

Supplementary Information

Achieving high response of perovskite-based (MAPbI_3) ammonia gas sensors at room temperature via light enhancement.

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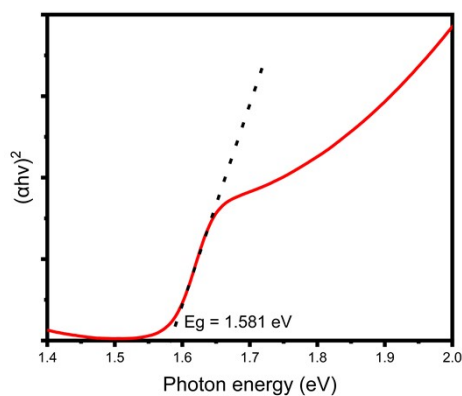


Figure. S1. Tauc plot of a typical MAPbI_3 film deposited on an ITO glass substrate.

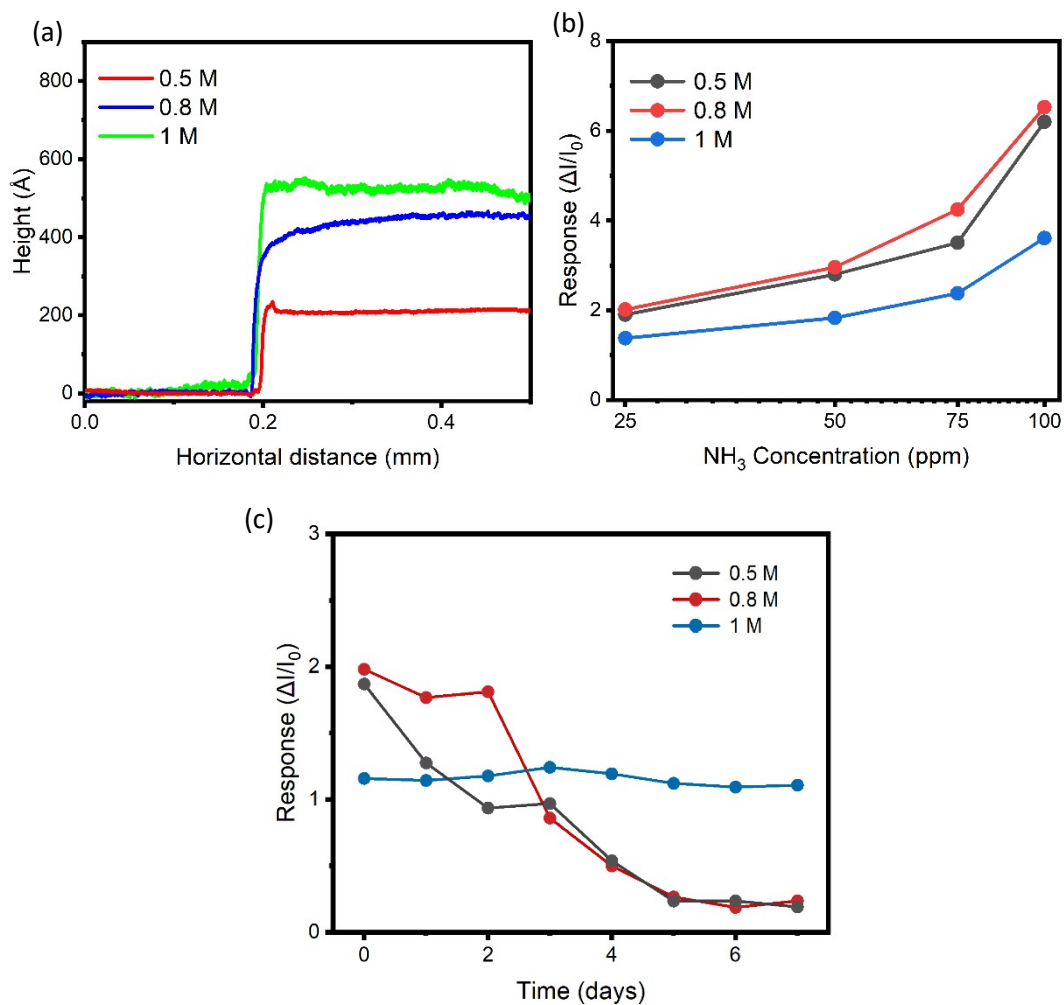


Figure S2. (a) Thickness of MAPbI₃ films prepared with varying concentrations of MAPbI₃ precursor solution, measured using a Bruker DektakXT profilometer. (b) Response and (c) long-term stability of gas sensors fabricated using different concentrations of MAPbI₃ precursor solution under exposure to 25 ppm NH₃.

