

ABSTRACT

WAVEGUIDE TRANSITIONS FOR HYBRID THIN-SILICON/III-V PHOTONICS

A device comprises a substrate having lower and upper silicon layers separated by a lower dielectric layer and a III-V structure bonded to the substrate, with first, second, and third sections along an optical axis. The first section comprises a first upper waveguide segment of the upper silicon layer, increasing in width from a first width to a second width at an interface between the first and second sections, the III-V structure overlapping with a tapered portion of the first upper waveguide segment. The second section comprises a second upper waveguide segment of the upper silicon layer decreasing in width, and a first lower waveguide segment of the lower silicon layer wider than the second upper waveguide segment at the interface between the second and third sections. The third section comprises a second lower waveguide segment of the lower silicon layer.

Figure 1A.