

Chromium Doped Yttrium Aluminum Garnet Crystal (Cr⁴⁺:YAG)

Introduction

Cr⁴⁺:YAG Crystal is an excellent crystal for passively Q-switching diode pumped or lamp-pumped Nd:YAG, Nd:YLF, Nd:YVO₄ or other Nd and Yb doped lasers at wavelength from 0.8 to 1.2 μm. Because of its chemically stable, durable, UV resistant, good thermal conductivity and high damage threshold (> 500 MW/cm²) and being easy to be operated, it will replace traditional materials, such as LiF, organic Dye and color centers.

CASTECH provides Cr⁴⁺:YAG with Cr⁴⁺ doping level from 0.5mol% to 3mol%. The size could be from 2×2mm² to 14×14mm² with length from 0.1mm to 12mm available. We can control the initial transmission from 10% to 92% according to customers' requirements.

Basic Properties of Cr⁴⁺:YAG

Crystal Structure	Cubic
Dopant Level	0.5 mol% ~ 3 mol%
Hardness	8.5
Damage Threshold	> 500 MW/cm ²
Refractive Index	1.82 @ 1064 nm

The preliminary experiments of CASTECH's Cr⁴⁺:YAG showed that the pulse width of passively Q-switched lasers could be as short as 5ns for diode pumped Nd:YAG lasers and repetition as high as 10kHz for diode pumped Nd:YVO₄ lasers. Furthermore, an efficient green output @ 532nm, and UV output @ 355nm and 266nm were generated, after a subsequent intracavity SHG in KTP or LBO, THG and 4HG in LBO and BBO for diode pumped and passively Q-switched Nd:YAG and Nd:YVO₄ lasers.

Cr⁴⁺:YAG is also a laser crystal with tunable output from 1.35 μm to 1.55 μm. It can generate ultrashort pulse laser (to fs pulsed) when pumped by Nd:YAG laser at 1.064 μm.

Note:

When ordering Cr⁴⁺:YAG crystal, please specify the size, initial transmission and coatings. For further information, please contact CASTECH.