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Glancing angle deposited villi-like nanostructures for enhanced chemo-resistive performances[1] HI GYU MOON, YOUNGMO JUNG, TAIKJIN LEE, SEOK LEE, Korea Institute of Science and Technology, HYUNG-HO PARK, Yonsei University, CHULKI KIM, CHONG-YUN KANG, Korea Institute of Science and Technology — Metal oxide nanostructures have attracted enormous attention for diverse applications such as solar cells, nanogenerators, nanolasers, optoelectronic devices and chemoresistive sensor. To achieve the enhanced electrical properties for these applications, one-dimensional (1D) metal oxide materials including nanowires, nanorods, nanotubes and nanobelts have been widely studied. However, the use of 1D nanomaterials as chemoresistive sensors is still in the beginning stage in how to integrate them. As an alternative, porous thin films based on 1D metal oxide nanostructures are considered as more desirable configuration due to their simplicity in synthesis, high reproducibility. In this study, we propose facile synthesis and self-assembled villi-like nanofingers (VLNF) WO_3 thin films with large specific surface area on the SiO_2/Si substrate. Room-temperature glancing angle deposition of WO_3 by a simple controlling in both polar and azimuthal directions resulted in anisotropic nanostructures with large aspect ratio and porous structures with a relative surface area of 350 m^2/g.

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