

Abstract Submitted  
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**High Aspect Ratio HBr Based Dry Etching of GaInAsP/InP for Nanoscale Photonic Couplers**<sup>1</sup> NAHID SULTANA, WEI ZHOU, DUNCAN MACFARLANE, The University of Texas at Dallas — Large scale integrated photonics demand nanoscale features that extend deeply into the III-V substrate to cover a propagating mode. The researchers discuss HBr etching of frustrated total internal reflection (FTIR) couplers with feature sizes of approximately 140nm wide by 20  $\mu\text{m}$  long by 3  $\mu\text{m}$  deep in InP. A variety of HBr based chemistries will be benchmarked against more traditional Chlorine based processes. Both FIB and EBL patterned features will be presented with aspect ratios greater than 30:1. Importantly, with HBr, the heterostructures can be etched through with reasonable smoothness at 165 degrees Celsius, and these are beneficial for reliable InP devices.

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