Review of: "Graphene in nMOS field-effect transistors"

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By reducing all the horizontal and vertical dimensions of the transistor, the electric charge density increases in different areas of the nano-transistor, or, in other words, the number of electric charges per unit area of the nano-transistor increases. Graphene in nMOS field-effect transistors is an excellent electrical conductor and also has outstanding spintronic properties. The ultra-thin carbon lattice is capable of transporting electrons with coordinated spin over longer distances and spinning for longer periods of time than any other known material at room temperature. Although the distance is still on the scale of a few micrometers and the time is still measured in nanoseconds, it essentially opens up the possibility of using rotation in microelectronic components.

The high speed of switching (doping) in the nMOS transistor circuit of the Graphene transistor is possible only because it can do p- and n- (positive and negative) doping, and graphene doping is a main parameter in the development of the nMOS transistor Graphene transistor. The bias voltage is applied to the graphene transistors in such a way that they always operate in their "active" region, that is, the curved or active linear part is used for the output characteristics. Graphene, which consists of only one carbon atom, can be used to create multilayer graphene field-effect transistors that consume less energy and take up less space. Graphene is a semi-conducting material with a zero gap and is not suitable for logic circuits, but using technology, they create different forms of this material that have different gaps. Graphene strips, multilayer graphene, and graphene grown on different transistor layers are such forms.

References

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