

12:00~12:30

Impacts of Nitridation on Ferroelectric HfZrO_2

Crystal Structures

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Abstract

In this work, we present preliminary results on N incorporation into $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ (HZO) using remote NH_3 plasma treatment on the top metal-oxide-semiconductor (MOS) capacitor. The indirect plasma treatment was used to change the bonding of HZO and favors no damages on the thin-films. Synchrotron radiation x-ray techniques provide a high-resolution spectrum for microstructures. X-ray diffraction (XRD) suggests that the crystallinity of HZO thin films varies with plasma treatment significantly. In addition, the deeper signals of structure can be detected by hard x-ray photoelectron spectroscopy (HAXPES). The information of electrical properties of HZO was studied by polarization – voltage (PV) loop.