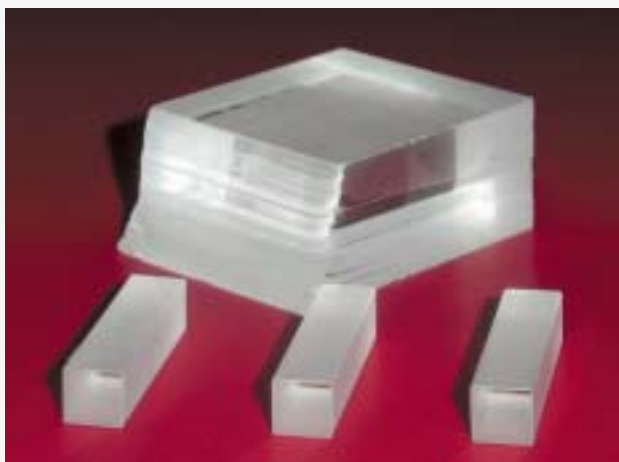


Crystals for Stimulated Raman Scattering



Eksma Co. offers new materials – undoped KGW, KYW and $\text{Ba}(\text{NO}_3)_2$ which have attracted much interest as most suitable solid-state materials for stimulated Raman scattering (SRS). These crystals can be used as frequency converters in tuneable lasers for extension of tuning range.

The potassium gadolinium tungstate $\text{KGd}(\text{WO}_4)_2$ or KGW single crystal is a new and very promising material for optical and laser applications. Because of its low structure symmetry and high c^3 -nonlinearity KGW offers unusual wealth of properties.

ATTRACTIVE SPECTRAL CHARACTERISTICS FOR DIODE PUMPING. The broad pump bandwidth centered at 810 nm allows operation at wider range of temperature and a range of laser diode specifications. Together with their high peak cross section a direct pump geometry is possible.

That makes way for construction of chip lasers which can be manufactured in large volume at low cost.

EFFICIENT STIMULATED RAMAN SCATTERING / SRS/. The ultralow-threshold SRS made possible the construction of so called stringer: a simultaneous generator of a string of lines – the common Nd and a few Stokes lines with selected string branching ratio. The first Stokes line from the second Nd transition $^4F_{3/2} \rightarrow ^4I_{13/2}$ fall just in $1.54 \mu\text{m}$ – the most promising wavelength for laser applications in inhabited areas. The Nd:KGW Raman amplifiers, four wave mixing and phase conjugate mirrors, etc., are undergoes to intensive research.

HIGH CONICAL REFRACTION. The high conical refraction angle is due to the high birefringence and unusual equidistant values of the refractive indexes of KGW. Discovered 160 years ago, the conical refraction effect can find a real application in polarization optics with the introducing on the market of non doped KGW. This effect could be used jointly with lasing c^3 -nonlinearity properties of KGW in the development of new laser/SRS schemes.

Stokes generation wavelengths in KGW crystal with oscillation efficient 901.5 cm^{-1} and $\text{Ba}(\text{NO}_3)_2$ crystal with oscillation coefficient 1048.6 cm^{-1} are given in the table below.

Stokes	KGW pumped @ 532 nm	KGW pumped @ 1064 nm	$\text{Ba}(\text{NO}_3)_2$ pumped @ 532 nm	$\text{Ba}(\text{NO}_3)_2$ pumped @ 1064 nm
1 Stoke	558	1177	563	1197
2 Stoke	588	1316	598	1369
3 Stoke	621	1494	638	1599
4 Stoke	658	1726	684	1924
1 Antistoke	507	970	503	957

Please contact EKSMA for further information or nonstandard specifications.