Understanding ferroelectric phase formation in doped HfO₂ thin films based on classical nucleation theory

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Figure S1. Changes in activation energy divided by kT at various temperature for phase transition from amorphous phase to x-phase for doped HfO_2 films with Y content of (a) 0, (b) 1.04, (c) 2.08, (d) 3.125, (e) 4.16, (f) 5.20, (g) 6.25, and (h) 7.29 cat%. x can be tetragonal (t), monoclinic (m), and orthorhombic (o) phase.



Figure S2. Cha Figure 3. Changes in activation energy divided by kT at various temperature for phase transition from x-phase to y-phase for doped HfO2 films with Y content of (a) 0, (b) 1.04, (c) 2.08, (d) 3.125, (e) 4.16, (f) 5.20, (g) 6.25, and (h) 7.29 cat%. x and y can be tetragonal (t), monoclinic (m), and orthorhombic (o) phase.