



Onyx Optics, Inc. New Product Announcement

Phase matching angle corrected BBO and walk-off compensated BBO stacks

Capability

Correction of phase matching angle of any common nonlinear optical crystal (NLO) with better than $\leq 0.05^\circ$ accuracy for a desired wavelength.

Applications

Manufacture of walk-off compensated (WOC) stacks for increased harmonic conversion efficiency of beta barium borate (BBO) and lithium borate (LBO). Specifically useful for WOC stacks of BBO for harmonic conversion from the visible to the deep ultraviolet (DUV) due to the large walk-off angle of BBO.

Benefits

- Increased harmonic conversion efficiency
- Increased interaction length
- Improved beam quality
- Increased acceptance angle
- Designable operating temperature
- Easier alignment in laser system
- More stable operation

Requirements

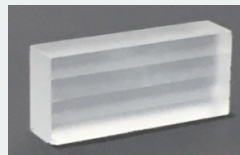
- Desired wavelength of operation
- Desired temperature of operation
- Number of layers and layer thickness of the stack to be specified

Design

Onyx has capability for designing WOC stacks of NLO crystals but we typically rely on our Customer's designs.

Please contact Onyx Optics, Inc. Sales Department by telephone at 925-833-1969, by email sales@onyxoptics.com or on our website www.onyxoptics.com for additional information.

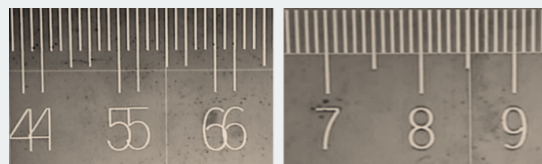
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**4-Layer WOC BBO stack,
4mm x 8mm x 19mm for
conversion from visible
to ultraviolet**

Experimental results on BBO WOC 4-layer stacks

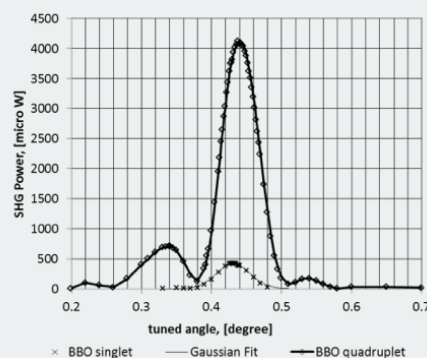
1. Demonstration of WOC of a BBO 4-layer stack



Single BBO crystal

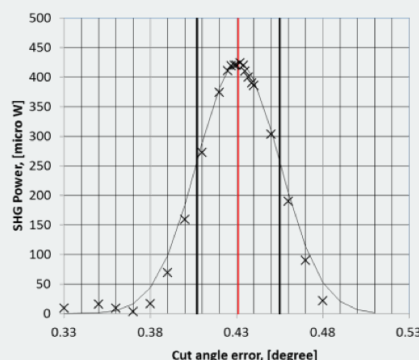
4-Layer BBO stack

2. Demonstration of increased single pass efficiency, using a pulsed 532 nm source laser –almost 10 X



3. Demonstration of measurement of cut angle error (e.g. 0.432°) to be corrected for SHG.

Angle measurement accuracy about 0.002°.



All data in this column have been generated at Onyx Optics.
US Pat. 8,102,593; 10,031,286; and Patent Pending

Onyx would like to express our gratitude to Defense Advanced Research Projects Agency (DARPA), who supported the research.

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