Analytical Instrumentation, Methods & Materials

Super-Continuum Ultraviolet Light Source with Single Stage Laser Drive

View U.S. Patent No. 7,196,839 in PDF format.

WARF: P05396US

Inventors: Scott Sanders, Joachim Walewski

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a fiber-coupled, broadband UV light source with approximately one million times the spectral radiance of conventional UV lamps.

Overview

Ultraviolet (UV) lamps are used as a source of white (multi-colored) UV light for many applications; however, these lamps are large and expensive, require a high voltage, generate a lot of heat and may waste much of the bright light due to leakage when coupled with optical fibers.

The Invention

UW-Madison researchers have developed a fiber-coupled, broadband UV light source with approximately one million times the spectral radiance of conventional UV lamps. This UV supercontinuum source consists of a pulsed ultraviolet laser followed by a fiber-optic cable. It produces light that is laser-like, except that it possesses many colors rather than just one. To achieve supercontinuua, a particular relationship among properties including laser pulse duration and energy, laser wavelength and fiber dispersion, diameter and length must be met.

Applications

- Sensing gases, biospecimens and other materials that absorb UV light

Key Benefits

- Compact; making it a practical, direct, drop-in replacement for all fiber-coupled UV lamps
- Produces a UV continuum in a wavelength range extending to less than 350 nanometers
- Can be coupled with a “scanner” to provide a broadly tunable UV source
- Can be driven with a single-stage, narrow-band laser
- Does not require spectral broadening of the fiber optic excitation pulse by an organic dye laser
- Different types of optical fibers may be used.

Additional Information

For More Information About the Inventors

- Scott Sanders

Tech Fields

- Analytical Instrumentation, Methods & Materials : Lasers
- Analytical Instrumentation, Methods & Materials : Spectroscopy

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867