Raman Convertor™

INCOMPARABLE PERFORMANCE...

...ULTIMATE SIMPLICITY

New Wavelengths For Any Pulsed Laser

Reliable, high power, wavelength

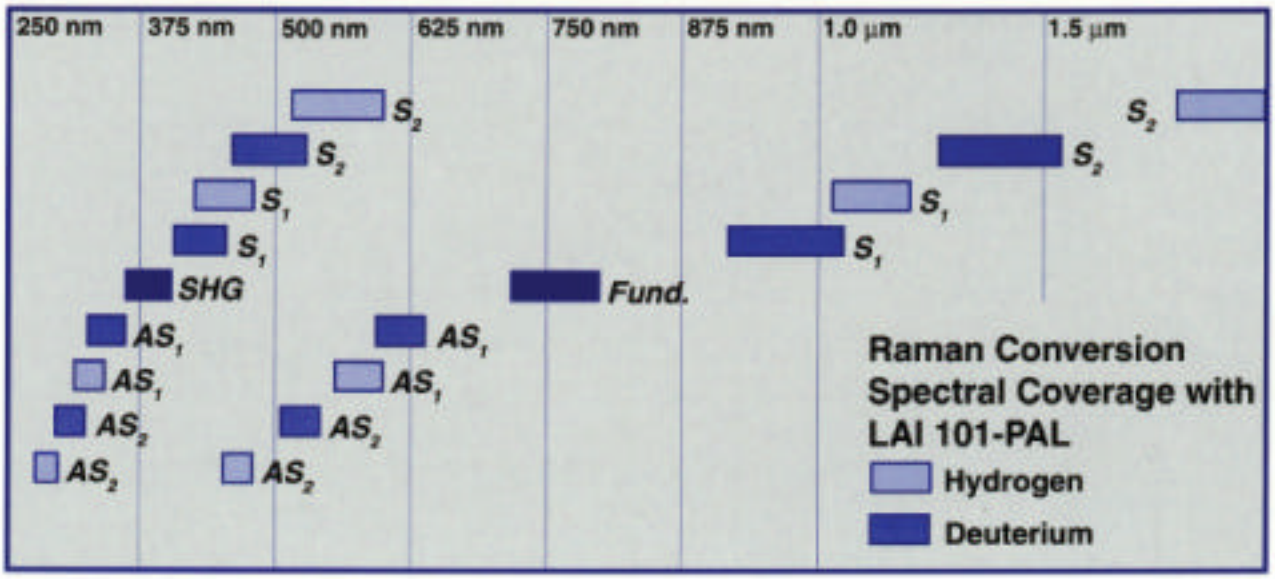
conversion to the UV, Visible, and IR for pulsed

Alexandrite, Dye, Excimer, Nd:YAG, Ruby,

Ti: Sapphire Lasers, and OPO's

LIGHT AGE

YOUR LASER SOURCE



DESCRIPTION

The Light Age 101 PAL-RCs are a family of state-of-the-art, compact, high pressure Raman Convertors capable of extending the tuning range of Light Age PAL™ lasers in the UV, VIS and IR. They also extend the wavelength range of pulsed Dye, Excimer, Nd:YAG, Ruby, Ti:Sapphire lasers, and OPO's. A unique gas recirculation system minimizes thermo-optic effects, permitting operation at power levels unachievable in any other commercial Raman Shifter.

PRINCIPLE OF OPERATION

Frequency conversion is effected by the stimulated Raman process in gaseous media. Q-switched laser pulses are focused into the high pressure gas sample and then recollimated by an integral lens system. Output consists of the incident wave number, ν_o and the Stokes and anti-Stokes lines at $\nu_o \pm n\nu_m$ where ν_m corresponds to the frequency of a Raman-active vibration of the scattering molecule and n takes integral values 1, 2, 3, ... etc. Stokes output radiation at longer wavelengths than the incident beam is recollimated and emitted essentially along the laser beam direction. Anti-Stokes lines at higher frequency are emitted colinearly or along specific directions which are determined by conservation of momentum. When used with a tunable laser pump source such as an Alexandrite, OPO, and Ti:Sapphire laser, all Raman lines tune in frequency with the pump. No adjustments of the Raman Convertor are required during tuning.

During the Raman process, an appreciable amount of energy is dumped into the gas. As heat builds up locally in high power operation thermo-optic refractive index distortions degrade beam quality and reduce conversion efficiency. The LAI 101 PAL-RC recirculation system mitigates these effects.

Achieving ultimate performance for Raman conversion efficiency requires optimization of gas, pressure, cell length and focal geometry. The LAI 101 PAL-RC Raman Convertor permits quick and easy modification of these parameters. The engineering staff at Light Age stands ready to offer their years of experience in assisting you to rapidly locate the optimum conditions for your particular application.

FEATURES

- Generates light in the IR, Visible, and UV
- Compatible with Alexandrite, Dye, Excimer, Nd:YAG, Ruby, Ti:Sapphire lasers, and OPO's
- Generates eyesafe 1.5 µm radiation from Nd:YAG lasers
- Generates VUV (<180-250 nm) by antistokes shifting
- Integrated focusing and recollimating optics for effortless alignment
- Efficient wavelength conversion at **high average power**
- Can be used with: H_2 (4155 cm^{-1}), D_2 (2991 cm^{-1}), N_2 (2331 cm^{-1}), CH_4 (2914 cm^{-1})
- Exclusive Internal Gas Recirculation System provides improved beam quality, even for > 50 W output powers
- 0.3 m, 0.5 m, and 1.0 m cell lengths standard
- Compact and convenient ... max. diameter only 3 inches
- Stainless steel construction for long term reliability
- Highest pressure range commercially available:
  15,000 psi body
  4,000 psi safety relief
  2,500 psi rating
- Extremely rugged...Flight tested
- Simple, rapid gas changes ... No vacuum pump required
- Cell Disassembly Kit and Fill Kit with Pressure Gauge are optional accessories
- Data and references for most pulsed lasers available upon request

LIGHT AGE

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