

## LED inventor bets on lasers to replace LEDs



*Dr Shuji Nakamura speaking about LED and laser technology at the LuxLive exhibition in London. 'Laser diodes are the future of lighting,' he says.*

The inventor of the blue LED, Dr Shuji Nakamura, says laser diodes are the future of lighting – and have compelling advantages over LED. In the next five years we can expect laser diodes to appear in lighting products, making them even more efficient than lighting based on traditional LED technology.

Nobel-prize winning Nakamura – who invented both the green and blue LED, the latter of which led to the so-called LED revolution – has co-founded SoraaLaser. The company says its products have unique performance properties such as collimated output and waveguide delivery. It says they provide compelling advantages over LED, OLED, and legacy sources.

Laser lighting is already used for automobile headlamps at BMW and Audi, because the laser diode's efficiency is ten times higher than that of the LED headlamp. The radiation distance of a laser diode headlamp is almost 700 metres, whereas LED headlamp is only 300 metres, and current automobile headlamps are only 100 metres.

The BMW i8, which launched this summer, is the first car to use laser

headlights developed by Osram. A special edition Audi R8 LMX has also been created. The laser diodes are so small that they can be worked into the structure, opening up new possibilities for car design.



<https://soraalaser.com/automotive/>

But Nakamura hastened to add that there is still some way to go before laser diode technology will reach its full potential. ‘We can make highly efficient lighting in the near future, but we still have to work very hard to make the laser diodes highly efficient. I think this will be a huge opportunity in the future,’ he said.

SoraaLaser’s visible laser light sources are based on its proprietary and patented semi-polar GaN laser diodes, combined with advanced phosphor technology. These laser light sources provide novel properties compared with other light sources by combining the benefits of solid-state illumination such as minimal power consumption and long lifetime, with the highly directional output that has been possible only with legacy technology.

Because the laser light is focused to a small spot on the phosphor and converted to white light, the SoraaLaser light sources enable safe, highly collimated white light output, ‘vastly superior’ optical control with miniature optics and reflectors, along with high efficiency fibre optic transport and glare-free waveguide delivery. The company says initial markets will be in applications such as architectural, hospitality, retail, security, entertainment, and automotive.

<http://www.enlightenmentmag.com/led-update/laser-vs-led>

LEDs have power-conversion efficiencies (PCE) today of 70 percent, while laser diodes (LDs) are currently at 30. LED pricing is roughly \$1 per chip with 100+ lumens per watt, while LDs are roughly \$10 per chip with 60+ lumens per watt. Possible applications could include projectors, high output commercial outdoor flood and area lights, stadium lighting, as well as stage and theater lighting.