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Fabrication of electrospun LaFeO₃ nanotubes via annealing technique for fast ethanol detection

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Abstract

Developing a simple method for fabricating nanotube materials is highly desired in nanomaterials research. In this work, LaFeO₃/polyvinylpyrrolidone (PVP) composite nanofibers were prepared by a single spinneret electrospinning method. Then, LaFeO₃ nanotubes were obtained via a rapid annealing technology. The gas sensors based on LaFeO₃ nanotubes were fabricated for investigating their gas sensing properties. The results show that the LaFeO₃ nanotubes gas sensor is of good response and selectivity to ethanol, and the fast response/recovery times are about 2/4 s to 100 ppm ethanol at 160 °C. We expect that LaFeO₃ nanotubes can be used to fabricate ethanol gas sensors, and the preparation method of LaFeO₃ nanotubes can provide new ideas for synthesizing other nanotube materials.

Key words: LaFeO₃ nanotubes; Electrospinning; Annealing technique; Microstructure; Sensors

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