



**Figure 1.** Remnant polarization and onset of fatigue for halide vs MO based precursors

**Table 1.** Comparison of ferroelectric properties of different flavors of HZO

Metric	HZO (halide)	HZO (MO)	La:HZO	La:HZO + Interface engineering
2Pr ( $\mu\text{C}/\text{cm}^2$ )	22	25	27	63
2Ec (MV/cm)	1.8	1.5	1.5	1.7
Endurance (cyc)	$\sim 10^5$	$\sim 10^8$	$\sim 10^9$	$\sim 10^9$
Wake up (cyc @80% max 2Pr)	$\sim 10^2$	$\sim 10^5$	$\sim 10^5$	$\sim 10^3$