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Percolative model for resistance switching S. H. CHANG, S. C. CHAE, J. S. LEE, S. B. LEE, Seoul National University, D.-W. KIM, Hanyang University, B. KHANG, T. W. NOH, Seoul National University — There have been research efforts on resistive switching in numerous insulating oxide films for the next nonvolatile memory device. Recently percolation has been considered as a key concept to explain unipolar memory switching [1]. The rupture process of conducting path is closely related to thermal heat budget induced by Joule-heating effect. In this process, the thermal heat dissipation during rupture could play important role in details of unipolar memory switching. In this study, we investigated correlation between the resistance switching behaviors of Pt/NiO/Pt capacitor structures and thermal heat dissipation as a function of the bottom electrode and temperature. Our modified percolative simulation and finite element analysis demonstrated these phenomena. [1] S. C. Chae *et al.*, Adv. Mat., to be published (2007).

Woo Seok Choi
Seoul National University

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