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## Self-template derived ZnFe<sub>2</sub>O<sub>4</sub> double-shell microspheres for chemresistive gas sensing

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### HIGHLIGHTS

- Hydrothermal and thermal self-templated approach is used to make double-, yolk-, and solid shelled ZnFe<sub>2</sub>O<sub>4</sub>.
- Double-shelled ZnFe<sub>2</sub>O<sub>4</sub> microspheres, with appreciable crystallinity, shell-thickness <20 nm is a robust, selective acetone sensor.
- Response time of 6-10 seconds, at operating temperatures of ~206 °C, with good cyclability is observed.
- Linear-response, and a detection-limit of ~0.1 ppm indicates prospective use in analytical acetone-sensors.

**ABSTRACT:** Porous ZnFe<sub>2</sub>O<sub>4</sub> double-shell, yolk-shell, and solid microspheres are synthesized using a combination of hydrothermal method and thermal treatment (carried out at appropriate

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