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Switching transition between bi-stable memory switching and mono-stable threshold switching based on ion migration in a NiO thin film INROK HWANG, Division of Quantum Phases & Devices, Department of Physics, Konkuk University, Korea, MYUNG-JAE LEE, Samsung Advanced Institute of Technology, Korea, GYOUNG-HO BUH, Semiconductor Exam. Division, Korean Intellectual Property Office, Korea, JINSIK CHOI, JIN-SOO KIM, SAHWAN HONG, SANG-HO JEON, YEON SOO KIM, IK-SU BYUN, SEUNG-WOONG LEE, Division of Quantum Phases & Devices, Department of Physics, Konkuk University, Korea, SEUNG-EON AHN, Samsung Advanced Institute of Technology, Korea, BO SOO KANG, Department of Applied Physics, Hanyang University, Korea, SUNG-OONG KANG, BAE HO PARK, Division of Quantum Phases & Devices, Department of Physics, Korea — We have investigated a transition of resistive switching behaviors between bi-stable memory switching and mono-stable threshold switching in a NiO film, which was controllable by the polarity and width of applied electric pulse. Macroscopic model was proposed to explain the polarity- and width-dependence of electrical transition that provided experimental evidences for migration of oxygen ions (O^{2-}) to be responsible for the filamentary resistive switching mechanism

Inrok Hwang
Division of Quantum Phases & Devices,
Department of Physics, Konkuk University, Korea

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