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Metamaterial Single Polarization Grid: Moving Towards the Dynamic Selective Polarizer COREY SHEMELYA, THOMAS VANDERVELDE, Tufts University — Ongoing interest in active metamaterial devices has increased due to their scalability, tunablity, and, more importantly, the ability to turn them on or off. A dynamic metamaterial polarizer has unique applications for identifying manmade objects anywhere in the IR. This work describes a single layer metamaterial polarization grid. The metamaterial grid is immediately scalable to many different wavelengths. The polarization grid has been designed for conversion to a dynamic metamaterial polarizer with simulated on/off ratios of 9 to 1. To this end, samples have been fabricated using varying doping concentrations of Si in GaAs grown epitaxially on Sapphire. Au metamaterials along with contact grids were then patterned and deposited. This design allows for potential dynamic responses as well as monolithic integration to create an active, metamaterial-stack, selective polarizer.

Corey Shemelya
Tufts University

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