

Abstract Submitted
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Fabrication of a Photonic Band Gap (PBG) Wavelength Demultiplexing Device SIWEI CAO, Miami University, MERON TEKESTE, JAN YARRISON-RICE, Miami University — We successfully modeled a two and three channel wavelength demultiplexer based on photonic band gap crystals,¹ assembled the optical characterization setup and initialized the device fabrication process. This PBG device is being fabricated in a 200 nm thick Si₃N₄ core planar waveguide on SiO₂ cladding layer using air pores with 150 nm diameter and 213 nm pitches. Fabrication steps include Cr wet etching after PMMA e-beam exposure, and final plasma etching of airpores in Si₃N₄. To date we have successfully exposed the device pattern with e-beam lithography and obtained airpores and coupling cavities within specification. After wet etching the Cr, AFM results are presented in which we study the hard Cr mask which will be used for plasma etching of final device.

¹M.Y Tekeste and J.M.Yarrison-Rice, *Opt. Exp.* **14**, 7931-7942 (2006).

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