GaN substrates may enable the development of high performance *enhancement-mode* GaN transistors, which could become important for many high frequency and high power electronics applications. Additionally, non-polar GaN substrates may prove important for improved p-type doping efficiencies, which could benefit many device applications including including avalanche photodiodes, laser diodes, LEDs, and heterojunction bipolar transistors (HBTs).

Kyma co-founder and COO Mark Williams offered, "Our launch of improved and new native GaN products represents an important step in responding to our customers' growing desire for cost-effective high-quality native crystalline GaN substrates in customer-defined orientations and electrical conductivity."

### **About Kyma Technologies**

Kyma Technologies is based in Raleigh, North Carolina and was spun out of North Carolina State University in 1998. Kyma has developed a patent-protected high-rate process for cost-effective manufacturing of boules of native single-crystal gallium nitride from which native single-crystal gallium nitride substrates are sliced and polished. Native GaN substrates are

expected to enable advances in cost, performance, and reliability of several different nitride semiconductor devices which will be useful for a broad range of commercial markets and applications including power switching electronics, high power radio-frequency electronics, solid state lighting, optical storage, bioagent and chemical sensing, and ultraviolet light detection. According to Strategies Unlimited, the market for nitride semiconductor devices will reach \$7.2B by 2009.

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