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Pt nanoparticles decorated SnO₂ nanoneedles for efficient CO gas sensing applications

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Highlights:

- Facile synthesis of Pt nanoparticles decorated SnO₂ nanoneedles
- Fabrication of highly sensitive and selective CO gas sensor
- At an optimized temperature the sensor exhibited high gas response
- Long-term stability and the selectivity of the fabricated CO sensor

ABSTRACT

Herein, we report the synthesis, characterization, and gas sensing applications of Pt nanoparticles-decorated SnO₂ nanoneedles synthesized through a facile hydrothermal process. The synthesized nanoneedles were characterized for their morphological, structural, compositional and sensing properties using different characterization techniques. The morphological and structural characterizations confirmed the synthesis of well crystalline Pt nanoparticles decorated SnO₂ nanoneedles with tetragonal rutile crystal phase. X-ray photoelectron spectroscopic analysis (XPS) confirmed the spatial distribution of Pt metal into SnO₂ nanoneedles. Further, gas sensor

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