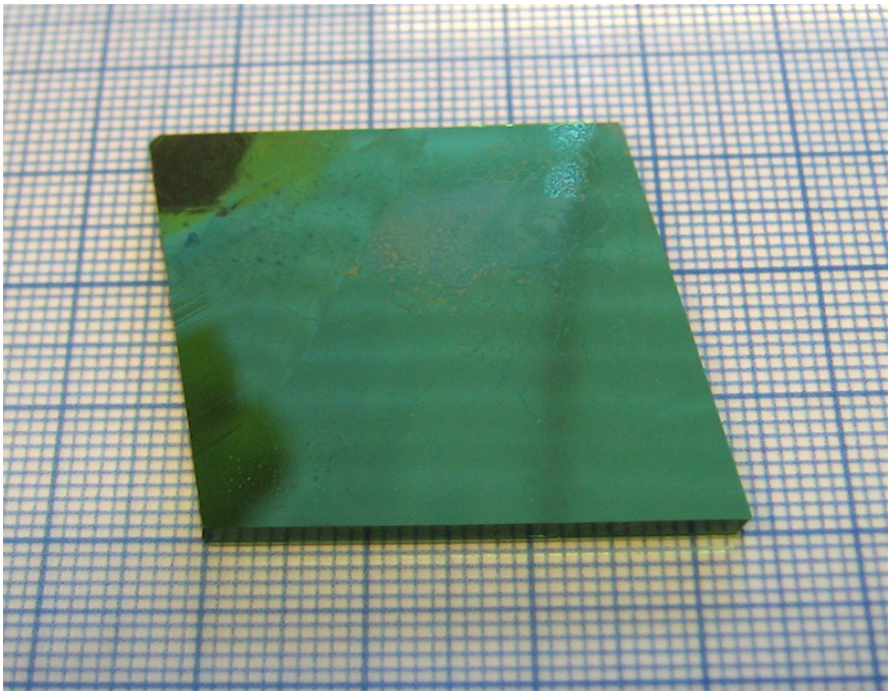
Rainbow Photonics

THz Generation

Electro-Optic DSTMS Crystals

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



Properties

- high quality crystals
- cut and polished for various applications
- large nonlinear optical susceptibilities
- large electro-optic coefficients
- phase matching for THz-wave generation between 720 nm and 1650 nm

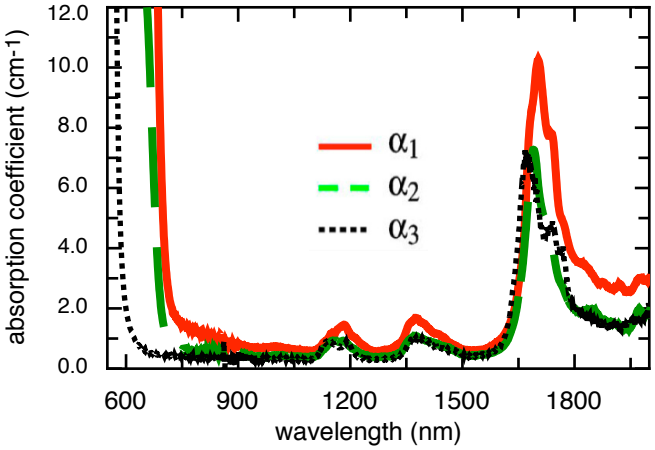
Applications

- efficient THz generation and detection from 0.3 to >20 THz
- fast electro-optic modulation
- optical parametric generation
- efficient frequency doubling of 1.55 μm radiation

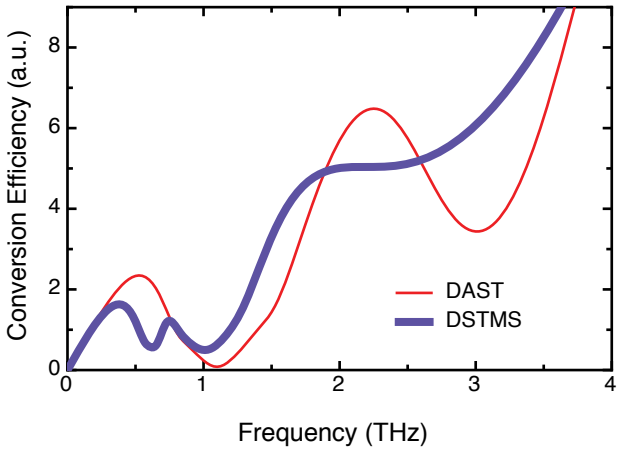
Physical Properties

melting temperature	250 °C		
point group symmetry	m		
refractive indices @ 1550 nm	n_1	=	2.07, n_2 = 1.64
nonlinear optical coefficients @ 1900 nm	d_{111}	=	214 ± 20 pm/V
	d_{122}	=	31 ± 4 pm/V
	d_{212}	=	35 ± 4 pm/V
electro optic coefficient @ 1900 nm	r_{111}	=	37 ± 3 pm/V

Absorption Spectrum



THz Conversion Efficiency



1) “Large-Size Bulk and Thin-Film Stilbazolium-Salt Single Crystals for Nonlinear Optics and THz Generation”; Z. Yang, L. Mutter, M. Stillhart, B. Ruiz, S. Aravazhi, M. Jazbinsek, A. Schneider, V. Gramlich and P. Günter, Adv. Funct. Mater. 17, 2018 (2007).
2) “Large-Size Bulk and Thin-Film Stilbazolium-Salt Single Crystals for Nonlinear Optics and THz Generation”; Z. Yang, L. Mutter, M. Stillhart, B. Ruiz, S. Aravazhi, M. Jazbinsek, A. Schneider, V. Gramlich and P. Günter, Adv. Funct. Mater. 17, 2018 (2007).
3) “Linear and nonlinear optical properties of the organic crystal DSTMS”; L. Mutter, F. Bruner, Z. Yang, M. Jazbinsek, P. Günter, J. Opt. Soc. Am. B 24, 2556 (2007).
4) “Molecular engineering of stilbazolium derivates for second-order nonlinear optics”: Z. Yang, M. Jazbinsek, B. Ruiz, S. Aravazhi, V. Gramlich, P. Günter, Chem. Mater. 19, 3512-3518 (2007).

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