

Electronic Supplementary Information

Quenching of Persistent Photocurrent in Oxide UV Photodetector

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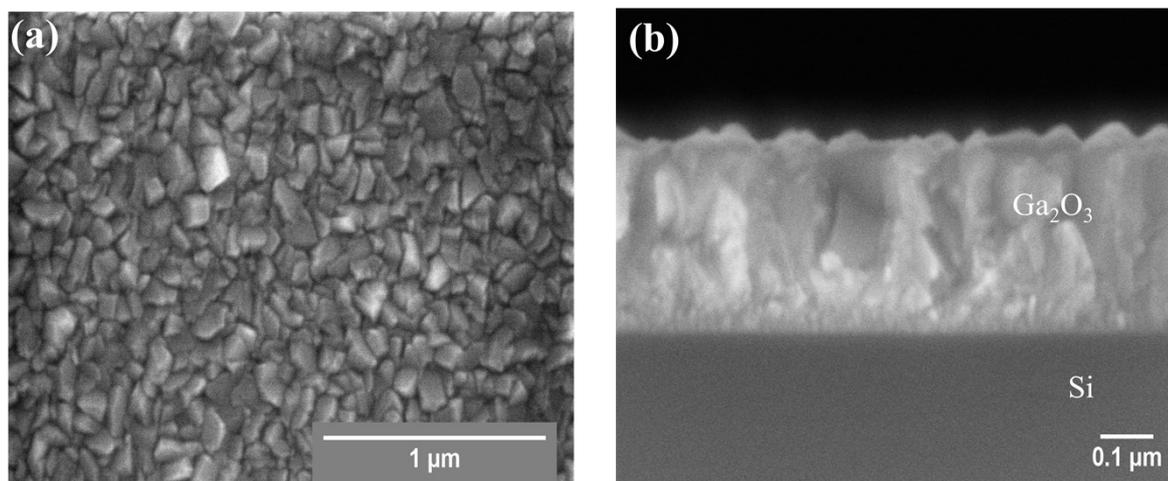


Figure S1 a) The top-view and b) cross-section SEM images of Ga₂O₃ thin film.

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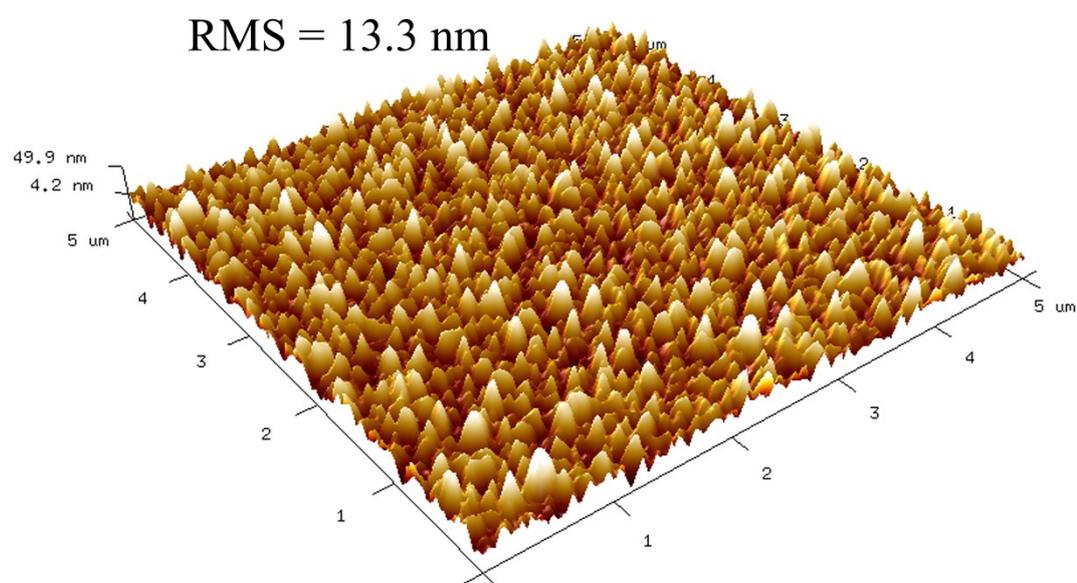


Figure S2 The atomic force microscopy of Ga_2O_3 . The root-mean-square surface roughness is 13.3 nm.

