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Coercive Voltage Modulation in Ferroelectric Capacitor with Two Sub-Capacitors

Jin San Kim* and Woo Young Kim

Department of Electronic Engineering, Jeju National University, Republic of Korea

The ferroelectric material is a material that forms a spontaneous polarization by an electric field or voltage applied from the outside, and is widely applied to a nonvolatile memory device because it maintains a polarization state even when an external stimulus is removed. The polarization of the ferroelectric does not cause polarization reversal below a certain threshold voltage (coercive voltage), but polarization reversal gradually occurs when the voltage exceeds the coercive voltage. Therefore, the coercive voltage is an important criterion for determining the operating voltage in a ferroelectric memory or a switching device.

This paper deals with the coercive voltage of a ferroelectric capacitor with two ferroelectric capacitors with different thicknesses. The hysteresis curve was measured by varying the area of the two capacitors. As a result, it was confirmed that the coercive voltage can be modulated according to the area ratio of the two capacitors. Using a ferroelectric with this structure would be advantageous for fabricating devices with arbitrary coercive voltages.

Biography:

Mr. Jin San Kim is an undergraduate student at Jeju National University in Korea, and his research interests are semiconductor devices, programming and circuit design. Prof. Dr Woo Young Kim is an assistant professor at Jeju National University in Korea. His research fields include applications of ferroelectric polymer and graphene process.

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