



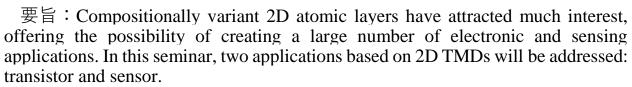
演題: Diverse applications using a two dimensional transition metal dichalcogenide alloy layer

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場 所:工学部 材料·化学系棟 MC214 教室



Firstly, we will introduce high performance transistor applications via approach of utilizing unique 2D TMD alloy synthesis methods. The two-dimensional WSe<sub>2</sub>—based transistor with mixed transition layer containing van der Waals (M-vdW, NbSe<sub>2</sub>/W<sub>x</sub>Nb<sub>1-x</sub>Se<sub>2</sub>/WSe<sub>2</sub>) junction realizes atomically sharp interface, exhibiting the superior transistor performance. Secondly, we will show that two-dimensional (2D) metal (NbSe<sub>2</sub>)—semiconductor (WSe<sub>2</sub>)-based flexible, wearable, and launderable gas sensors can be prepared through simple one-step chemical vapor deposition of prepatterned WO<sub>3</sub> and Nb<sub>2</sub>O<sub>5</sub>. Compared to a control device with a Au/ WSe<sub>2</sub> junction, gas-sensing performance of the 2D NbSe<sub>2</sub>/WSe<sub>2</sub> device was significantly enhanced, which might be attributed to the formation of a Nb<sub>x</sub>W<sub>1-x</sub>Se<sub>2</sub> transition alloy junction lowering the Schottky barrier height.

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