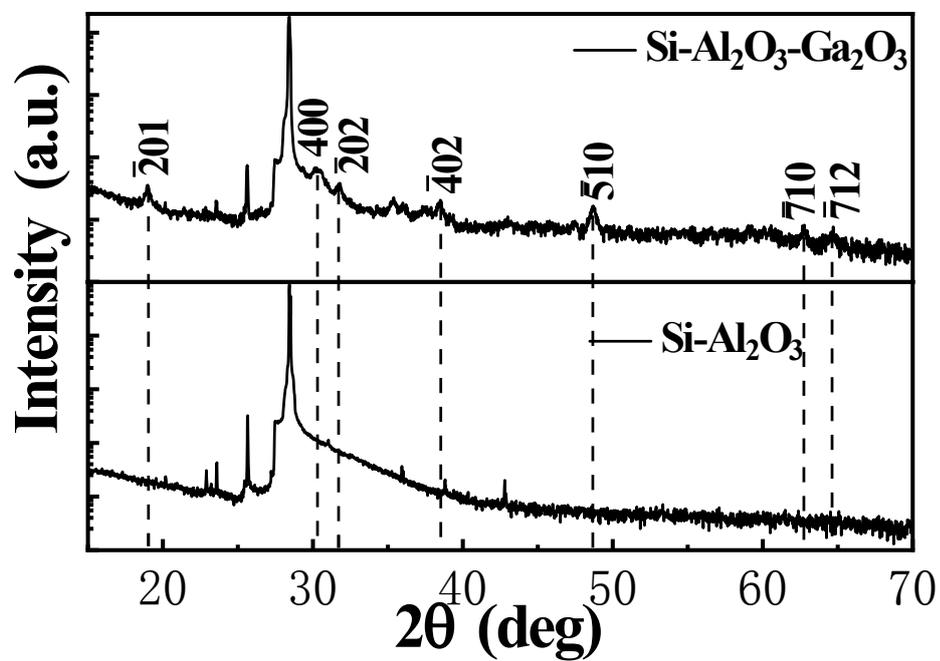


Figure S3 The XRD pattern of Ga₂O₃ with logarithmic coordinates.

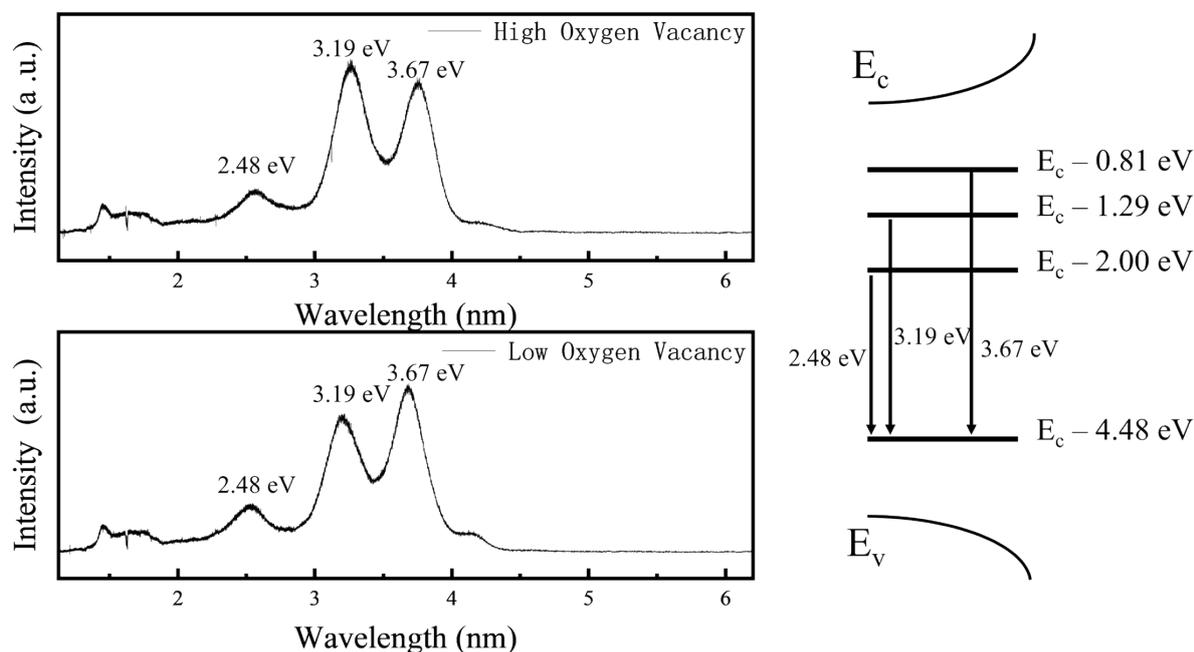


Figure S4 The room-temperature photoluminescence spectra of high- and low-oxygen vacancy. A 193-nm laser was used as the excitation source. The position of band edges and defect level is shown on the right.

