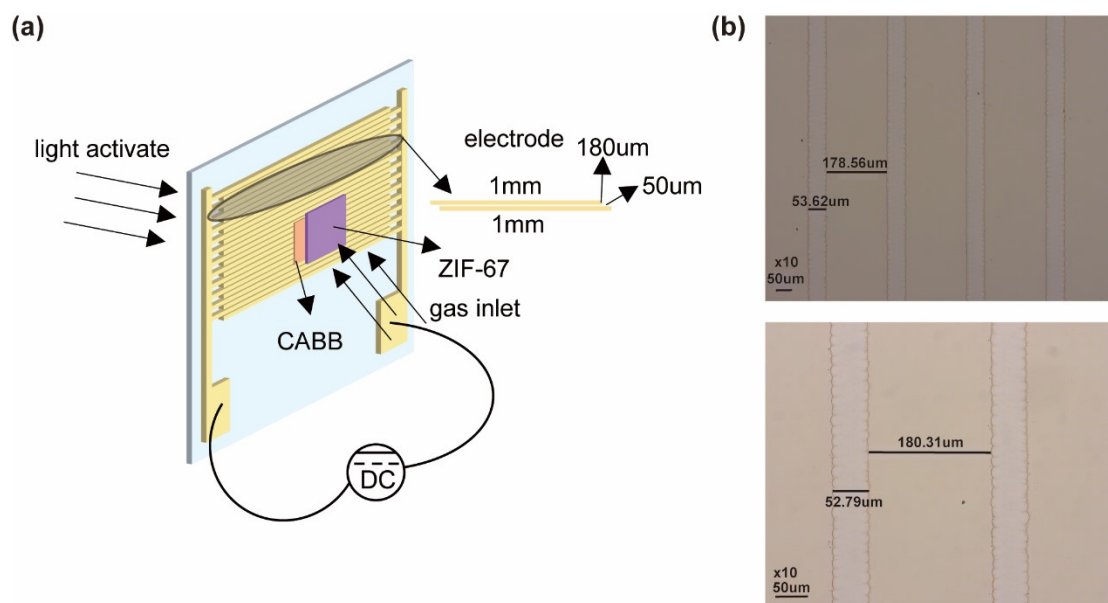


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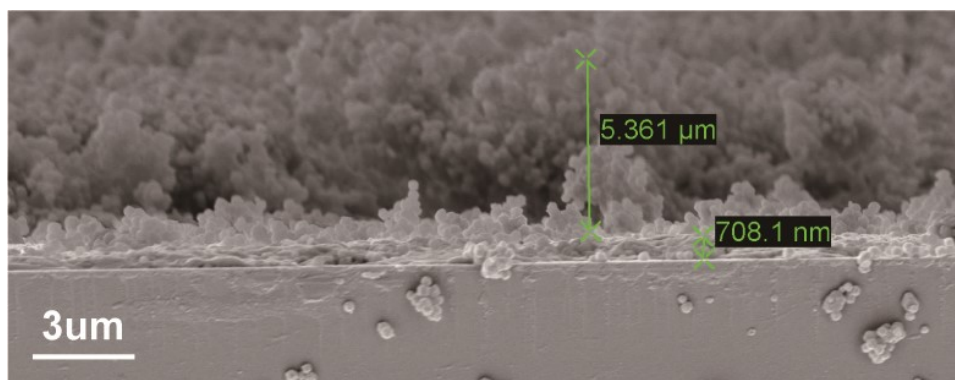
Supporting Information



2

3 **Figure S1.** (a) Electrode Structure. (b) Microscope image of the electrode.

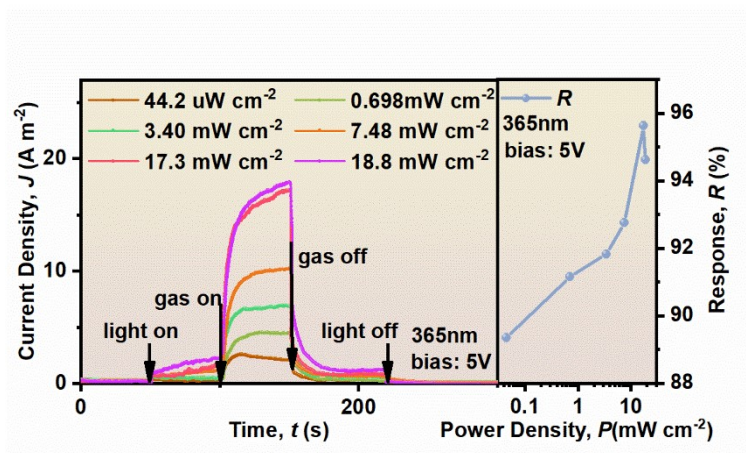
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6 **Figure S2.** Cross-sectional SEM picture of the device.

