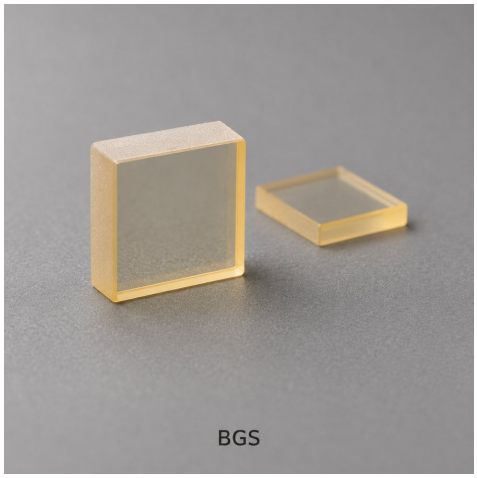
BGS (BaGa4S7) Mid-IR Nonlinear Crystal for OPO and OPA, 0.35–13.7 µm

Model WQ-NLC-BGS · waveqvanta.com/products/bgs-baga4s7-nonlinear-crystal

BGS (barium gallium sulfide, BaGa4S7) is a mid-infrared nonlinear crystal with a wide band gap of 3.54 eV and stable chemical properties. It transmits from 0.35 µm to 13.7 µm and shows no two-photon absorption at 1 µm, so it can be pumped directly by 1064 nm Nd:YAG lasers or by commercially common 1030 nm femtosecond lasers. WaveQuanta supplies BGS as oriented blanks and as coated elements for OPO, OPA, DFG, SFG and OPG.


BGS

Key features

- Transmission range 0.35–13.7 µm (UV cut-off 350 nm, IR cut-off 13.7 µm)
- Band gap 3.54 eV
- Nonlinear coefficient d33 = 12.7 pm/V
- No two-photon absorption at 1 µm, allowing pumping at 1064 nm or 1030 nm
- Chemically stable
- Flatness λ/8 @ 632.8 nm and parallelism 30″

Specifications

Chemical Formula	BaGa4S7
Transmission Range	0.35–13.7 µm
UV Cut-off Edge	350 nm
IR Cut-off Edge	13.7 µm
Band Gap	3.54 eV
Nonlinear Coefficient	d33 = 12.7 pm/V
Density	3.95 g/cm^3
Two-Photon Absorption at 1 µm	None
Aperture Tolerance	+0/−0.1 mm
Length Tolerance	±0.1 mm
Surface Quality	40-20 scratch-dig
Flatness	λ/8 @ 632.8 nm (length ≥ 1 mm)
Perpendicularity	10′
Parallelism	30″

Standard sizes

Size	Cut / orientation	Surface / coating	Mount
5 × 5 × 3 mm	θ = 14°, φ = 0°, XZ-cut	AR/AR @ 1.0–1.3 µm + 6–11 µm	Unmounted
5 × 5 × 9.8 mm	θ = 12.5°, φ = 0°	S1: AR @ 1–1.3 µm; S2: P-coating @ 8 µm	Unmounted
5 × 5 × 10 mm	θ = 13°, φ = 0°, XZ-cut	Blank	Unmounted
8 × 8 × 2.5 mm	θ = 47.6°, φ = 90°, YZ-cut	Blank	Unmounted
8 × 8 × 3.5 mm	θ = 47.6°, φ = 90°, YZ-cut	Blank	Unmounted

Typical applications

- Mid-IR OPO pumped by 1064 nm Nd:YAG lasers
- OPA and OPG pumped by 1030 nm femtosecond lasers
- Difference-frequency generation (DFG) in the mid-IR
- Sum-frequency generation (SFG)