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Hydrogen gas sensing performance of high-dimensional tungsten oxide fuzz (He induced nanostructure) YOSHIHIRO KIMURA, KENZO IBANO, KAZUKI YUZAWA, KENYA UEHATA, HEUN TAE LEE, YOSHIO UEDA, Osaka Univ, OSAKA UNIV UEDA LAB TEAM — Characteristic nano-fiber structure is formed by He plasma irradiation to metal surfaces at certain temperatures. This nano-fiber structure, usually called 'fuzz', is expected to be applied to catalysts and sensors because of their remarkably large surface area due to high-dimensionality. Also, it is known that tungsten oxide has a promising hydrogen sensing ability through redox. Therefore, hydrogen sensitivity of He-induced tungsten fuzz was examined. A thin film of tungsten was formed on a quartz glass plate and tungsten fuzz was made on this by He plasma irradiation using an ECR plasma apparatus. Then, thermal oxidation of the tungsten fuzz was performed in air. The tungsten-oxide fuzz samples were placed in a glass furnace, then resistivity changes by introducing hydrogen containing air were measured as a function of surface temperature. Influence of detailed fuzz structure and oxidation time on the sensing performance were investigated.

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