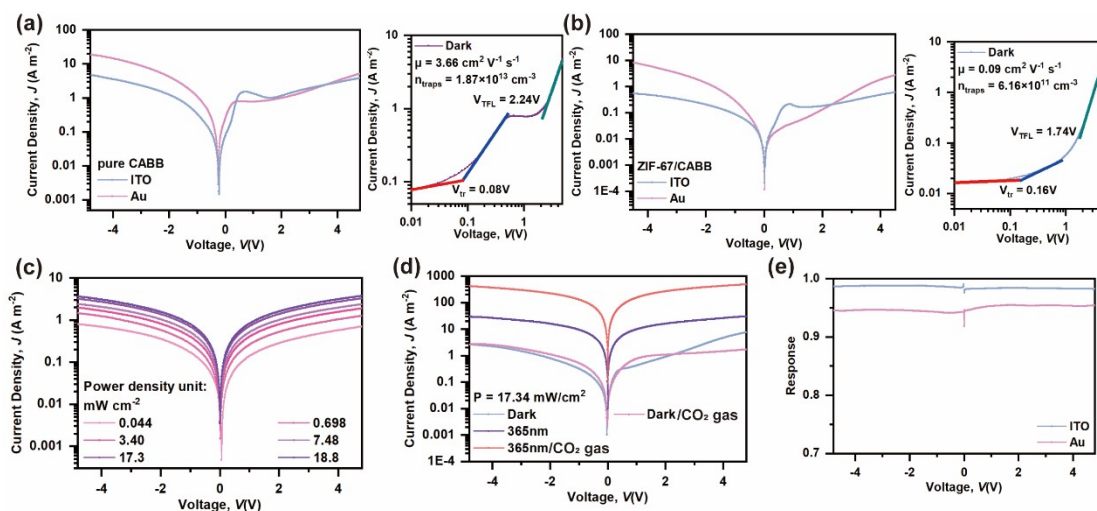
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8

1 **Figure S3.** Gas response of ZIF-67/CABB heterojunction under different light power density. The
 2 voltage bias is 5V and the wavelength is 365nm. The CO₂ concentration is 14000ppm.

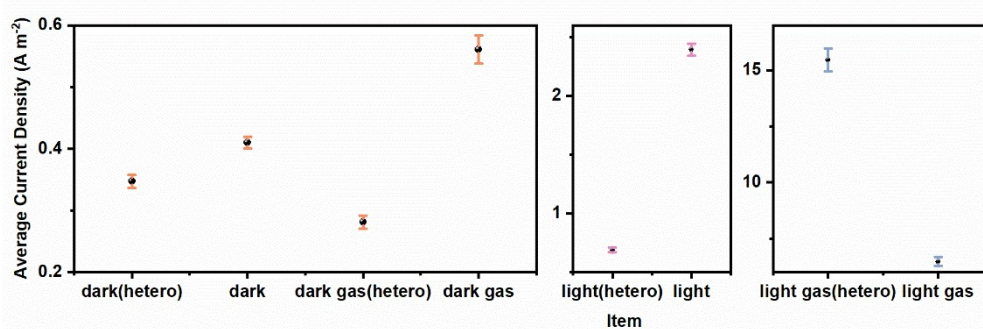
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5 **Figure S4.** (a₁), (b₁) J-V symmetry analysis of the (a₁) CABB device and (b₁) ZIF-67/CABB device,
 6 with ITO and Au electrode. SCLC characterization of (a₂) pure CABB and (b₂) heterojunction with
 7 Au electrode. (c) J-V curves of the heterojunction made by ITO electrode with different incident
 8 power density. (d) The gas current density (light, dark) and air current density (light, dark) of ZIF-
 9 67/CABB tested by Au electrode. (e) Response of the heterojunction calculated by J-V curves with
 10 ITO and Au electrode.

