

Title	<b>Highly efficient THG in TiO<sub>2</sub> nanolayers for third-order pulse characterization</b>
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Abstract	Third harmonic generation (THG) of femtosecond laser pulses in sputtered nanocrystalline TiO <sub>2</sub> thin films is investigated. Using layers of graded thickness, the dependence of THG on the film parameters is studied. The maximum THG signal is observed at a thickness of 180 nm. The corresponding conversion efficiency is 26 times larger compared to THG at the air-glass interface. For a demonstration of the capabilities of such a highly nonlinear material for pulse characterization, third-order autocorrelation and interferometric frequency-resolved optical gating (IFROG) traces are recorded with unamplified nanojoule pulses directly from a broadband femtosecond laser oscillator.
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