

Fig 1: Schematic diagram of the fabricated MOSCAP structure

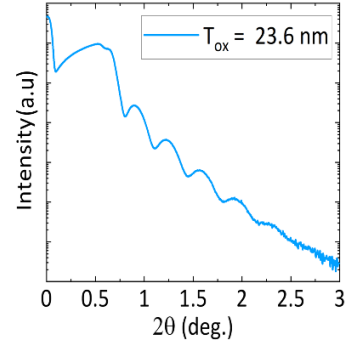


Fig 2: (a) Xray reflectivity plot to measure thickness of the in-situ MOCVD grown Al₂O₃

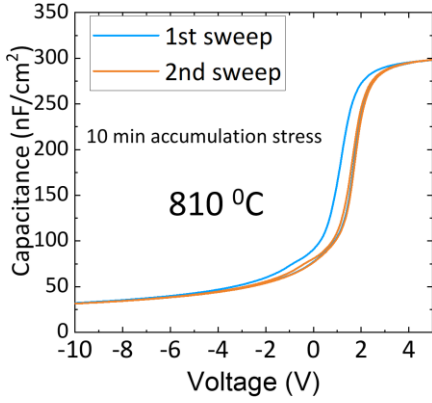


Fig 3: First & second sweep of the CV hysteresis plots for the MOSCAP

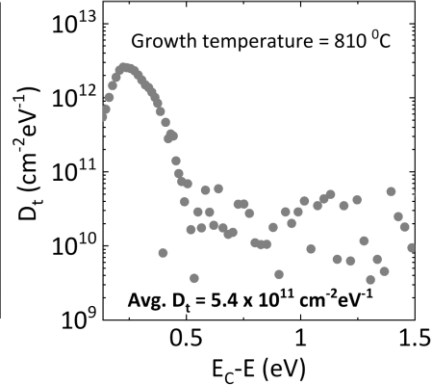
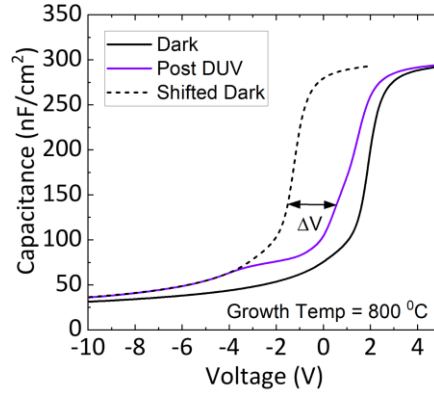


Fig 4: (a) UV assisted CV characteristics and (b) trap density vs energy distribution plots for the MOSCAP

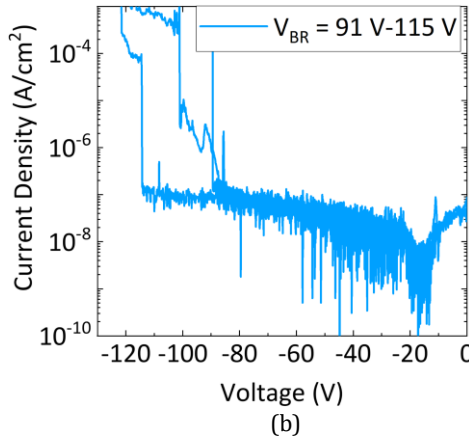
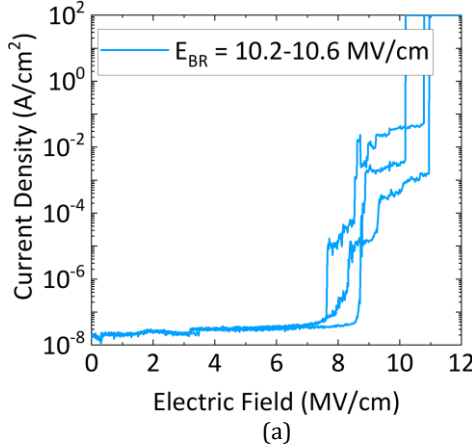


Fig 5: (a) Forward current density vs E_{ox} and (b) reverse current density vs voltage characteristics of the MOSCAP

TABLE: Summary of the extracted trap densities

ΔQ_{T1}	ΔQ_{T2}	ΔQ_s	D_t
$-8.3 \times 10^{11} \text{ cm}^{-2}$	$-1.5 \times 10^{11} \text{ cm}^{-2}$	$-7.7 \times 10^{11} \text{ cm}^{-2}$	$5.4 \times 10^{11} \text{ cm}^{-2}\text{eV}^{-1}$

Where,

ΔQ_{T1} = Amount Fast and initially empty slow near interface traps.

ΔQ_{T2} = Amount of Fast near interface traps.

ΔQ_s = Amount of charge that is injected and trapped in the MOSCAP due to the accumulation stress.

D_t = Density of all the shallow and deep (initially filled and empty) interface traps + bulk oxide hole traps.