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Fabrication and Characterization of Graphene Nonvolatile Memory Device

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Graphene is a material consisting of a single layer of carbon atoms, known to have excellent mechanical and electrical properties. In particular, the adjustment of the doping concentration by chemical adsorption or electrical gating is a very useful method for varying the conductivity of graphene. Graphene can be used as a memory element if this conductivity can be adjusted to more than two states and its adjusted conductivity can be maintained. In this paper, we will demonstrate a memory device that can memorize the conductivity of graphene by grafting ferroelectric polymer with memory characteristics.

The graphene memory demonstrated in this paper was fabricated by stacking a graphene - ferroelectric composite film. Since the device can be manufactured only in a desired place, the use amount of the graphene can be reduced, and the type of the substrate may not be affected. In addition, the surface of the ferroelectric polymer layer was modified to improve the memory characteristics. It is expected to be applicable to future flexible and transparent memory devices.

Biography:

Mr. Seung Hyeon Kim is an undergraduate student at Jeju National University in Korea, and his research interests are memory devices and processes. Prof. Dr Woo Young Kim is an assistant professor at Jeju National University in Korea. His research fields include applications of ferroelectric polymer and graphene process.

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