

Abstract Submitted
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Toothed Mid-Infrared Metal-Insulator-Metal Waveguides KEVIN ANGLIN, DAVID ADAMS, TROY RIBAUDO, DANIEL WASSERMAN, University of Massachusetts at Lowell, UNIVERSITY OF MASSACHUSETTS AT LOWELL TEAM — We have fabricated both flat and toothed MIM waveguides for mid-IR frequencies and investigated transmission of these structures as a function of wavelength and periodicity. The transmission spectra of these structures for TM and TE polarized light is investigated and our results compared to numerical simulations, which mimic the coupling efficiency and incident k-vectors present in our experimental setup. A photonic bandgap is imposed on the transmission properties due to the periodic modulation of the MIM structure, and good agreement of passbands and stopbands was demonstrated between experimental data and numerical simulation. Control of the transmission passband frequency (specifically at longer wavelengths) is possible for these toothed structures by changing the period of the teeth. These structures offer potential for applications in chemical sensing, due to slow light propagation and high confinement of electric fields inside the waveguide.

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