Impact of impurities and annealing conditions on the characteristics of Si/HfO_2 :Al/TiN ReRAM devices

TT-P025

Rashba effect and optical transitions of $MAPbI_3$ organic-inorganic perovskite crystals under high magnetic fields

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We investigate optical transitions of an $MAPbI_3$ crystals in high magnetic fields to 50 T. It show strong temperature dependent optical transitions while cooling from room temperature to the liquid helium temperature. A sharp PL peak at 1.628 eV is originated from the surface state. The broad peak composes of four multiple peaks of excitons. We analyze exciton transitions by using Rashba effect. It is known that this $MAPbI_3$ shows Rashba effect[1] due to the strong spin-orbit coupling. We attempted to calculate Rashba excitons in high magnetic field and compared with the experimental results.

Keywords : $MAPbI_3$, photoluminescence, Rashba effect

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Impact of impurities and annealing conditions on the characteristics of Si/HfO_2:Al/TiN ReRAM devices

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ReRAM (Resistive Random Access Memory) devices has been investigated for next-generation high performance nonvolatile memory. Metal-oxides ReRAM using HfO_2 exhibited nonvolatile memory characteristics in terms of switching speed, on-off resistance ratio [1]. In this work, the effects of resistive switching on the characteristics in Si/HfO_2:Al/TiN device structure were investigated. We will discuss the impact of impurities and thermal annealing conditions on the electrical characteristics of the devices.

Keywords : Random access memory, annealing, resistive switching