

## 2011 R&D 100 Winner



*Energetiq\_EQ99 Power*

The capabilities of spectrosopes and similar imaging solutions have been transformed in recent years by improvements in analytical instrumentation that operate in the ultraviolet, visible, and near-infrared (UV-Vis-NIR) wavelengths. These tools require a high brightness light source, typically provided by excimer, deuterium, xenon short arc, or mercury discharge lamps. Each have advantages and disadvantages; but markedly, all have less than 1,000 hours of lifetime because they

rely on corrosion-prone electrodes that coat the bulb's surface with eroded material.

The **EQ-99 LDLS Laser-Driven Light Source**, produced by **Energetiq Technology Inc.**, Woburn, Mass., provides the high brightness required by UV-Vis-NIR instruments and has a lifetime in the 10,000 hour range. The enabling technology for this product is Energetiq's Laser-Driven Light Source, a 20-W continuous-wave laser diode that directly heats a xenon plasma to high temperatures, providing a flat output spectrum from the NIR range down to 170 nm. Electrodes in the bulb ignite the plasma and then shut off. The laser alone sustains the plasma temperature, allowing gas temperature to climb in a comparatively small collection area with dimensions of about 100  $\mu$ m. This, along with higher plasma temperatures, boosts detection efficiency across the wavelength range.

### Technology

Laser-driven light source for UV-Vis-NIR

### Developers

[Energetiq Technology Inc.](#)

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### EQ-99 LDLS Laser-Driven Light Source Development Team

Donald Smith, Principal Developer

Paul Blackborow

Matthew Besen

Ron Collins

Gordon Hill

Award Year 2011

1/7/2016

Light source lifetime lifted with laser tech

Energetiq Technology Inc.

Matthew Besen (Primary)

Paul Blackborow (Primary)

Ron Collins (Primary)

Gordon Hill (Primary)

Donald Smith (Primary)

Developers Huiling Zhu (Primary)

TOPICS R&D 100 AWARDS LASERS AND PHOTONICS