Review of: "nanoelectronics in the field of production and monopoly (nanochips)"

Sandra Lopez

Harvard University

Potential competing interests: No potential competing interests to declare.

Transistors and integrated circuit manufacturing technology have become the most common technologies based on them, i.e., CMOS, in the micro and nano electronics industry. This industry and the technology of manufacturing integrated circuits—this advantage of nanoelectronics is doubled in reducing the size of transistors and the number of transistors used in each chip. The shrinking of the dimensions of the transistors leads to an increase in speed and a reduction in power losses. Nanotube-based field-effect transistors and carbon-based field-effect transistors are very serious candidates for replacing graphene, and common transistors are silicon.

Internal structure and field-effect transistors based on carbon nanotubes

The basic simple structure that plays the role of source and drain in two metallic junctions and the carbon nanotube plays the role of the transistor channel, which is separated from the silicon substrate with a high gross density by an oxide layer. In this electronic part, the silicon substrate plays the role of the gate, which is called the back gate in this structure. Then the transistor with an upper gate also which was suitable for use in integrated circuits, with the addition of an upper gate by The thin oxide layer is separated from the nanotube channel, The transistors are the same as transistors based on carbon nanotubes. Combination (upper and lower) gates. Combinations (Not; or; And; Nand) are used in making nanochips by nanotransistors. From the point of view of structure, they can have types of back and Graphene transistors also transparent can be achieved by using this nanomaterial. high speed in flexible electronic circuits and it is possible to make electronic components with suitable for a low light absorption and band gap high thermal conductivity, fracture resistance, Graphene’s unique properties such as electron mobility and, graphene is used in its channel. with the difference that instead of a carbon nanotube.

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References


