

# High average power continuous-wave laser

## BACKGROUND

High power, continuous wave lasers with narrow linewidths and operating at wavelengths other than those available from rare-earth ion laser lines and their harmonics are currently unavailable in cost-effective designs.

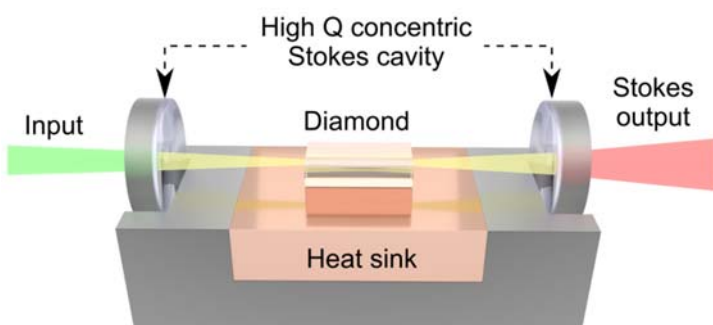
Such lasers are required for applications as diverse as in remote sensing, astronomical guide-stars and large-scale atom coolers, to pump Cr-femtosecond lasers, for laser projection, defence countermeasures and in photodynamic therapy.

## OUR SOLUTION

High thermal conductivity Raman materials such as diamond can be used to mitigate thermal lensing enabling operation over a very wide power range without compromising output beam quality.

The invention is able to utilise tunable and fixed wavelength infrared or visible pump lasers. Efficient conversion to visible and ultraviolet output may also be achieved using designs that include nonlinear conversion inside the Raman resonator.

The core Raman laser principle underpinning the invention is illustrated below.



## APPLICATIONS

- ✓ Licensed in all fields except defence

[research.mq.edu.au](http://research.mq.edu.au)

CRICOS Provider 00002J

ADVANTAGES	BENEFITS
Effective wavelength conversion of continuous wave pump lasers	Low cost add-on
High output power in a diffraction limited beam	Addresses high spectral power density applications
Raman technology	Diverse output wavelengths available
Efficient conversion to Stokes	Addresses lack of CW sources in yellow-red and UV-C regions
Applicable to a large variety of fixed line or tunable pump lasers	Adaptable
Diamond technology	Power scalable

## INVENTORS

Rich Mildren, Ondrej Kitzler

## INTELLECTUAL PROPERTY POSITION

WO 2013/155568: "A device and method for converting a light and a laser system"

## WOULD YOU LIKE TO KNOW MORE?

Contact Anna Grocholsky  
+61(0) 437 463 317 or  
[anna.grocholsky@mq.edu.au](mailto:anna.grocholsky@mq.edu.au)