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Crystal Growth and Terahertz Wave Generation of Organic NLO Crystals: OH1

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The organic nonlinear optical (NLO) crystal OH1 (2-(3-(4-hydroxystyryl)-5,5-dimethylcyclohex-2-enylidene) malononitrile) was grown by the seeded solution growth method with size up to $11\times11\times10mm^3$. The cooling rate would affect the crystal formation and lead to the different shapes of OH1 crystals. The hydrogen-bond interactions between the OH1 molecules played a prominent influence on the molecular alignment and the direction of crystal growth. Furthermore, the OH1 crystals grown from the seeds on different orientations would form different morphologies. X-ray rocking curve showed good quality of the grown crystals. Continuous stiffness measurement showed that the hardness of the OH1 (100) and (111) plane was about 0.67GPa and 0.51GPa, while the Young's modulus was about 9.68GPa and 11.91GPa. The transmission spectra in the range of 0.5μm-20μm was measured and there was a transmission window appearing in the mid-infrared waveband of 4-6μm. With the OH1 crystal obtained, continuous THz wave radiation

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