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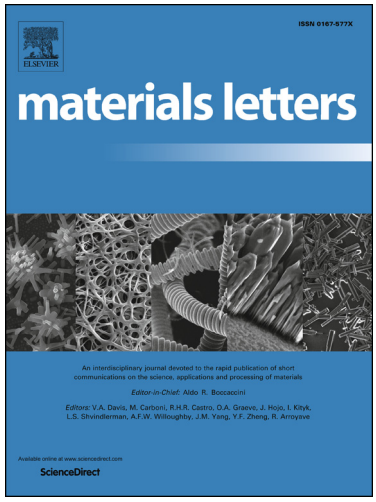

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Bing Wang, Lian Sun, Yingde Wang

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Template-free synthesis of nanosheets-assembled SnO_2 hollow spheres for enhanced ethanol gas sensing

Bing Wang,[a,b] Lian Sun,[b] Yingde Wang,*[b]*

[a]*Key Laboratory of High Performance Fibers & Products, Ministry of Education, Donghua University, Shanghai 201620, P. R. China*

[b]*Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, National University of Defense Technology, 109 Deya Road, Changsha 410073, PR China*

*Corresponding Author: +86 731-84574196 E-mail: cfcwb01@163.com (Dr. B. Wang) wangyingde@nudt.edu.cn (Prof. Y. D. Wang)

Abstract: The specific structure of hollow sphere with hierarchical structure is beneficial to facilitate the gas diffusion and supply more active sites for improving gas sensing performance. In this paper, we report the fabrication of hierarchical SnO_2 hollow spheres assembled by ultrathin nanosheets (SnO_2 NSHSs) via a template-free hydrothermal method. The formation mechanism and microstructures of the SnO_2 NSHSs were discussed and characterized in detail. The SnO_2 NSHSs sensor shows a high response and ultrafast response time (5 s) towards ethanol. Furthermore, the SnO_2 NSHSs gas sensor also exhibits a low detection limit of ppb level. The enhanced sensing performance can be attributed to the unrestricted gas diffusion in the hierarchical hollow spheres and plenty of active sites on the ultrathin SnO_2 nanosheets.