

## Ultraviolet Second-Harmonic Generation in 2D Nonlinear LiNbO<sub>3</sub> Photonic Crystal Waveguides

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We have experimentally examined the second-harmonic radiation of the two-dimensional (2D) highly nonlinear LiNbO<sub>3</sub> (LN) photonic crystal (PhC) waveguides fabricated by LN nano-fabrication technology. We show a large enhancement of the second-harmonic generation (SHG) in the ultraviolet (UV) region. The observed SHG enhancement results agree well with the corresponding photonic band structure obtained by three-dimensional finite-difference time-domain calculations, indicating that the design of the matter-radiation nonlinear interaction is realistically possible by band dispersion and group velocity engineering [1-3] in the 2D highly nonlinear LN PhC waveguide. Future works in this direction lead to innovative developments in nonlinear optical applications, for example, in the realization of high-efficiency, compact deep UV coherent light sources.

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