

( N-08 )

## Molecular Dynamics Study of Nanoelectromechanical Nanotube Memory Device

강정원, 변기량, 송기오, 황호정  
중앙대학교 전자전기공학부 나노전자신기술연구실

Electromechanical operations of carbon-nanotube-bridge memory device were investigated by using atomistic simulations based on empirical potentials. The nanotube-bridge memory device was operated by the electrostatic and the van der Waals forces acting on the nanotube-bridge. For the CNT-bridge memory device, the van der Waals interactions between the CNT-bridge and the oxide were very important. As the distance between the CNT-bridge and the oxide decreased and the van der Waals interaction energy increased, the pull-in bias of the CNT-bridge decreased and the nonvolatility of the nanotube-bridge memory device increased, while the pull-out voltages increased. When the materials composed of the oxide film were different, since the van der Waals interactions must be also different, the oxide materials should be carefully selected to order that the CNT-bridge memory device could be worked as a nonvolatile memory.