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Harmonic generations in fractal-poled LiNbO3 at mid-infrared wavelengths HYUNWOOK PARK, ANTOINE CAMPER, PIERRE AGOSTINI, LOUIS DIMAURO, The Ohio State University — We report harmonic generation in a $LiNbO_3$-based photonic crystal by mid-infrared femtosecond laser pulses. We observe harmonics generated at different driver frequencies below the band gap, extending up to 11^{th} order for a 4 um driver. We interpret the results by solving coupled wave equations, which include cascade nonlinear processes with the aid of quasi phase matching. The harmonics driven by 4 um consist of collinear harmonic comb and non-collinear spatially separated visible colors. The conversion efficiency is measured to be 13-16 %.

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