LGS crystals

La3Ga5SiO14 crystal (LGS crystal) is an optical nonlinear material with high damage threshold, high electro-optical coefficient and excellent electro-optical performance. LGS crystal belongs to trigonal system structure, smaller thermal expansion coefficient, thermal expansion anisotropy of crystal is weak, the temperature of the high temperature stability is good (better than SiO2), with two independent electro - optical coefficients are as good as those of BBO Crystals. The electro-optic coefficients are stable in a wide range of temperatures.

The crystal has good mechanical properties, no cleavage, no deliquescence, physicochemical stability and has very good comprehensive performance. LGS crystal has a wide transmission band, from 242nm-3550nm has a high transmission rate. It can be used for EO modulation and EO Q-Switches.

LGS Pockels Cells

LGS crystal has a wide range of applications: in addition to piezoelectric effect, optical rotation effect, its electro-optical effect performance is also very superior, LGS Pockels Cells have high repetition frequency, large section aperture, narrow pulse width, high power, ultra-low temperature and other conditions are suitable for LGS crystal EO Q - switch. We applied the EO coefficient of γ 11 to make LGS Pockels cells, and selected its larger aspect ratio to reduce the half-wave voltage of LGS Electro-optical cells, which can be suitable for the electro-optical tuning of all- Solid-state laser with higher power repetition rates.

For example, it can be applied to LD Nd:YVO4 solid-state laser pumped with high average power and energy over 100W, with the highest rate up to 200KHZ, the highest output up to 715w, the pulse width up to 46ns, the continuous output up to nearly 10w, and the optical damage threshold is 9-10 times higher than that of LiNbO3 crystal. 1/2 wave voltage and 1/4 wave voltage are lower than that of the same diameter BBO Pockels Cells, and the material and assembly cost are lower than that of the same diameter RTP Pockels Cells . Compared with DKDP Pockels Cells, they are non-solution and have good temperature stability. LGS Electro-optical Cells can be used in harsh environments and can perform well in different applications.

LGS crystals

Basic properties	
Chemical Formula	La3Ga5SiQ14
Density	5.75g/cm3
Melting Point	1470℃
Transparency Range	242-3200nm
Refractive Index	1.89
Electro-Optic Coefficients	γ41=1.8pm/V，γ11=2.3pm/V
Resistivity	1.7x1010Ω.cm
Thermal Expansion Coefficients	α11=5.15x10-6/K(⊥Z-axis); α33=3.65x10-6/K(∥Z-axis)