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# One-pot synthesis of In doped NiO nanofibers and their gas sensing properties

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## Highlights

- The gas sensing properties of In-doped NiO nanotubes were enhanced, having a response about 10.9 to 200 ppm methanol, which is almost 5.2 times higher than that of sensor based on pure NiO nanotubes.
- The gas sensors based on In-doped NiO nanotube exhibit good selectivity, repeatability and long term stability to methanol.
- To the best of our knowledge, there are few reports on the methanol-sensing property of In-doped NiO nanotubes, which prepared by electrospinning.

## Abstract

A series of In-doped NiO nanofibers have been synthesized by electrospinning method in this paper, and the gas sensing properties of nanofibers to methanol were investigated. Due to the concentration reduce of carrier, the In-doped NiO nanofibers show good sensing properties to methanol. At the optimal operating temperature of 300 °C, the response of In-doped NiO nanofibers to 200 ppm methanol is 10.9, which is almost 5.2 times higher than that of pure NiO nanofibers. These gas sensing results indicate In-doped NiO nanofibers exhibit good selectivity, repeatability and long term stability characteristics, which means In-doped NiO nanofibers to be the promising candidates for detect methanol vapor in air.

**Keywords:** In-doped NiO nanofibers; electrospinning; methanol; gas sensor.

## 1. Introduction

Methanol (CH<sub>3</sub>OH) is a highly volatile and flammable liquid, which is widely used to manufacture biodiesel, antifreeze, dyes, paints, perfume etc. However, methanol has strong

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