

Abstract Submitted
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Second Harmonic Generation in MnTiO₃¹ JUDY CHERIAN, Florida State University, National High Magnetic Field Laboratory, HAIDONG ZHOU, National High Magnetic Field Laboratory, JAMES BROOKS, Florida State University, National High Magnetic Field Laboratory, STEPHEN MCGILL, National High Magnetic Field Laboratory — Optical Second Harmonic Generation (SHG) is a non-linear process observed in non-centrosymmetric materials. We have performed SHG in MnTiO₃ in the wavelength range of 900 nm -1500 nm. MnTiO₃ is anti-ferromagnetically ordered below 63 K ($T_N = 63.5\text{K}$). We study SHG as a function of temperature and magnetic field both above and below the Néel temperature to observe the effect of the spin order. When a magnetic field above the critical field ($B_C = 6$ T) is applied along the c-axis, MnTiO₃ exhibits spin flopping, and is thought to show ferrotoroidic symmetry.² We measured the magnetic field dependence of the second harmonic spectra of MnTiO₃ from 0 T to 10 T at temperatures ranging from 1.5 K to 150 K.

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²H. Toyosaki et.al, *APL* **93**, 072507 (2008)

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