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Cover story

(Yingying Jian, Danyao Qu, Lihao Guo, Yujin Zhu, Chen Su, Huanran Feng, Guangjian Zhang, Jia Zhang, Weiwei Wu, Ming-Shui Yao, pp. 505-517)

Ti₃C₂T₄ MXene, a two-dimensional (2D) materials with ultra-thin structure, has been fabricated as gas sensors working at room temperature with various thickness. In this work, two critical features towards reducing gases (NH3 and CO) and oxidizing gas (NO2) are characterized in a dynamic model. On one hand, the thickness of the Ti₃C₂T₂ MXene material affects the sensing performance that the response to gases is declined with the increasing thickness of the Ti₃C₂T_x MXene. On the other hand, the Ti₃C₂T_x MXene based gas sensor is not appropriate for strong and moderate oxidizing gas (NO2) compared with the reducing gases (NH3 and CO). These two rules are demonstrated, and could be considered with priority both in the future researches and practical applications.



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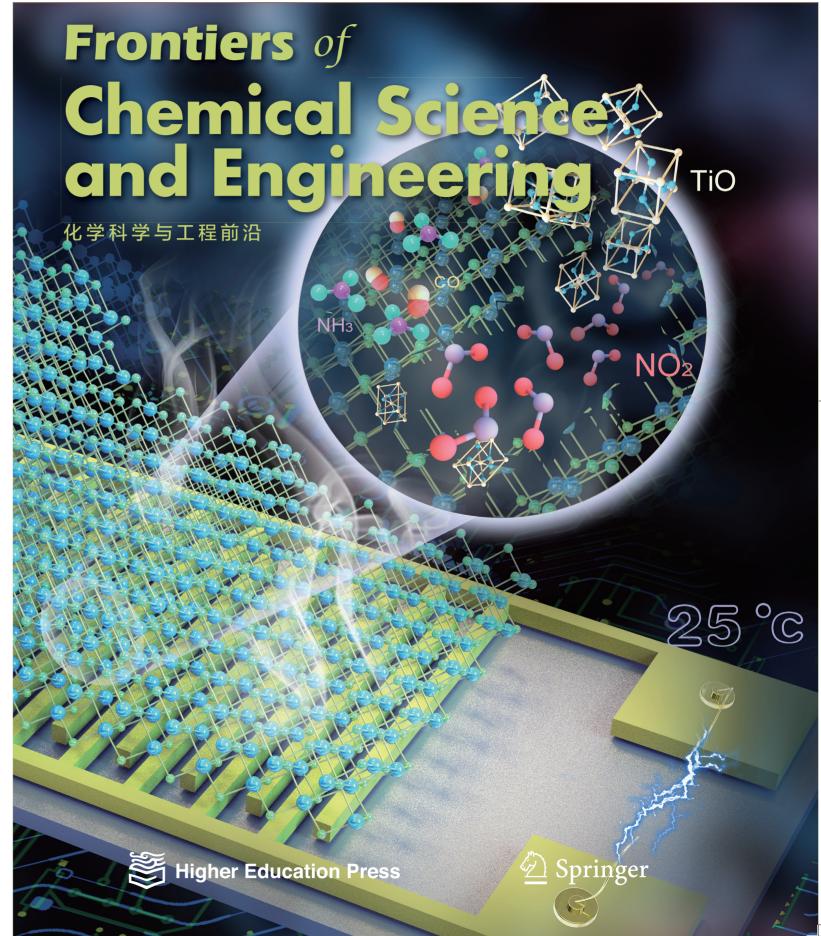
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