Supplementary Information (SI) for Materials Advances.

Synthesis of rhombohedral $Hf_{0.5}Zr_{0.5}O_2$ and analysis by x-ray diffraction through dynamical diffraction simulations

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Table S1: Most important parameters for the single layer simulations.

	Layer thickness t (Å)	RMS Roughness σ (nm)	Debye-Waller factor W_h
STO	-	1.0	0.60
LSMO	194	2.0	0.18
HZO	105	3.0	0.50

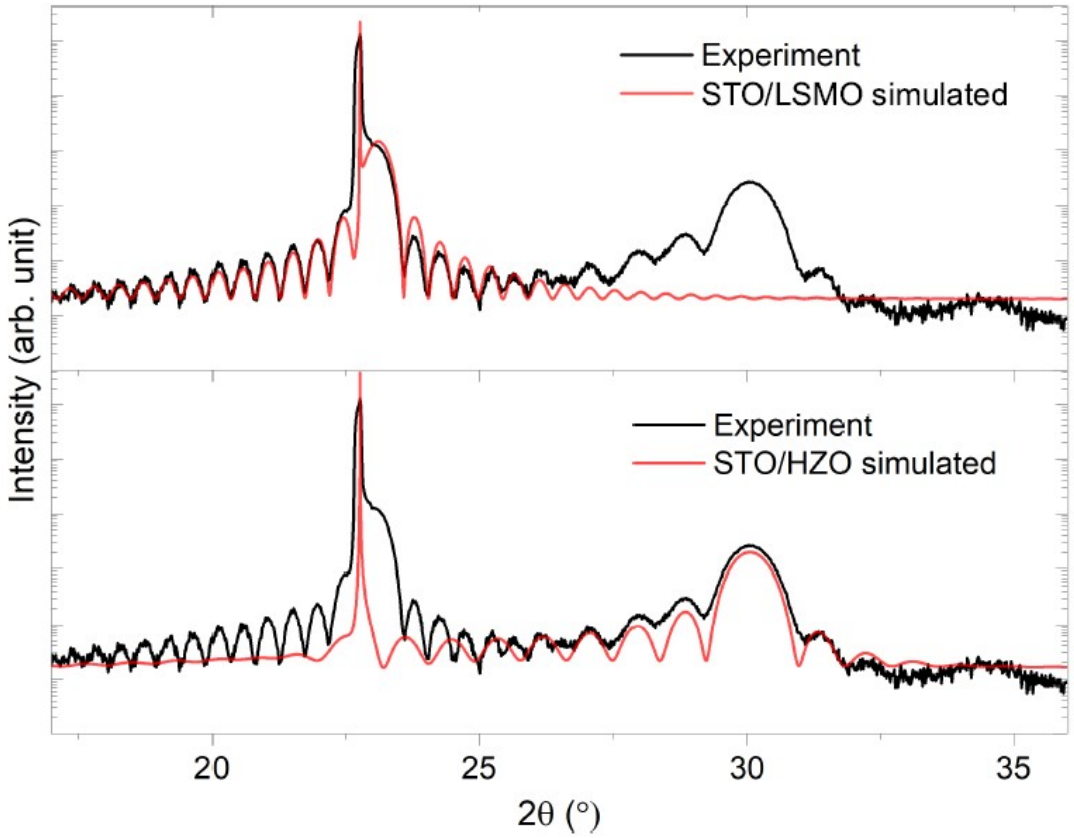

Figure S1: Dynamical XRD simulations of the LSMO and HZO layer separately. Both layers are simulated as being strained on an STO substrate.

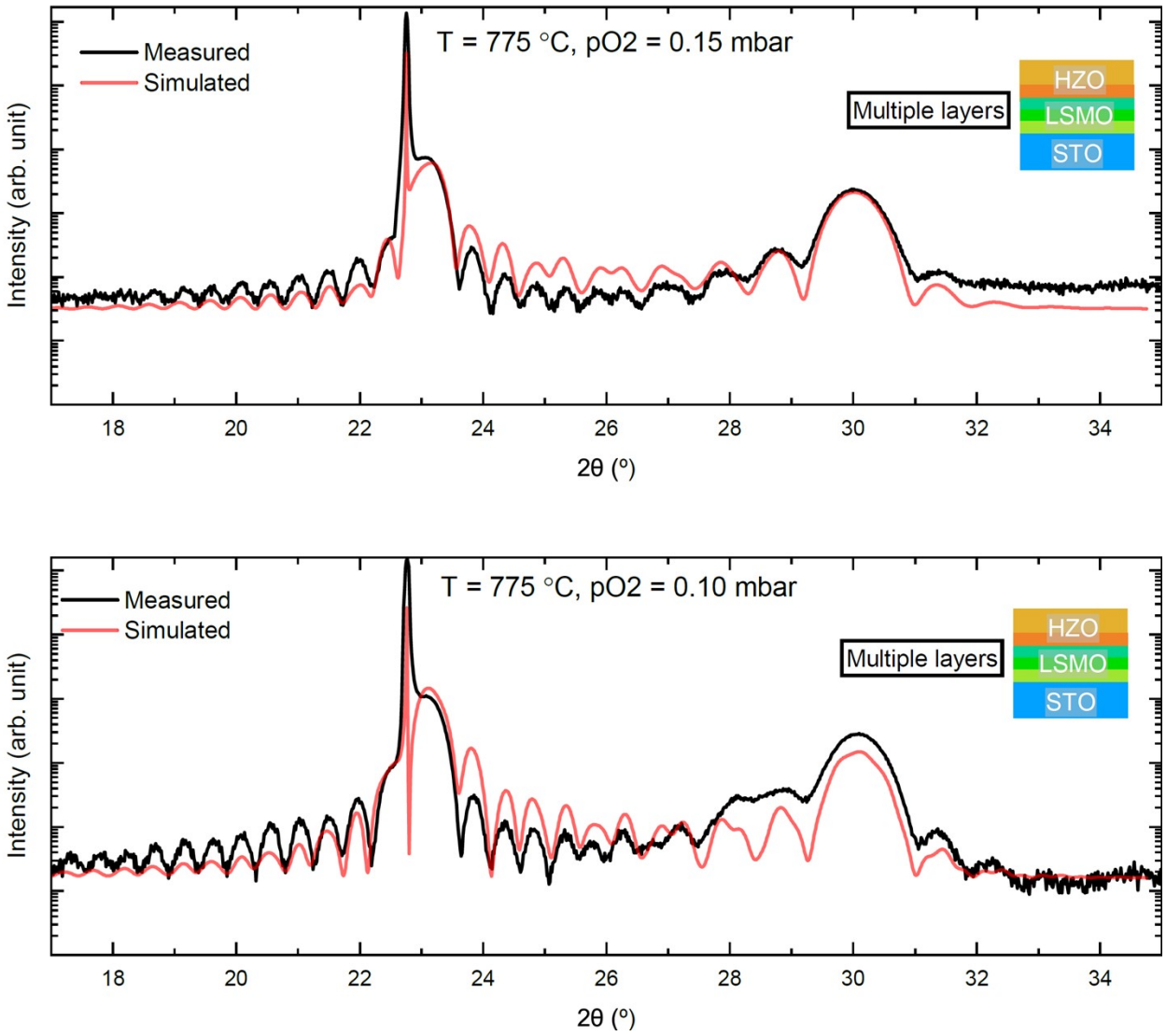

Figure S2: Dynamical XRD simulations for samples with different growth conditions. Both samples are simulated by splitting up the LSMO and HZO layers into multiple sublayers.