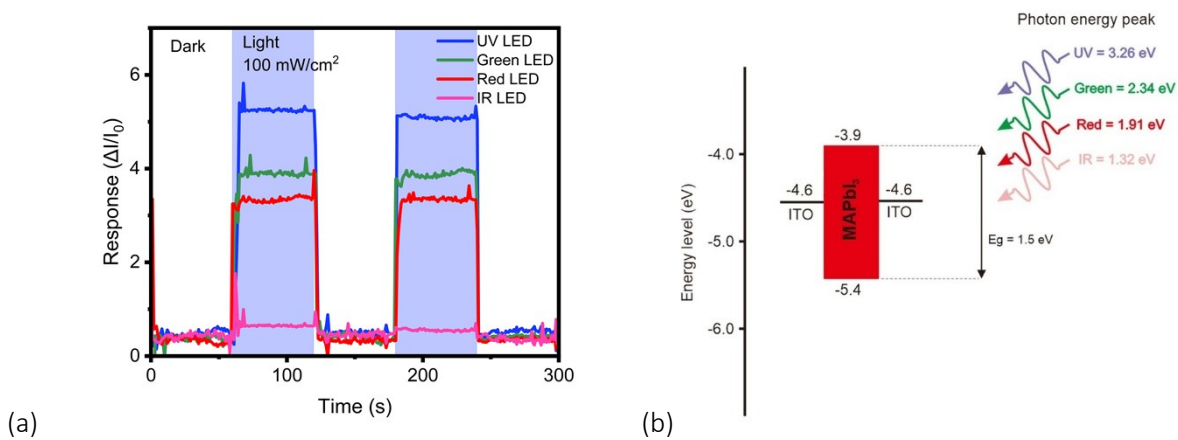


Figure. S3. (a) Dynamic response of the MAPbI₃ gas sensor under different illumination conditions. (b) Band energy levels of the MAPbI₃ film and the photon energy peak of the LED (calculated using the energy equation $E = hc/\lambda$, where λ is the LED emission peak).

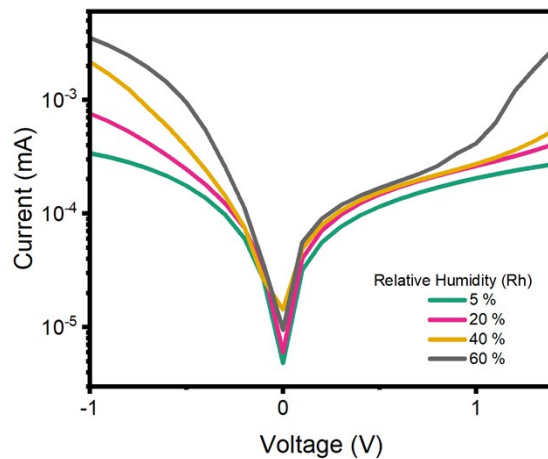


Figure. S4. I-V curves of the MAPbI₃ gas sensor under dark conditions at various relative humidity levels.

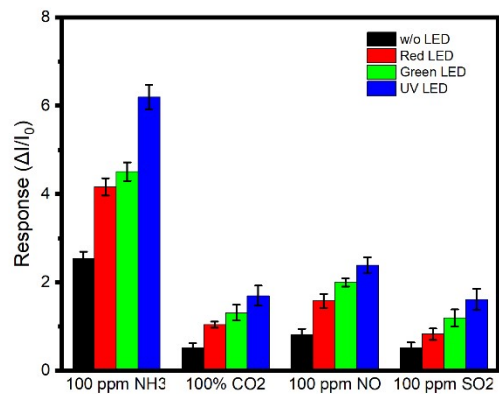


Figure. S5. Selectivity response of the MAPbI₃ gas sensor to 100 ppm of various gases under 100 mW/cm² light illumination with an applied bias of 1.5 V.

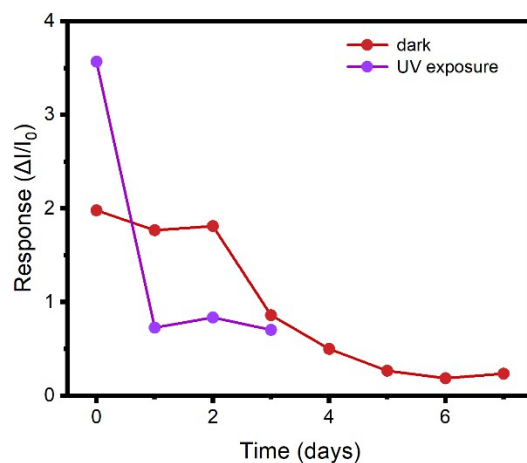


Figure. S6. Long-term stability of the MAPbI₃ gas sensor under 100 ppm NH₃ in the dark and with 100 mW/cm² UV light illumination.