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Dielectric and structural properties of $Hf_{1-x}Zr_xO_2$ thin film grown by pulsed laser deposition for ferroelectric oxide KYOUNGJUN LEE, TAEYOON LEE, JAESUNG SHIN, SEUNGCHUL CHAE, Seoul Natl Univ — Concerning ferroelectricity embedded in CMOS technology, research attention has been paid to the potential application of HfO_2 as a non-perovskite ferroelectric material. So far, HfO_2 has been considered as an alternative for the standard gate dielectric. Recently, HfO_2 demonstrated latent ferroelectricity with the typical capacitance-voltage hysteresis. In addition, the doped HfO_2 exhibited ferroelectric as well as antiferroelectric behavior. Both ferroelectric and antiferroelectric behavior of $Hf_{1-x}Zr_xO_2$ can be used as the memory device and energy harvest materials respectively. The ferroelectric behavior was observed in $Hf_{1-x}Zr_xO_2$ thin film on TiN electrode. On the other hand, it was reported that the ferroelectric behavior disappeared on Pt electrode because of its isotropic stain. In this presentation, we present the bottom electrode crystallinity dependence of ferroelectricity in $Hf_{1-x}Zr_xO_2$ thin films. We deposited $Hf_{1-x}Zr_xO_2$ on three distinct bottom electrodes, Pt(111), Pt(poly-crystalline) and ITO(111) to check strain induced ferroelectricity. Dielectric and structural properties of the $Hf_{1-x}Zr_xO_2$ thin films were investigated by P-E measurement and XRD.

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