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Graphene Field-effect Transistors on Flexible Substrates

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Graphene, a flat one-atom-thick two-dimensional layer of carbon atoms, is considered to be a promising candidate for nanoelectronics due to its exceptional electronic properties. Most of all, future nanoelectronics such as flexible displays and artificial electronic skins require low cost manufacturing process on flexible substrate to be integrated with high resolutions on large area. The solution based printing process can be applicable on plastic substrate at low temperature and also adequate for fabrication of electronics on large-area. The combination of printed electronics and graphene has allowed for the development of a variety of flexible electronic devices. As the first step of the study, we prepared the gate electrodes by printing onto the gate dielectric layer on PET substrate. We showed the performance of graphene field-effect transistor with electrohydrodynamic (EHD) inkjet-printed Ag gate electrodes.

Keywords: Graphene, Field-effect transistor, Flexible, EHD inkjet-printing