A transistor device includes an array of fin structures arranged on a substrate, each of the fin structures being vertically alternating stacks of a first isoelectric point material having a first isoelectric point and a second isoelectric point material having a second isoelectric point that is different than the first isoelectric point; one or more carbon nanotubes (CNTs) suspended between the fin structures and contacting a side surface of the second isoelectric point material in the fin structures; a gate wrapped around the array of CNTs; and source and drain contacts arranged over the fin structures; wherein each of the fin structures have a trapezoidal shape or parallel sides that are oriented about 90° with respect to the substrate.

1 Claim, 13 Drawing Sheets