



Translucent

Earth Abundant Materials Technology

Translucent announces new GaN-on-Si wafer template with embedded DBR mirrors for low-cost LED growth

Novel Mirrored Si™ process to be presented in a special session at the International Conference on Nitride Semiconductors in Glasgow, Scotland

Palo Alto, Calif. and Glasgow, Scotland, July 14, 2011 —Translucent, Inc., a provider of rare-earth-oxide (REO) engineered silicon substrates for low-cost, high-performance epitaxy, announces that it has developed a proprietary [GaN-on-Si](#) wafer template with embedded DBR mirrors for application to low-cost LED growth. This structure and the process used to grow it will be explained at the International Conference on Nitride Semiconductors (ICNS-9), Glasgow, Scotland, (July 15th, 2011) in a special post-deadline paper titled “Integrated High Reflectivity Silicon Substrates for GaN LEDs” (Session LN-2 at 8:30 AM GMT). View a copy of the presentation on our website (http://www.translucentinc.com/documents/presentation_ICNS9.pdf).

Translucent will report technical details in the development of a 100-mm-diameter wafer that exhibits high reflectivity using a lattice-matched rare-earth-oxide material grown onto a silicon substrate. This structure is capped by a GaN layer that can support further nitride epitaxy for the growth of LED structures. The lattice engineering offered by the rare earth oxide (REO) material system, which is grown epitaxially on silicon (111) substrates, can be utilized to mitigate strain arising during growth of GaN. REO materials further enable highly reflective mirrors embedded in engineered silicon substrates. The new technology is being offered to prospective customers who are ready to grow LEDs on large-diameter wafers.

Translucent’s silicon solution mitigates the need to remove the substrate and the use of handle wafers during subsequent processing. As the LED industry migrates to larger wafer sizes, a one-step epitaxial solution is expected to provide the best path to cost-effective scaling.

With Translucent’s new embedded silicon solution (Mirrored Si™), LEDs can now be grown directly on top of the GaN-on-Si template that includes an embedded DBR mirror,

directly lattice matched to the silicon substrate. On top of this DBR mirror is a layer of proprietary patented Rare Earth Oxide (REO), which allows GaN to cap the template and does not require subsequent removal of the substrate.

Translucent's paper describes how this device-ready GaN template can be supplied to LED manufacturers as-is for LED growth. Calculations are made that show that mirror reflectivity can **exceed 98%** at the LED-emitted wavelength range of 450 nm in ultra-thin layers of lattice-matched REO material. The material was grown using molecular beam epitaxy (MBE) reactors at Translucent's facilities. The exceptional quality of the growth achieved to date leads to extremely high quality crystalline interfaces which are scalable to large-diameter silicon wafers, thus indicating excellent commercial prospects for Translucent's embedded mirror material.

Translucent is currently preparing to scale its embedded silicon mirror technology for commercial rollout with 150 mm and 200 mm wafers.

About Translucent

[Translucent, Inc.](#), a subsidiary of Australian listed company [Silex Systems Limited](#). (SLX: ASX), is a materials-based company founded in 2001 that focuses on using rare-earth oxides to provide low-cost, silicon-based templates for epitaxial growth of semiconductors. With its emphasis on GaN- and Ge-compatible growth platforms, Translucent provides products for the solar, power FET, and solid-state lighting (LED) industries. Mirrored Si is a registered trademark of Translucent, Inc. More information is available at www.translucentinc.com and www.silex.com.au.

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Forward Looking Statements and Business Risks:

Silex Systems is a research and development Company whose assets are its proprietary rights in various technologies, including, but not limited to, the SILEX technology, the Silex Solar technology and business, Solar Systems technology and business, Translucent technology and ChronoLogic technology. Several of the Company's technologies are in the development stage and have not been commercially deployed, and therefore are high-risk. Accordingly, the statements in this announcement regarding the future of the Company's technologies and commercial prospects are forward looking and actual results could be materially different from those expressed or implied by such forward looking statements as a result of various risk factors. Some risk factors that could affect future results and commercial prospects include, but are not limited to: results from the SILEX uranium enrichment development program and the stable isotopes program; the demand for enriched materials including uranium, silicon, oxygen, carbon and others; the business risks associated with SilexSolar's manufacturing and marketing activities; the risks associated with the development of Solar Systems technology and related marketing activities; the outcomes of the Company's interests in the development of various semiconductor, photonics and alternative energy technologies; the time taken to develop various technologies; the development of competing technologies; the potential for third party claims against the Company's ownership of Intellectual Property associated with its numerous technologies; the potential impact of government regulations or policies; and the outcomes of various commercialization strategies undertaken by the Company.