Influence of oxygen source on ferroelectricity of ALD-$Hf_{0.5}Zr_{0.5}O_2$ thin films with and without capping layer

Hye Ryeon Park[1], Seongbin Park[2], Jong Mook Kang[1], Jin-Hyun Kim[3], Yong Chan Jung[3], Jiyoung Kim[3,*], and Si Joon Kim[1,2,*]

[1]*Department of BIT Medical Convergence, Kangwon National University,*
1 Gangwondaehakgil, Chuncheon-si, gangwon-do 24341, Republic of Korea
[2]*Department of Electrical and Electronics Engineering, Kangwon National University,*
1 Gangwondaehakgil, Chuncheon-si, Gangwon-do 24341, Republic of Korea
[3]*Department of Materials Science and Engineering, The University of Texas at Dallas,*
800 West Campbell Road, Richardson, Texas 75080, United States
E-mail: jiyoung.kim@utdallas.edu and sijoon.kim@kangwon.ac.kr

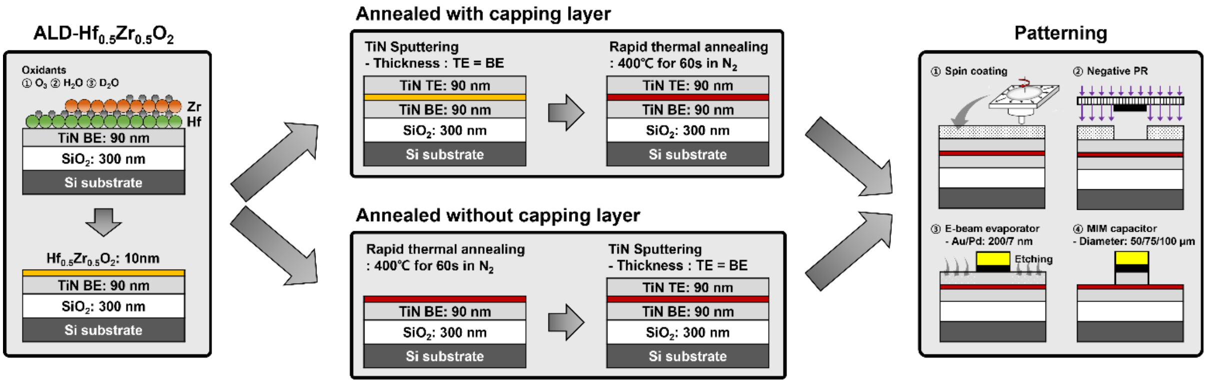

Figure 1. A schematic illustration of the two fabrication procedures for TiN/HZO/TiN capacitors annealed at 400°C before and after top electrode deposition.

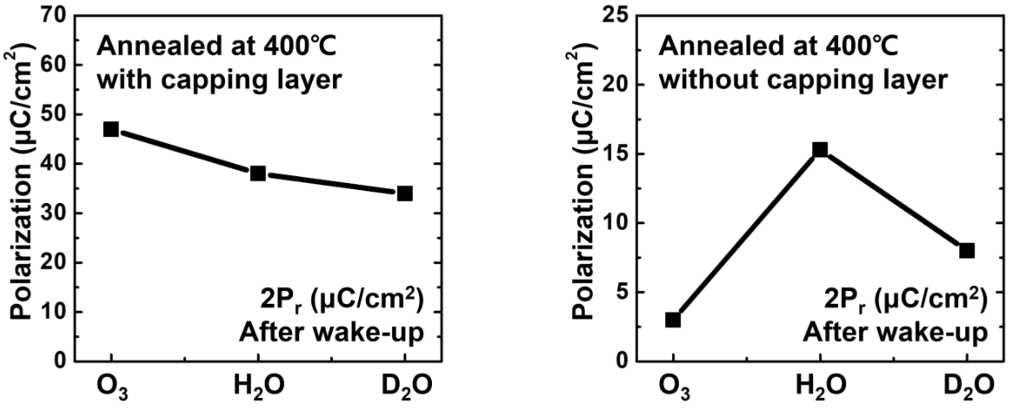

Figure 2. Comparison of the $2P_r$ values of 10-nm-thick O_3-, H_2O-, and D_2O-based HZO samples annealed at 400°C with and without a capping layer.