



Supplementary Materials

Yttrium Doping Effects on Ferroelectricity and Electric Properties of As-deposited $\text{Hf}_{1-x}\text{Zr}_x\text{O}_2$ Thin Films via Atomic Layer DepositionYoukyoung Oh¹, Seung Won Lee¹, Jeong-Hun Choi¹, Hyo-Bae Kim^{1,*} and Ji-Hoon Ahn^{1,*}¹ Affiliation 1; Department of Materials Science and Chemical Engineering, Hanyang University, 55 Hanyangdaehak-ro, Sangnok-gu, Ansan, Gyeonggi-do, 15588 Republic of Korea* Correspondence: hbkim9510@hanyang.ac.kr (H.-B.K); ajh1820@hanyang.ac.kr (J.-H.A.)

1. XPS studies

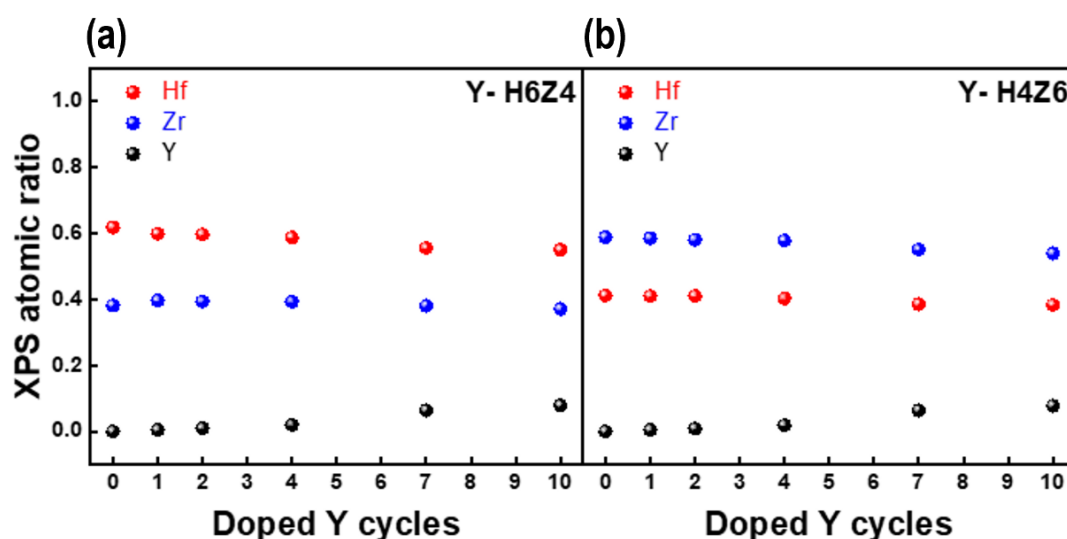


Figure S1. X-ray photoelectron spectroscopy (XPS) atomic ratio of Hf, Zr and Y in (a) as-deposited Y-H6Z4 thin films (b) as-deposited Y-H4Z6 thin films according to Y-doping cycle.

2. XRD studies

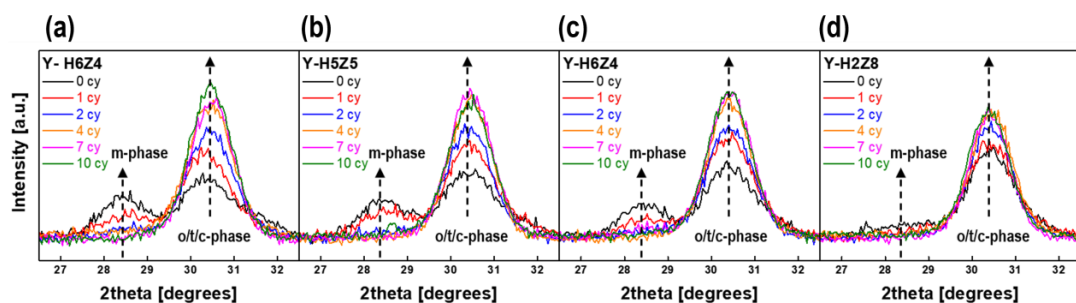


Figure S2. Grazing-angle incidence X-ray diffraction (GI-XRD) spectra of (a) as-deposited Y-H6Z4 thin films, (b) as-deposited Y-H5Z5 thin films, (c) as-deposited Y-H4Z6 thin films and (d) as-deposited Y-H2Z8 thin films according to Y-doping cycle.

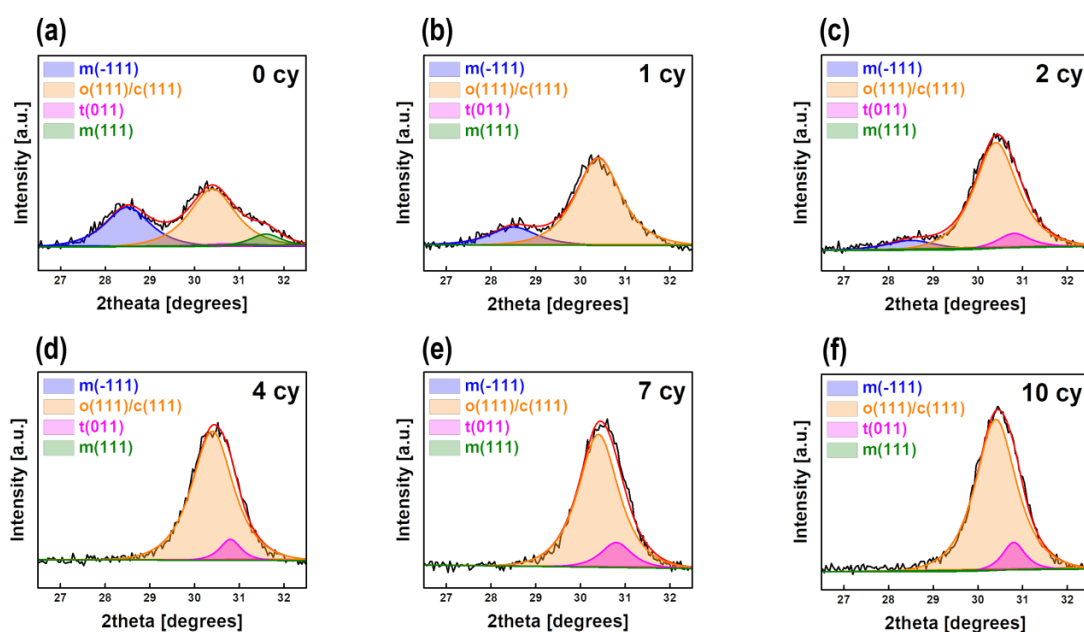


Figure S3. Peak deconvolution of grazing-angle incidence X-ray diffraction (GI-XRD) spectra of as-deposited Y-H6Z4 thin films with Y-doping cycle of (a) 0, (b) 1, (c) 2, (d) 4, (e) 7, (f) 10.