Semrock
A Unit of IDEX Corporation

February 28, 2011

R&D 100 Awards
200 Clearwater Drive
Oak Brook, IL 60523

To Whom It May Concern:

As a founder of one of the major providers of optical components for biotechnology and analytical instruments, I am keenly aware of the challenges faced by the developers and users of instrumentation in these areas. It is well known that light source technology is one of the key limiting factors for these instruments. In particular, there are four main problems with broadband light sources that span near-UV to near-IR wavelengths today: poor brightness, short lifetime, low stability, and limited performance in the UV.

These problems are hampering scientific research based on optical instrumentation as well as the potential for these instruments to revolutionize clinical diagnostic and medical applications. For example, poor brightness (a measure of the amount of light intensity per wavelength interval coming from a given source size and going into a certain direction) greatly limits measurement speed for applications like screening in drug discovery as well as sensitivity in applications like single-molecule imaging for cell biology research. The poor lifetime of today's light sources (typically light "bulbs" must be changed after only 100's of hours of use) translates into expense resulting from instrument downtime, as well as poor repeatability since the light source properties are diminishing rapidly over a short time span. Poor signal-to-noise ratios resulting from low stability and the inaccessibility to certain measurements due to insufficient light intensity at UV wavelengths also provide severe limitations to experiments and analysis today.

Fortunately, the breakthrough technology recently introduced by Energetiq Technology has dramatically changed the playing field. The EQ-99 system demonstrates the highly desirable intensity and wavelength range of a Xe arc lamp, especially at UV wavelengths, yet with at least two orders of magnitude higher brightness and more than an order of magnitude improvement in each of the lifetime and stability. As a result many new instruments – especially for fluorescence imaging and analysis – that were once limited by awkward optical systems can now utilize glass optical fiber for compactness and efficiency. And systems like high-pressure liquid chromatography (HPLC) that were limited to the poor brightness and lifetime of UV deuterium lamps can now see tremendous improvements in cost of operation, sensitivity, and throughput.

No doubt numerous other instrumentation improvements will follow when optical system designers begin to really exploit the advantages of this new light source technology.

Sincerely,

Turan Erdogan, Ph.D., CTO
Semrock, Inc., A Unit of IDEX Corp.
3625 Buffalo Road
Rochester, NY 14624
tel: (585) 594-7001
fax: (585) 594-7095
terdogan@idexcorp.com