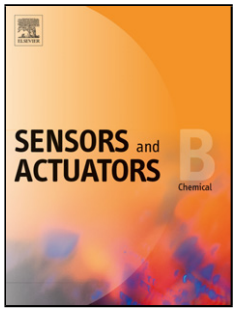

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Growth of TiO_2 nanostructures exposed {001} and {110} facets on SiC ultrafine fibers for enhanced gas sensing performance

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Highlights

1. TiO_2 nanostructures exposed {001} and {110} facets were controllably grown on the macro-meso-microporous SiC ultrathin fibers (MMM-SFs).
2. TiO_2 nanosheets exposed {001} facet (TNS001) show higher response than TiO_2 nanorods exposed {110} facet (TNR110) toward acetone.
3. The hierarchical TNS001@MMM-SFs sensor presents a high response (19.2), excellent reproducibility, outstanding selectivity and ultrafast response speed (1 s) to acetone.
4. The superior sensing performance is mainly attributed to the exposing of high-energy {001}