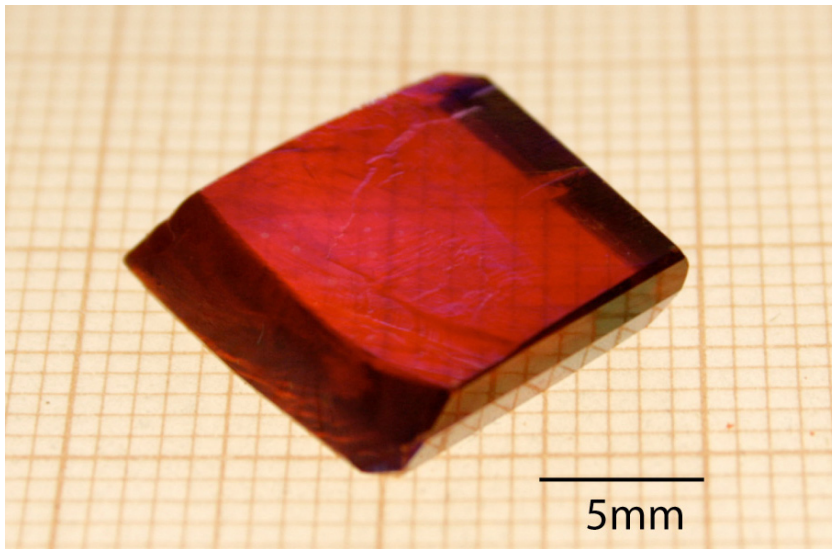


Electro-Optic OH1 Crystals

OH1: (2-(3-(4-Hydroxystyryl)-5,5-dimethylcyclohex-2-enylidene)malononitrile)



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 1200 nm and 1460 nm

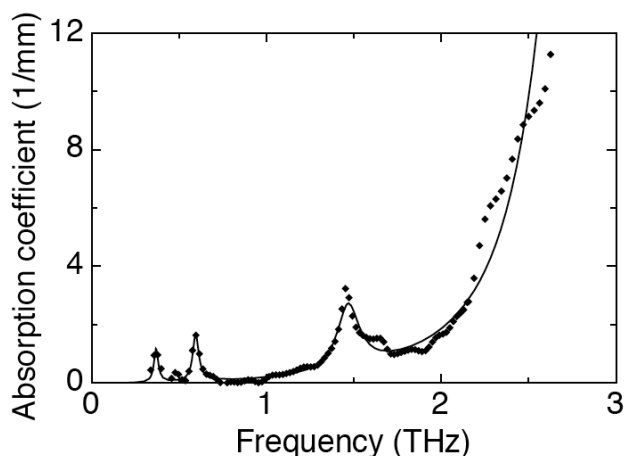
Applications

- efficient THz generation and detection from 0.1 to >10 THz
- fast electro-optic modulation
- optical parametric generation

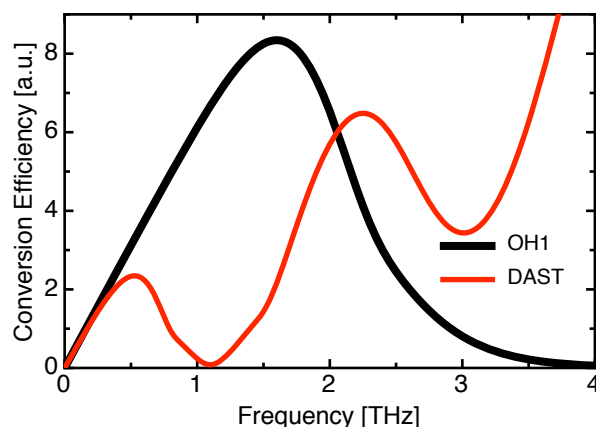
Physical Properties

melting point	212 °C
point group symmetry	mm2
refractive indices	$n_2 = 1.58$, $n_3 = 2.15$
nonlinear coefficients ($\lambda = 1.9 \mu\text{m}$)	$d_{333} = 120 \pm 10 \text{ pm/V}$ $d_{223} = 13 \pm 2 \text{ pm/V}$ $d_{322} = 8.5 \pm 2 \text{ pm/V}$
electro optic coefficients	$r_{333} (633 \text{ nm}) = 109 \pm 4 \text{ pm/V}$ $r_{333} (785 \text{ nm}) = 75 \pm 7 \text{ pm/V}$ $r_{333} (1064 \text{ nm}) = 56 \pm 2 \text{ pm/V}$ $r_{333} (1319 \text{ nm}) = 52 \pm 7 \text{ pm/V}$

Absorption Spectrum



THz Conversion Efficiency



- 1) "Configurationally locked, phenolic polyene organic crystal OH1: linear and nonlinear optical properties"; C. Hunziker, S. Kwon, H. Figi, F. Juvalta, O. Kwon, M. Jazbinsek, P. Günter, J. Opt. Soc. Am. B 5, 1678 (2008).
- 2) "A hydrogen-bonded organic nonlinear optical crystal for high-efficiency terahertz generation and detection"; F. Brunner, O. Kwon, S. Kwon, M. Jazbinsek, A. Schneider, P. Günter, Opt. Express 16, 16496 (2008).
- 3) "Organic phenolic configurationally locked polyene single crystals for electro-optic and terahertz wave applications"; O. Kwon, S. Kwon, M. Jazbinsek, F. Brunner, J. Seo, C. Hunziker, A. Schneider, H. Yun, Y. Lee, P. Günter, Adv. Funct. Mater. 18, 3242 (2008).
- 4) "Scaling submillimeter single-cycle transients toward megavolts per centimeter field strength via optical rectification in the organic crystal OH1"; C. Ruchert, C. Vicario, C.P. Hauri, Opt. Lett. 37, 899 (2012).

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