

METHODS OF FORMING FINFET DEVICES WITH ALTERNATIVE CHANNEL MATERIALS

ABSTRACT

5 One illustrative method disclosed herein involves performing a first etching process through a patterned hard mask layer (16) to define a plurality of spaced-apart trenches (14) in a substrate (10) that defines a first portion of a fin (20) for the device, forming a layer of insulating material (22) in the trenches (14) and performing a planarization process on the layer of insulating material to expose the patterned hard, performing a second etching process
10 to remove the hard mask layer (16) and to define a cavity (16A) within the layer of insulating material, forming a second portion (24) of the fin within the cavity, wherein the second portion of the fin is comprised of a semiconducting material that is different than the substrate, and performing a third etching process on the layer of insulating material such that an upper surface (22R) of the insulating material is below an upper surface of the second
15 portion (24) of the fin.

Figure 1G