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# Resistance Switching Mechanism of Metal-Oxide Nano-Particles Memory on Graphene Layer

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A graphene layer is most important materials in resent year to enhance the electrical properties of semiconductor device due to high mobility, flexibility, strong mechanical resistance and transparency[1,2]. The resistance switching memory with the graphene layer have been reported for next generation nonvolatile memory device[3,4]. Also, the graphene layer is able to improve the electrical properties of memory device because of the high mobility and current density.

In this study, the resistance switching memory device with metal-oxide nano-particles embedded in polyimide layer on the graphene mono-layer were fabricated. At first, the graphene layer was deposited $SiO_2$/Si substrate by using chemical vapor deposition. Then, a biphenyl-tetracarboxylic dianhydride-phenylene diamine poly-amic-acid was spin coated on the deposited metal layer on the graphene mono-layer. Then the samples were cured at 400$^{o}$C for 1 hour in $N_2$ atmosphere after drying at 135$^{o}$C for 30 min through rapid thermal annealing. The deposition of aluminum layer with thickness of 200 nm was done by a thermal evaporator. The electrical properties of device were measured at room temperature using an HP4156a precision semiconductor parameter analyzer and an Agilent 81101A pulse generator. We will discuss the switching mechanism of memory device with metal-oxide nano-particles on the graphene mono-layer.

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