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**Synthesis of La<sub>2</sub>O<sub>3</sub> doped Zn<sub>2</sub>SnO<sub>4</sub> hollow fibers by electrospinning method and application in detecting of acetone**

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**Highlights**

- Hollow porous pure and La doped Zn<sub>2</sub>SnO<sub>4</sub> nanofibers were synthesized by single capillary electrospinning technology.
- The sample exhibits excellent response to acetone at the low operating temperature of 200°C.
- The sensor with rapidly response time (7 s) and recovery time (9 s).

**Abstract:**

Hollow porous pure and La<sub>2</sub>O<sub>3</sub> doped Zn<sub>2</sub>SnO<sub>4</sub> fibers were synthesized via single capillary electrospinning technology and used for obtaining of gas sensors. The as-prepared samples were characterized by microscopy, Brunauer–Emmett–Teller, X-ray photoelectron spectroscopy and UV-vis absorption spectra. The newly obtained gas sensors were investigated for acetone detection. Compared with pure Zn<sub>2</sub>SnO<sub>4</sub> hollow fibers, the La<sub>2</sub>O<sub>3</sub> doped Zn<sub>2</sub>SnO<sub>4</sub> hollow fibers not only exhibited perfect sensing performance toward acetone with excellent selectivity, high response and fast response/recovery capability (7 s for adsorption and 9 s for desorption), but also the operating temperature was reduced from 240°C to 200°C. These results demonstrated that the special hollow porous La doped Zn<sub>2</sub>SnO<sub>4</sub> fibers structures were

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