

Fabrication of Graphene Nanoribbon Field-Effect Transistor with High On/Off Ratio for High Performance

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Precise spatial control over the electrical properties of thin films is the key capability enabling the production of modern integrated circuitry. So we have to find another building block as insulator and combine these two building blocks into one circuit. On the other hand, uniform edge of graphene is important factor for electronic devices. Recently, some groups reported that graphene nanoribbon field-effect transistor using top-down method like lithography. However, this graphene nanoribbon field-effect transistor have not uniform edges of graphene due to using lithography. Here, we report that one step growth of graphene/amorphous carbon(G/AC) hetero-structures from solid source as polystyrene-b-polymethylmetacrylate (PS-b-PMMA) perpendicular lamellar via UV irradiation. This bottom-up approach also overcomes problem of graphene edges due to getting uniform edges.