ABSTRACT

METHODS OF FORMING III/V SEMICONDUCTOR MATERIALS, AND SEMICONDUCTOR STRUCTURES FORMED USING SUCH METHODS

Methods of forming ternary III-nitride materials include epitaxially growing ternary III-nitride material on a substrate in a chamber. The epitaxial growth includes providing a precursor gas mixture within the chamber that includes a relatively high ratio of a partial pressure of a nitrogen precursor to a partial pressure of one or more Group III precursors in the chamber. Due at least in part to the relativley high ratio, the layer of ternary III-nitride material may be grown to a high final thickness with small V-pit defects therein. Semiconductor structures including such ternary III-nitride material layers are fabricated using such methods.

Figure 4