Improved Fabrication and Structures Of Crystalline Material

ABSTRACT

A surface of the first semiconductor crystalline material has a reduced roughness. A semiconductor device includes a low defect, strained second semiconductor crystalline material over the surface of the first crystalline material. A surface of the strained second semiconductor crystalline material has a reduced roughness. One example includes obtaining a surface with reduced roughness by creating process parameters that reduce impurities at an interfacial boundary between the first and second semiconductor crystalline materials. In one embodiment, the first semiconductor crystalline material can be confined by an opening in an insulator having an aspect ratio sufficient to trap defects using Aspect Ratio Trapping techniques.

Figure 1a