

Ratio [Al ₂ O ₃ :HfO ₂]	T _{annealing}		
	600°C	750°C	1000°C
[1:10]	✓	✓	✗
[1:15]	✓	✓	✗
[1:20]	✓	✓	✗
[5:50]	✓	✓	✗

Fig.1: Summary table of crystallinity results according to annealing temperature and doping in Al

Thickness of lanthanum (Å)	T _{annealing}		
	600°C	750°C	1000°C
3,3	✓	✓	~
6,6	✓	✓	✗
10	✓	~	✗

Fig.2: Summary table of crystallinity results according to annealing temperature and doping in La

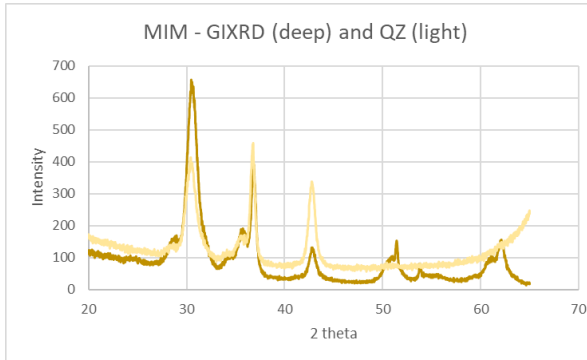


Fig.3: Measure of crystal phase of MIM (TiN/HfO₂:SiO₂/TiN) with GIXRD (deep line) and QZ-XRD (light line)

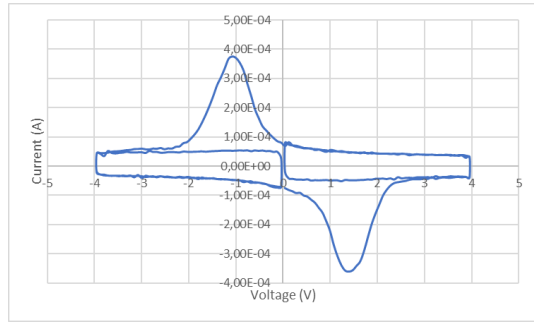


Fig.4: Example of PUND measures on a MIM (TiN/HfO₂:SiO₂/TiN) after 10⁵ cycles at ±4V

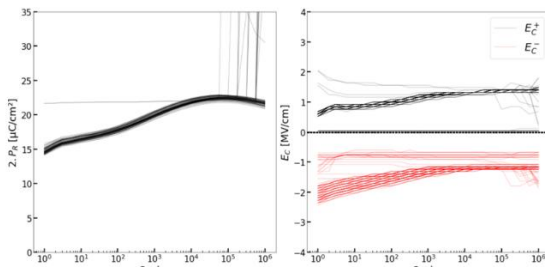


Fig.5: Measures of $2P_R$ and E_C on several MIM (TiN/HfO₂:SiO₂/TiN)

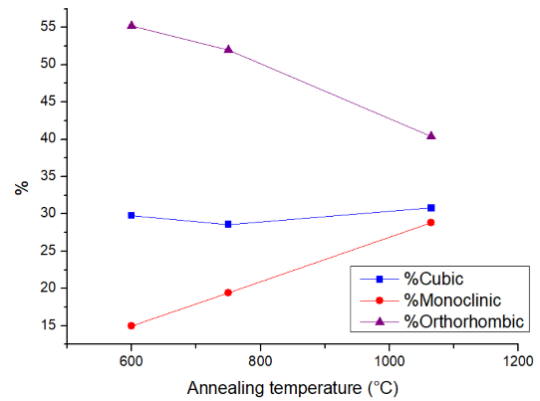


Fig.6: MAUD results of fraction phases percentage of La doped HfO₂ depending on annealing temperature.