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Photonic Band Gap Calculation and Holographic Fabrication of Orthorhombic and Tetragonal 3D Photonic Crystals¹ KRIS OHLINGER, Department of Physics and Geology, University of Texas-Pan American, Edinburg, TX 78539, YUANKUN LIN, Department of Physics and Geology, UTPA, Edinburg, Texas, 78539, DI XU, KEVIN CHEN, Department of Electrical and Computer Engineering, University of Pittsburgh, Pittsburgh, PA 15261 — We report a photonic band gap (PBG) and fabrication of both orthorhombic and tetragonal photonic crystals. 3D photonic crystal structures were formed by a double-exposure of photoresist SU8 through a phase mask. Lattice structures and PBG can be controlled by the rotational angles of the phase mask between two exposures. PBG computation predicts that the photonic crystal structure with the optimized bandgap can be realized when the rotational angle is set between 50 and 70 degrees. A photonic crystal template by 60-degree phase mask rotation was fabricated in SU8.

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