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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)

Ti₃C₂T_x 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 Ti₃C₂T_x 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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