

Semiconductor Diodes Fabricated by Aspect Ratio Trapping with Coalesced Films

ABSTRACT OF THE DISCLOSURE

A photonic device comprises a substrate and a dielectric material including two or more openings that expose a portion of the substrate, the two or more openings each having an aspect ratio of at least 1. A bottom diode material comprising a compound semiconductor material that is lattice mismatched to the substrate occupies the two or more openings and is coalesced above the two or more openings to form the bottom diode region. The device further includes a top diode material and an active diode region between the top and bottom diode materials.

Figure 4