

Construction of LaF₃ QDs-modified SnS₂ nanorod composites for ultrasensitive detection of H₂S

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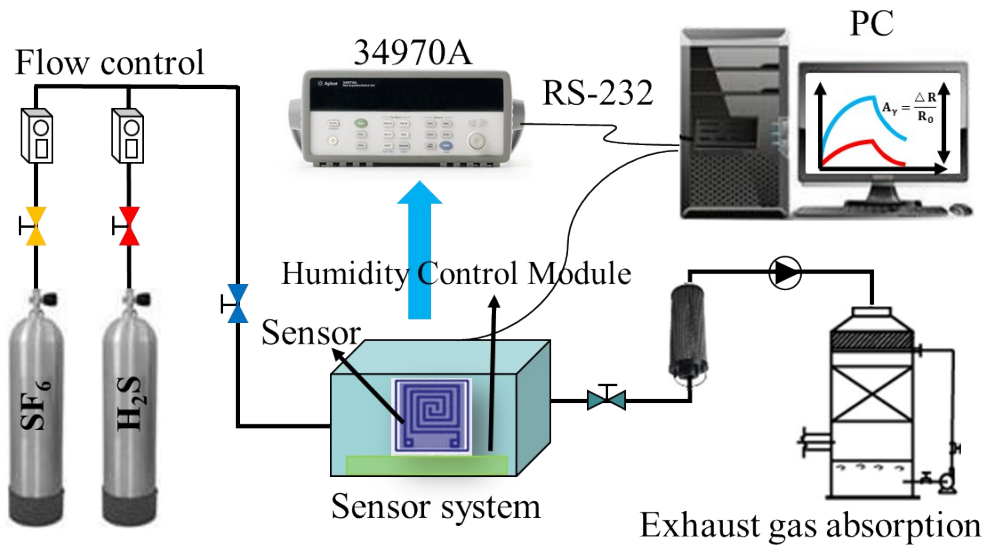


Fig. S1. Dynamic air distribution test system.

In this paper, a dynamic gas distribution device is used for gas mixing settings, as shown in Fig. S1. A gas flow valve is used to control the flow rate of the gas to achieve different concentration ratios of the gas. 34970A is used to collect the digital signal from the sensor test system. This device is equipped with an exhaust gas absorption device, which can prevent toxic and harmful gases from being released into the air. The humidity influence experiment involves controlling the humidity environment in the test system through the humidity control module. The humidity influence experiment's goal is to expose the target gas to various humidity environments in order to measure the sensor's response and observe the change in response to determine the influence of humidity on the sensor.

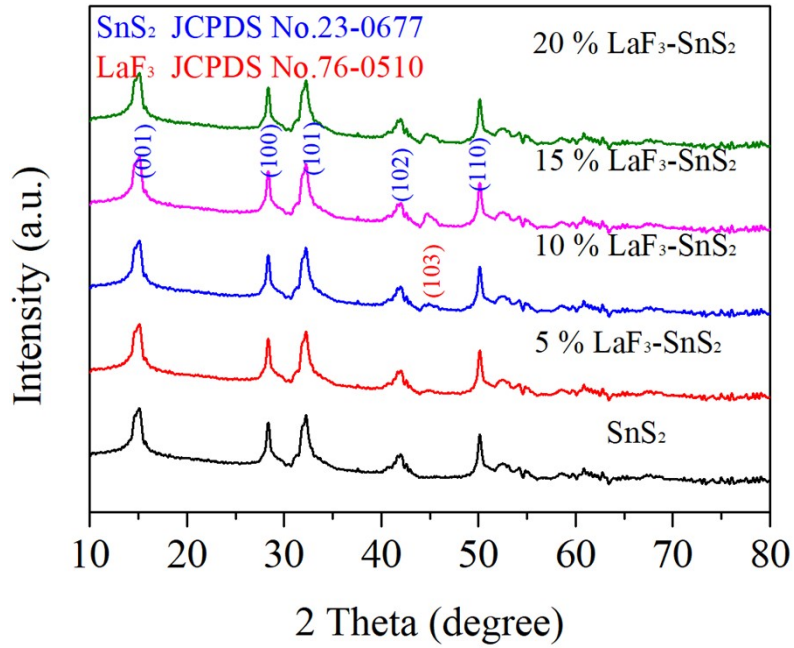


Fig. S2. The XRD characterization of SnS₂ nanorods modified with different LaF₃ QDs.

The XRD characterization of LaF₃ QDs modified SnS₂ is shown in Fig. 2. After analyzing the XRD pattern, it can be known that the standard card corresponding to SnS₂ is JCPDS No.23-0677. With the increase of the content of LaF₃ QDs modified SnS₂, the (2-1-1) characteristic peak of LaF₃ appeared in the XRD curve. As the LaF₃ QDs content increases, the characteristic peak intensity also increases. When the content of LaF₃ QDs increased to 15%, the characteristic peak intensity was the strongest. When the LaF₃ content is 20%, the characteristic peak intensity decreases. The variation of this characteristic peak may be related to the gas-sensing characteristics of the sensor.