

## White LEDs: A penny for your lumen?

**E**nvironmentally conscious consumers can rest easy. Bridgelux Inc., a solid-state lighting company in Sunnyvale, Calif., has adopted a “penny per lumen” slogan to make white LEDs more affordable for consumers and their wallets.

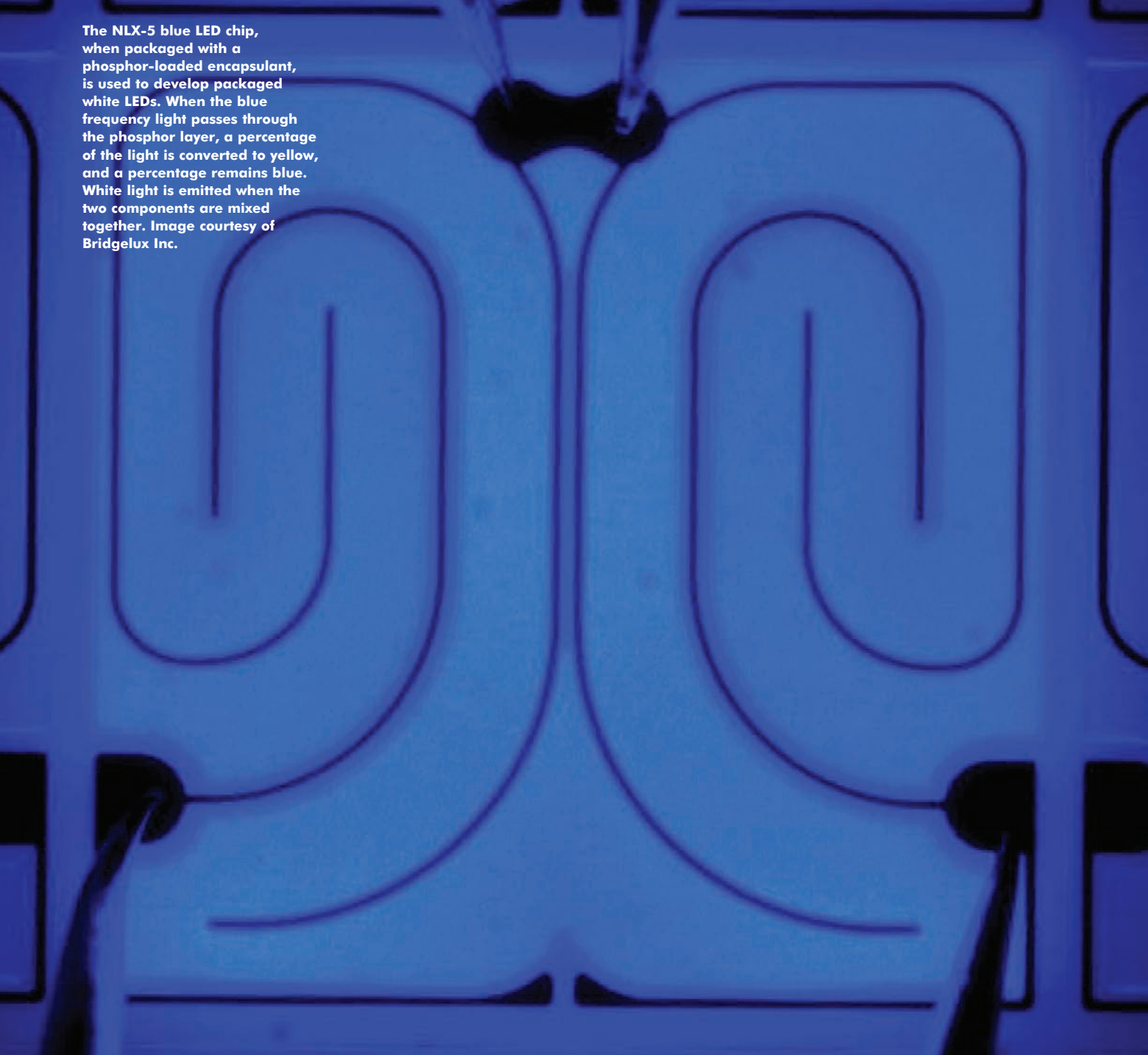
In early 2009, the company plans to release a series of white-light LED products that could allow manufacturers to make

LED solid-state lighting (SSL) fixtures that cost significantly less than current ones.

“Bridgelux has been increasing our LED chip performance about 15 to 20 percent every six months,” said Brian Fisher, director of corporate marketing. “We expect to introduce to the market our next-generation LED chip that, when packaged in a cool-white package, will produce 100

lumens per watt.”

He explained that the company focuses not only on producing products with the highest lumens per watt but also upon the best performance dollarwise in terms of lumens per watt. This technology, when integrated into a lighting system, can enable lighting fixture manufacturers to achieve the “penny per lumen” goal. Currently, the 60-W equivalent of an LED



The NLX-5 blue LED chip, when packaged with a phosphor-loaded encapsulant, is used to develop packaged white LEDs. When the blue frequency light passes through the phosphor layer, a percentage of the light is converted to yellow, and a percentage remains blue. White light is emitted when the two components are mixed together. Image courtesy of Bridgelux Inc.

bulb at Home Depot costs a consumer \$90 or even more.

The shift to white LEDs will prove valuable both for the energy-saving efficiency and application benefits. The change also will have significant environmental benefits.

According to the Next Generation Lighting Industry Alliance, 19 percent of all electricity generated in the US is consumed by lighting and costs approximately \$55 billion per year. If half of the incandescent and fluorescent light bulbs were replaced by LED lighting systems, the US could save \$17 billion per year and reduce carbon dioxide emissions by 155 million tons per year.

“The appeal to manufacturers of white light is that it can be used in products targeted at general lighting applications,” Fisher said. “These LED lighting products are about 10 times more energy efficient than incandescent lighting products and are comparable or superior in efficiency to fluorescent lighting products.”

Additionally, LED lights do not contain mercury as do fluorescent bulbs, and their ability to reduce energy consumption and carbon dioxide emissions has been met

with excitement in the lighting market, according to Fisher.

LEDs have become more viable for mainstream applications rather than just the niche markets they originally were used for.

“The rapid improvements in quantity of light, quality of light and efficacy have expanded the applications and opportunities for LEDs dramatically in just the past five years,” he said.

Bridgelux’s mid- and high-power LEDs are used for a variety of product applications, including LCD backlighting for mobile applications and camera flash, as well as for general lighting markets. White LEDs could also benefit industries and businesses where lighting is left on for long durations – such as casinos, hotels and restaurants – and whose significant energy consumption could be reduced.

While cost still remains a problem for consumers, the company strives to break the barrier by optimizing system-level design.

“Bridgelux sees the system-level cost as the last remaining barrier for LED-based SSL lighting systems,” Fisher explained. “We believe there are two ways to reduce

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system-level cost. The first is to improve the efficiency of LED chips and packages. The second is via control of the core LED design and manufacturing technologies – optimizing the technology with the lighting system in mind.”

With the company’s “total system” approach, white LEDs may soon offer a more affordable and environmentally friendly lighting alternative to homes and businesses across the globe.

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