11

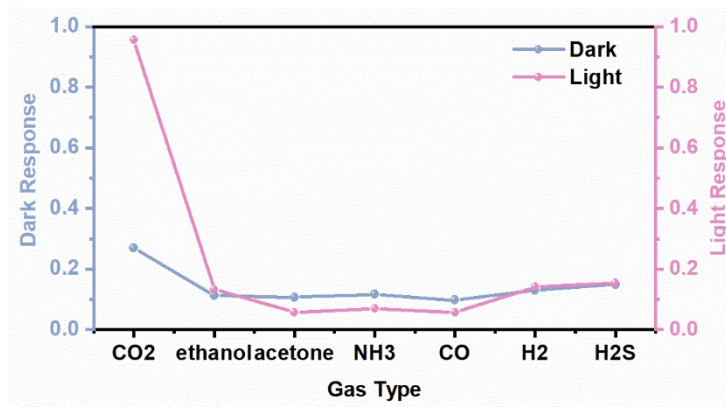


12

13 **Figure S5** Device-to-device statistical error bars of the current density tested by 5 ZIF-67/CABB
 14 heterojunction samples. Where the voltage bias is 5V. Light wavelength is 365nm, light power
 15 density is 17.34 mW cm⁻², gas concentration is 14000ppm.

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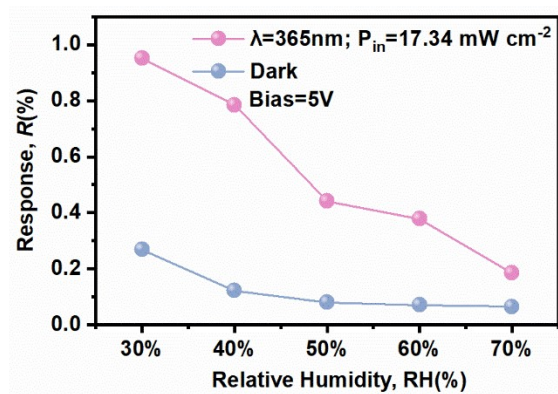
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1

2 **Figure S6.** The selectivity of ZIF-67/CABB heterojunction samples under dark or light condition.
 3 The light condition is wavelength of 365nm and incident power density of 17.34 mW cm⁻². Where
 4 CO₂ is 14000ppm, ethanol is 200ppm, H₂S is 100ppm, and other gases are 1000ppm.

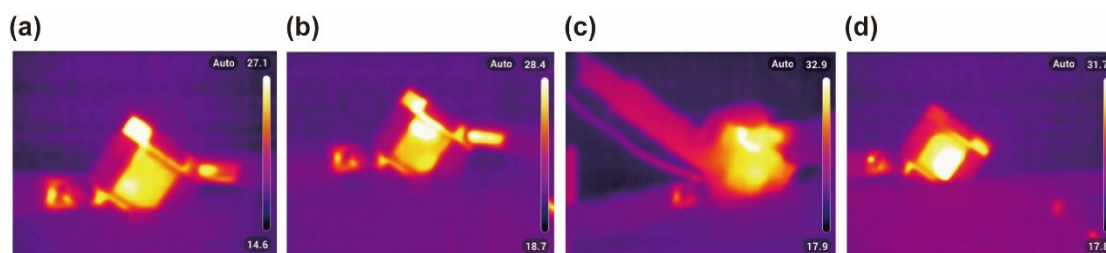
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6

7 **Figure S7.** The humidity dependence of ZIF-67/CABB heterojunction samples under dark or light
 8 condition. The light condition is wavelength of 365nm and incident power density of 17.34 mW
 9 cm⁻².

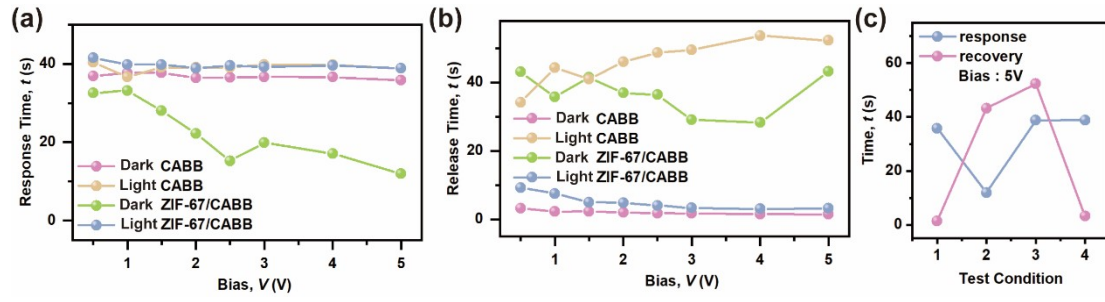
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12 **Figure S8.** Device temperature at (a) un-work state, (b) 5V bias at dark condition for 30min, (c) 5V
 13 bias with UV light for 30min, (d) un-work state after working under 5V bias with UV light for
 14 30min.

15



1

2 **Figure S9.** Time fitting is obtained by time change between 10% to 90% current density or 90% to
 3 10% current density. (a) Device response time. (b) Device recovery time. (c) Response/Recovery
 4 time at 5V bias and Dark/Light CABB and ZIF-67/CABB heterojunction.

5