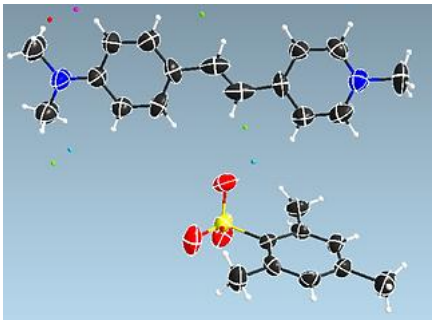
DSTMS Organic Crystal

4-N,N-dimethylamino-4'-N'-methyl-stilbazolium 2,4,6-trimethylbenzenesulfonate

Applications

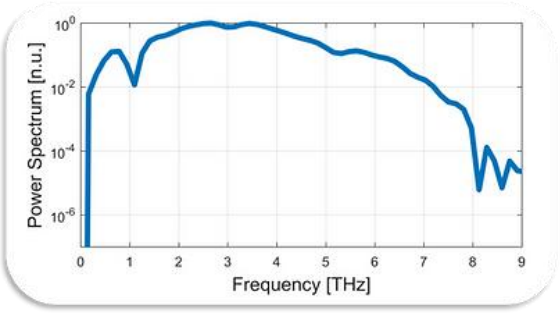


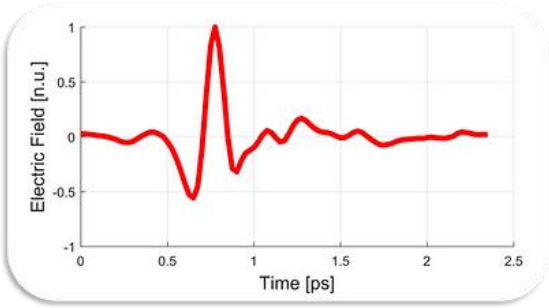
- THz generator and detector
- Multi-THz generator
- Second harmonic generator

Main Advantages

Superior performance to classical THz generator (ZnTe and Lithium Niobate) from Ti:Sa 800 nm lasers

Example Output





Comparison With Sister DAST Crystal

- DSTMS and DAST have similar optical properties
- DSTMS optical to THz energy efficiency is slightly higher than DAST
- DAST could show higher peak electric field because of the broader spectrum than DSTMS
- DAST has higher damage threshold than DSTMS

Laser Requirements

DSTMS operates with all conventional types of lasers

- Telecomm fiber
- OPA
- OPCPA

Expected Output

- Input laser: 34 mJ OPA near-infrared
- Output THz: 85 MV/cm

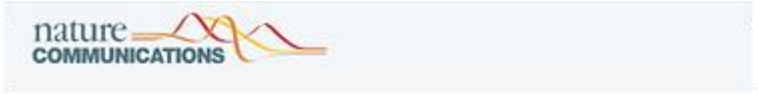
Physical Properties

Physical Property	Value
Nonlinear Optical Coefficient	d11(1900nm) = 214pm/V
Electro-optic Coefficient	r11(1900nm) = 37pm/V
Melting Point	250°C

State of the Art: Intense Nonlinear Terahertz Spectroscopy

Crystal	Experimental Requirements	Conversion Efficiency at RT	Bandwidth
DSTMS	Simple Collinear Scheme	1-3%	15 THz
Lithium Niobate	Complex Tilted Pulse Front	0.1%	1 THz or 3 THz

Our Crystal Technology in Literature



Article | OPEN

High-performing nonlinear visualization of terahertz radiation on a silicon charge-coupled device

Article

Demonstration of a low-frequency three-dimensional terahertz bullet with extreme brightness

Literature

J. Opt. Soc. Am. B 24, 2556 (2007) . J. Opt. Soc. Am. B 32, 1078 (2015).
Opt. Lett. 42, 129 (2017) . Nat. Commun. 6, 5976 (2015)
Nat. Commun. 6, 8439 (2015)