分類E　　産 研 ISIR *　　海外共同研究　　IF=3.365 (1 Year)

超微細MoO_3ナノロッドアレイを用いた高速応答性VOCガスセンサの開発

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Diverse Adsorption/Desorption Abilities Originating from the Nanostructural Morphology of VOC Gas Sensing Devices Based on Molybdenum Trioxide Nanorod Arrays

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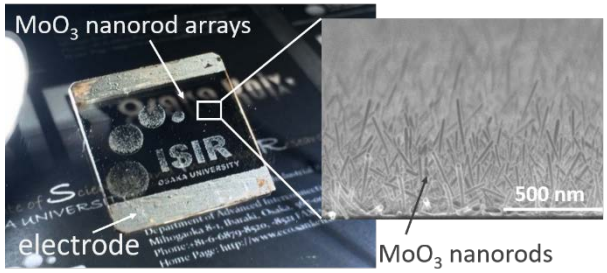

Figure1. Photo picture of gas sensor device and SEM image of MoO_3 nanorod array.

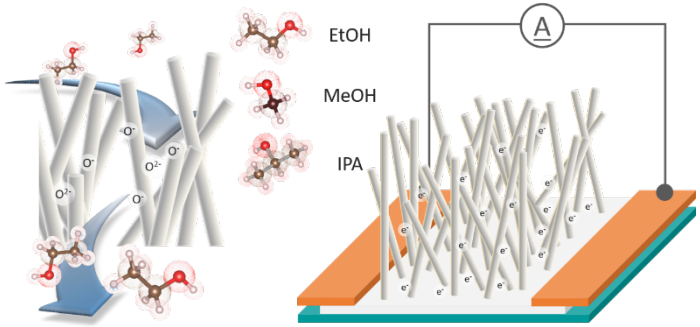

Figure2. Schematic figure of sensing mechanism and detail of VOC gas detecting with sensing systems.

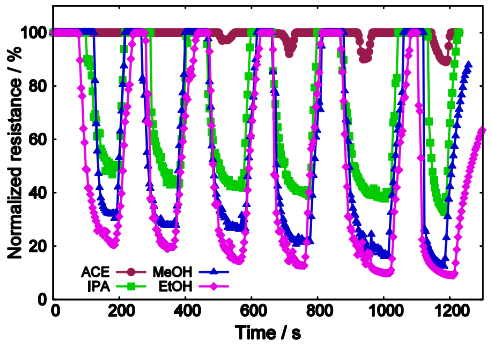

Figure3. Normalized resistance of gas sensor VOC vapors with different concentrations at 573 K.

簡便な方法かつ短時間で、超微細な単結晶のα相MoO_3ナノロッドを基板上に直接成長させることに成功しました。このMoO3ナノロッドアレイを用いたVOCガスセンサ素子は、世界一の応答性を示すとともに、ナノロッドの表面状態がガスとの吸脱着反応に強く影響していることが分かりました。

Ultra-fine single-crystal α-MoO_3nanorod array based gas sensors show a prompt response and discrimination to volatile organic compounds (VOCs). The performance of the sensors strongly depends on the specific morphologies of the nanorod arrays. The nanorod arrays are spontaneously grown with functionally tunable morphology by a simple single-step solution route.