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Abstract

In this work, we investigated the phase transformation mechanism in HfO₂-based ferroelectric material (Zr doped HfO₂, Hf_{0.5}Zr_{0.5}O₂) during annealing while applying pulse voltage. After doing P-E measurement, we found that the remnant polarization increases after we applying pulse voltage. Then, we use XRD and XAS technics in NSRRC, TAIWAN, to do further study of phase transformation in our samples. After we applying pulse voltage, the non-centered symmetry phase (orthorhombic phase, Pca21, also known as ferroelectric phase) increase. Hence, the phase transform while applying pulse voltage during annealing. Then the remnant polarization improves with the O-phase increasing. Our results pave a way for research and development for increasing polarization in HfO₂-based ferroelectric materials.

Keywords –*Hf_{0.5}Zr_{0.5}O₂, XRD, EXAFS, ferroelectric material*