

Stable solid state Raman laser and a method of operating same

BACKGROUND

Solid-state Raman lasers are a practical and efficient approach to optical frequency down conversion offering high (up to 70-80%) conversion efficiencies with respect to the pump laser power, excellent beam quality and ease of alignment.

Solid-state Raman laser systems suffer from the problem that they are complex in design and operation and it is generally difficult to design a solid-state Raman laser which is capable of being operated with stability from initial current input to the optical power pump source up to maximum current and over a long period of time. If the laser system is not effectively stable, alignment and power drifts result.

OUR SOLUTION

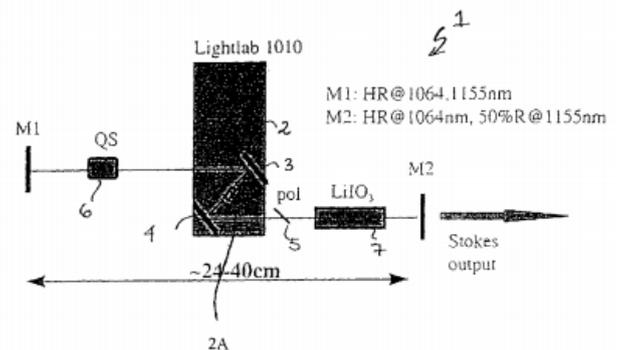
This invention consists in a stable solid-state Raman laser, the solid-state Raman laser including:

- a resonator cavity defined by at least two reflectors,
- a laser material located in the resonator cavity and capable of generating a cavity laser beam which propagates within the resonator cavity,
- a solid Raman medium located in the resonator cavity for shifting the frequency of the cavity laser beam to produce a Raman laser beam which propagates within the resonator cavity; and
- an output coupler for coupling and outputting the Raman laser beam from the resonator cavity, wherein at least one parameter selected from the group consisting of (i) the position of the laser material relative to the position of the Raman medium in the cavity, (ii) the length of the cavity and (iii) the curvature of at least one of the reflectors, is selected such that changes in the focal lengths of both the laser material and the Raman medium as a result of thermal effects in the laser material and the Raman medium during operation of the laser do not substantially cause instability in the power of the output Raman laser beam.

APPLICATIONS

- ✓ Dermatology and other medical uses
- ✓ Defence
- ✓ Display

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ADVANTAGES	BENEFITS
Compact	Transferable
Low production cost	Affordable
Practical and efficient	Can generate laser output at unconventional wavelengths e.g. 1-1.2 μm yellow

INVENTORS

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INTELLECTUAL PROPERTY POSITION

A Stable Solid State Raman Laser and a Method of Operating Same

Granted: AU 2001276159 & US 6901084

COMMERCIAL OPPORTUNITY

Seeking a partner to commercialise this technology in the applications identified.

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