sensors

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Supplementary Materials

Development of High-Performance Ethanol Gas Sensors Based on La_2O_3 Nanoparticles-Embedded Porous SnO_2 Nanofibers

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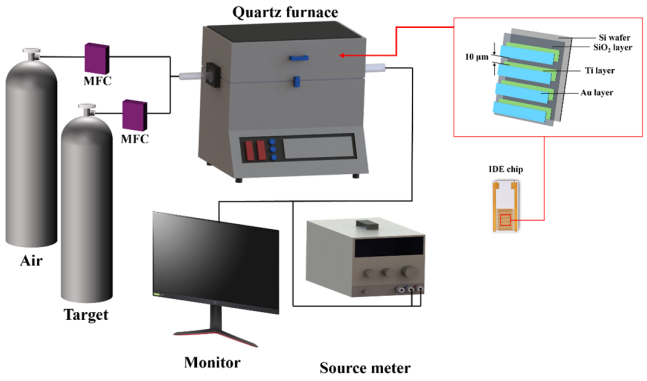


Figure S1. Schematic diagram of homemade gas sensing system.

To thoroughly investigate the sensor's response under varying relative humidity conditions, we designed a specialized system that integrates a Mass Flow Controller (MFC) with the sensing chamber. This setup enables precise control over both humidity levels and gas concentrations. The system includes four gas supply lines connected to the MFC for gas concentration regulation, a heated reservoir to adjust humidity, and a gas humidity sensor from S+S Regeltechnik. Among these, Line 5 introduces the target gas, while Lines 3 and 4 supply dry air. Line 1 is connected to the heated reservoir, with one end submerged in water and the other above it, allowing humid air to exit through Line 2. By merging Lines 2 and 3 under MFC regulation, a continuous flow of air with a set humidity is generated through the combination of dry and humid air. Line 4 is then integrated to adjust the airflow velocity, ensuring a stable output of air with the desired concentration and humidity. Finally, the mixed gas is directed through Line 5 to the sensing chamber (Line 6). Before entering the chamber, the gas's humidity and concentration are measured by the humidity sensor, providing real-time monitoring of the test gas properties.

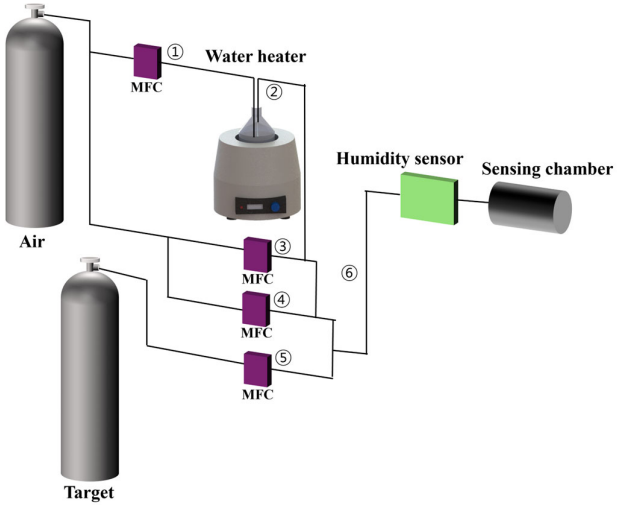


Figure S2. Relative humidity control system.

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