

EPITAXIAL GROWTH OF COMPOUND SEMICONDUCTORS USING LATTICE-TUNED DOMAIN-MATCHING EPITAXY

ABSTRACT

A method of epitaxially growing a final film using a crystalline substrate wherein the final film cannot be grown directly on the surface of crystalline substrate is disclosed. The method includes forming a transition layer on the upper surface of the crystalline substrate. The transition layer has a lattice spacing that varies between its lower and upper surfaces. The lattice spacing at the lower surface of transition layer matches the lattice spacing of the crystalline substrate to within a first lattice mismatch of 7%. The lattice spacing at the upper surface of transition layer matches the lattice spacing of the final film to within a second lattice mismatch of 7%. The method also includes forming the final film on the upper surface of the transition layer.

(Figure 4E)