The main PL peaks correspond with emissions between defect levels in previous works.¹ The states of $E_c - 0.81$ eV and $E_c - 4.48$ eV are related to the extrinsic impurities and change less.² The states of $E_c - 1.29$ eV is mostly related to the oxygen vacancy and is regarded to results in the 3.19 eV-PL peak.³⁻⁴ The PL spectra indicate the reduction of V_O density in low V_O density materials.

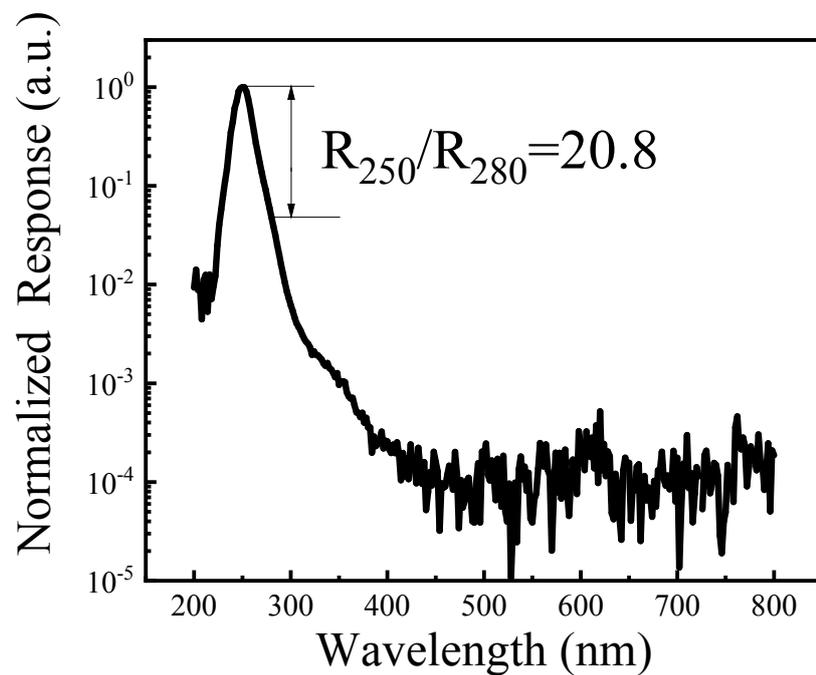


Figure S5 The spectral response of Si/Al₂O₃/Ga₂O₃ device. The -3 dB cutoff is 260 nm.

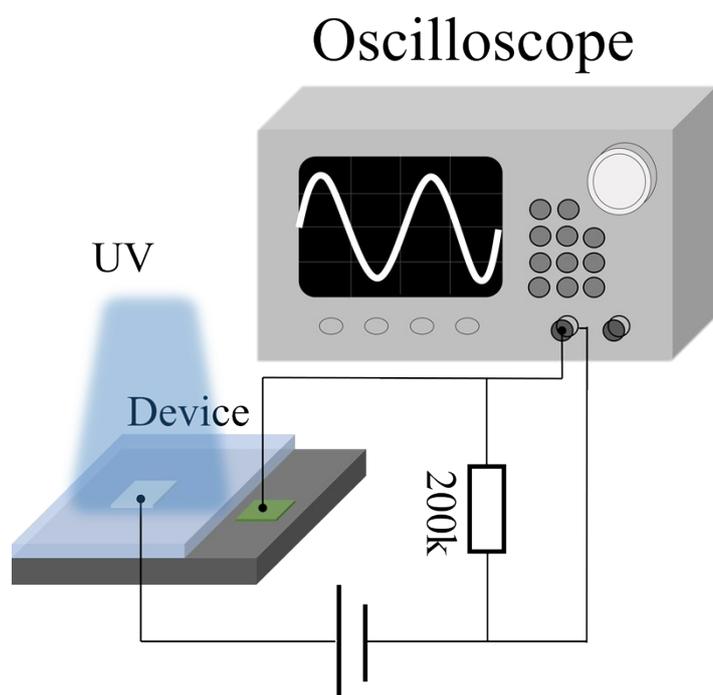


Figure S6 The configuration of reset-speed measurement.

References

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