

## Fabrication and Characterization of Ferroelectric-Fullerene Hybrid Film

Seong Min Kim<sup>1\*</sup>, Woo Young Kim<sup>1,2</sup>, Shenawar Ali Khan<sup>2</sup> and Sheik Abdur Rahman<sup>2</sup>

<sup>1</sup>Department of Electronic Engineering, Jeju National University, Republic of Korea

<sup>2</sup>Jeju National University, Republic of Korea

A fullerene film was formed on the ferroelectric thin film by vacuum evaporation. To measure the electrical properties, a metal was deposited and the polarization-voltage curve was measured. As a result, the overall hysteresis loops were very similar to the simple ferroelectric capacitors. However, the hysteresis curves showed very different characteristics depending on the polarity of the measured voltage. When a positive voltage was applied, the data was stored normally. In other words, almost the same polarization value as that of the ferroelectric capacitor was stored, whereas when the negative voltage was applied, it was found that the data was hardly stored. This means that the size of the depolarization field varies greatly depending on the applied voltage polarity. The depolarization field occurs when the ferroelectric capacitor is connected in series with the non-ferroelectric capacitor. From these measurement results, it was confirmed that the deposited fullerene film had an n-type semiconductor characteristic. It was found that the characteristics of the n - type semiconductor are represented even though the temperature of the substrate is maintained at room temperature during vacuum deposition.

### Biography:

Ms. S. M. Kim is an undergraduate student at Jeju National University in Korea, and her research interests are semiconductor memory devices. Mr. S. A. Khan and Mr. S. A. Rahman are graduate students in master course. Prof. Dr. W. Y. Kim is an assistant professor at Jeju National University in Korea since 2017. His research fields include applications of ferroelectric polymer and graphene process.