Nd:KGW

DESCRIPTION

Nd:KGW crystal is a kind of laser crystal that can realize high concentration doping.Because the crystal can be mixed with high concentrations of Nd ions and has a large emission area, its monopulse and low-repeat laser performance is better than Nd: YAG. The absorption band of Nd: KGW crystal is at 808 nm, which can effectively couple with LD pump source (emitting wavelength is 808 nm) to improve its luminous efficiency. Moreover, its half height and width of 12 nm makes it able to accommodate the drift of LD emission wavelength with temperature, which is conducive to conducting diode pumped KGw laser experiment and device research. Nd:KGW can not only realize free oscillation, Q switching, mode locking operation, but also realize Raman conversion.

Nd:KGW crystal—A crystal can be generated from excited Raman scattering and become a multi-wavelength light source in visible band after frequency doubling.
The Raman characteristics of Nd:KGW crystal depend on its high excited beam cross section, low pumping threshold, high output energy, high conversion efficiency, and two high Raman gain coefficients (768 and 901 cm-1).Since the fundamental frequency light of Raman crystal is 911 nm, 1067 nm and 1351 nm, the red, yellow and blue light of 0.455 um, 0.533 um and 65 um can be produced after frequency multiplication, which can be used in material processing, optical communication, tele-sensing, medicine, environmental monitoring, precision measurement and other fields.

FEATURES

- High doping concentration
- Highly excited cross section
- High Raman gain coefficient
- Good coupling with LD
- Wide absorption bandwidth
- Low lasing threshold

APPLICATIONS

- 1067nm Laser

  Nd:KGW is one of the most effective active media for solid-state laser engineering in the near-infrared region. Nd:KGW has some exceptional properties compared with other widely used Nd-doped laser crystals operating around 1 μm, such as Nd:YAG and Nd:YVO. High doping concentration of Nd ion and high slope efficiency can be achieved with it. This crystal is well known for its high emission cross section (higher than that of Nd:YAG) and thus efficient continuous wave (CW), Q-switched, and mode-locked operation .Inaddition, birefringence of the host results in strongly polarized emission, which is advantageous for further frequency conversion. Because of the high third-order nonlinearity of the host, Nd:KGW crystals and lasers are widely used to generate multiple wavelengths via stimulated Raman scattering.

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PARAMETER

Physical Properties

Nd concentration	2.2%(cw),3%(quasi-cw)
Fluorescence lifetime	130 μs
Stimulated emission cross section	3.7*10-19 cm2
Transition wavelength	1067 nm
Thermal conductivity	Ka=2.6 W/Km
	Kb=3.8 W/Km
	Kc=3.4 W/Km
dn/dT	0.4*10-6 K-1
Refractive index @ 1.06 μm	np=1.978
	nm=2.014
	ng=2.049
Thermal expansion coefficient	(100):4*10-6 K-1
	(010):3.6*10-6 K-1
	(001):8.5*10-6 K-1
Density (g*cm-3)	7.248
Specific heat Cp	500 Jkg-1K-1

Spectroscopic Properties

Laser wavelength (nm)	1067
Emission cross section (pm2)a	32.3
Gain bandwidth (nm)	2.73
Fluorescence lifetime (μs)	110 at 3% doping
Thermal conductivity (Wm-1K-1)	~3

SPECTRA