

ABSTRACT

ENHANCED BONDING BETWEEN III-V MATERIAL AND OXIDE MATERIAL

When III-V semiconductor material is bonded to an oxide material, water molecules can degrade the bonding if they become trapped at the interface between the III-V material and the oxide material. Because water molecules can diffuse readily through oxide material, and may not diffuse as readily through III-V material or through silicon, forcing the III-V material against the oxide material can force water molecules at the interface into the oxide material and away from the interface.

Water molecules present at the interface can be forced during manufacturing through vertical channels in a silicon layer into a buried oxide layer thereby to enhance bonding between the III-V material and the oxide material. Water molecules can be also forced through lateral channels in the oxide material, past a periphery of the III-V material, and, through diffusion, out of the oxide material into the atmosphere.

(FIG 1)