

Co²⁺:MgAl₂O₄ is a relatively new material for passive Q-switching in lasers emitting from 1.2 to 1.6 μm, in particular, for eye-safe 1.54 μm Er:glass laser, but also works at 1.44 μm and 1.34 μm wavelengths. High absorption cross section ($3.5 \times 10^{-19} \text{cm}^2$) permits Q-switching of Er:glass laser without intracavity focusing both with flash-lamp and diode-laser pumping. Negligible excited-state absorption results in high contrast of Q-switch, i.e. the ratio of initial (small signal) to saturated absorption is higher than 10 (Figure 1).



Cr⁴⁺:YAG is one of the best passive Q-switch for high power lasers emitting at ~1 μm wavelength. Standard diameter apertures-5,8,9.5 mm and various initial transmission (or optical density) are available upon request. Also Cr⁴⁺:YAG laser rods for ultra-short pulse solid-state lasers are available.

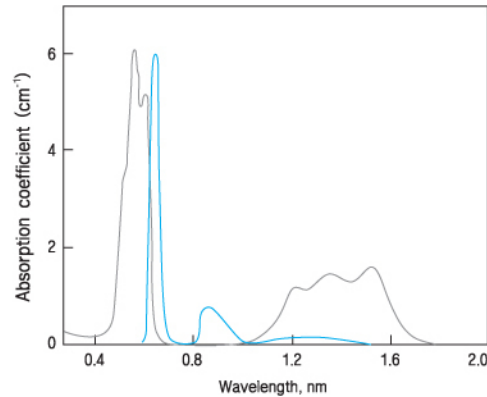


Figure 1.
Absorption spectra of the Co²⁺:MgAl₂O₄ crystal

V³⁺:YAG is relatively new material for passive Q-switch. Crystal has working wavelength range from 1 μm to 1.45 μm. Typical application-Q-switch, for lasers emitting at 1.34 μm wavelength (Figure 2).

Finally, excellent optical, mechanical, and thermal properties of the crystals give an opportunity to design compact and reliable laser sources with these passive Q-switches.

Fe:ZnSe, Cr:ZnSe, Co:ZnS solid-state saturable absorbers also are available upon request.

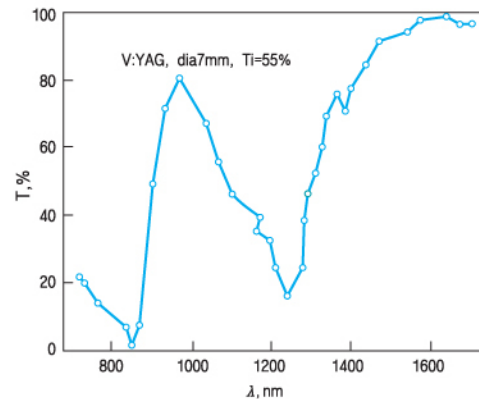


Figure 2.
Transmission spectra of V³⁺:YAG crystal with Ti=55% @ 1.34 μm

Specification

	Co:MgAl ₂ O ₄	Cr ⁴⁺ :YAG	V ³⁺ :YAG
Working Wavelength Range, μm	1.2 - 1.6	0.8 - 1.2	1 - 1.45
Absorption Cross-section, cm ²	3.5×10^{-19} (at 1.54 μm)	5×10^{-18} (at 1.06 μm)	7.3×10^{-18} (at 1.34 μm)
Initial Transmittance, %	30 - 99	20 - 99	40 - 99
Aperture, mm	5 - 12	5, 8, 9.5	4 - 10
Thickness, mm	1 - 5	1 - 5	1 - 10
Coatings*	AR @ 1.54 μm, R<0.2%	AR @ 1.06 μm, R<0.15%	AR @ 1.34 μm, R<0.2%