

## Cocktail precursor FER-1

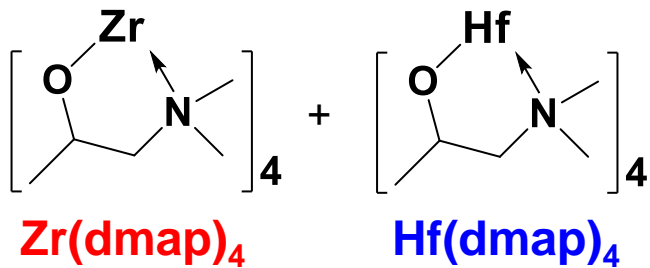


Fig. 1 Chemical structure of FER-1

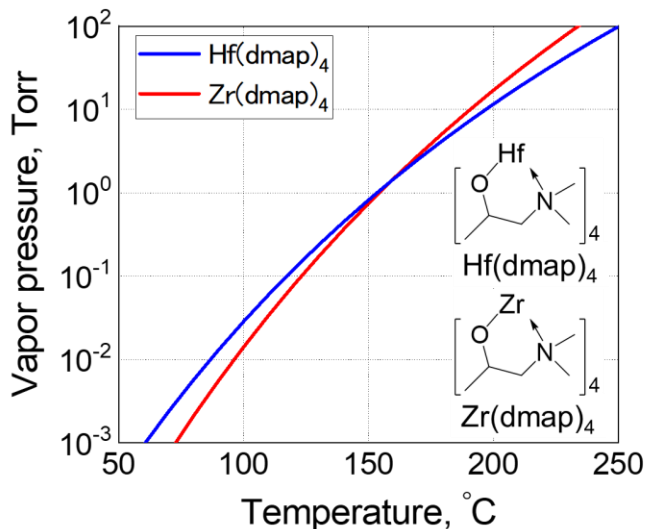


Fig. 2 Variation of the vapor pressure of Hf(dmap)<sub>4</sub> and Zr(dmap)<sub>4</sub> as a function of temperature.

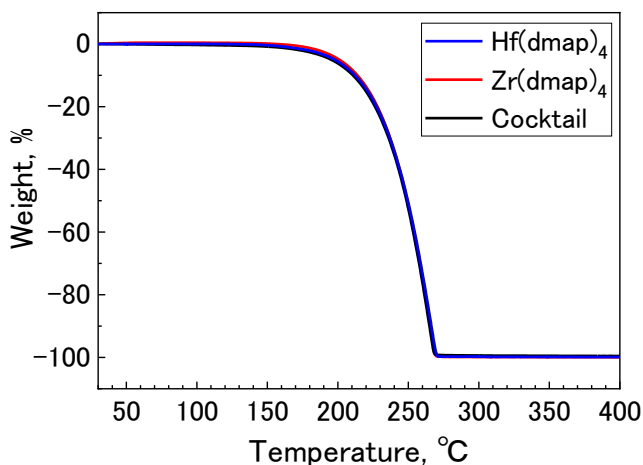


Fig. 3 TGA curve of Hf(damp)<sub>4</sub>, Zr(dmap)<sub>4</sub>, and the cocktail precursor at 760 Torr.

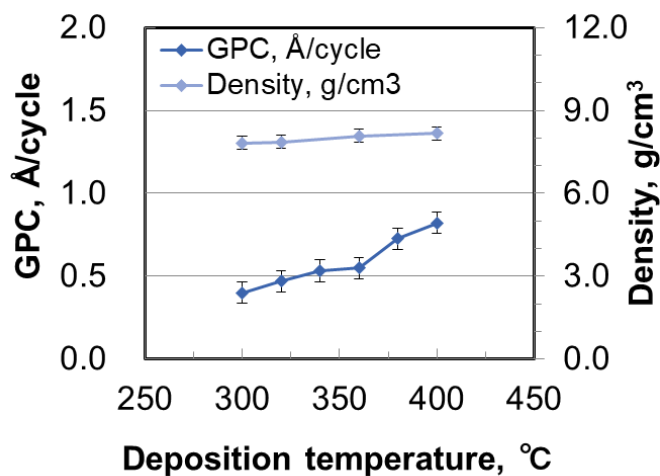


Fig. 4 Temperature dependence of the growth rate and density of the cocktail precursor using O<sub>3</sub> as a co-reactant.

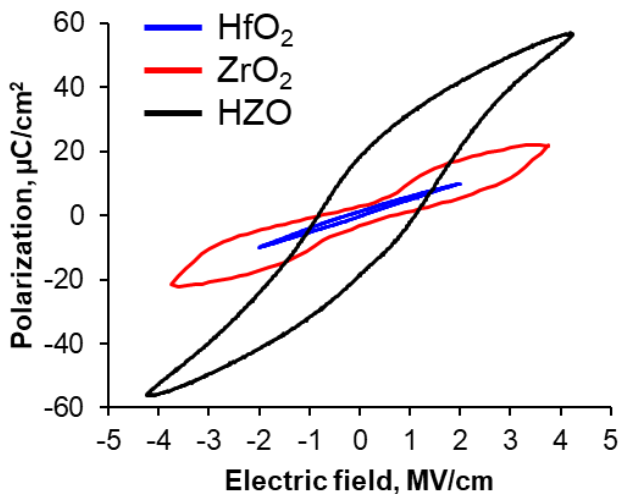


Fig. 5 Polarization versus electric field ( $P-E$ ) curves for the HfO<sub>2</sub>, ZrO<sub>2</sub>, and HZO films.

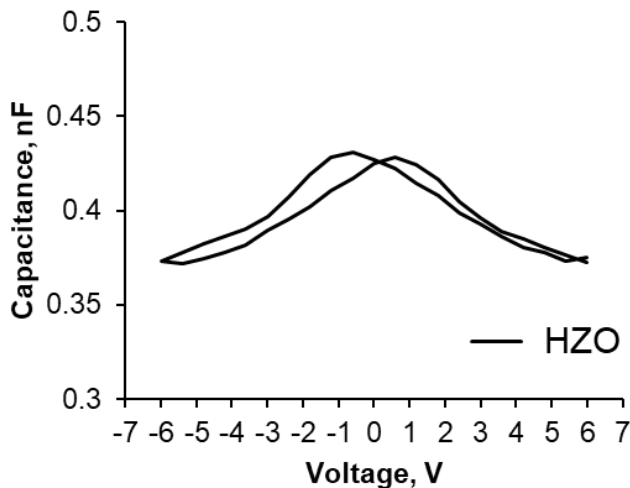


Fig. 6 C-V curves of the TiN/HZO/TiN/p-Si MIM capacitor at a frequency of 100 kHz.