Figure S1  The cross-section schematic drawing of the detector.

Figure S2  The thermal distribution of the detector surface when $V_H=3.7$ V.
Figure S3  UVC light source: I-V, I-LOP curve and light spectrum.
Figure S4  UVA light source: I-V, I-LOP curve and light spectrum.

\[
\lambda_p = 395.1 \text{ nm} \\
\lambda_d = 11 \text{ nm}
\]
Figure S5  An example illuminates the MHR process before and in measurement.