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Hydrogen Gas Sensor Based on Nanograined Pd/ α -MoO₃ belts

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In this work, a simple and cost-effective method for nanostructurization of α -MoO₃ micro-belts by using an aqueous solution of PdCl₂ is reported. Obtained nanograined Pd/ α -MoO₃ belts, with 70-80 nm average diameters of nanocrystallites were integrated in sensor structures for application in hydrogen gas sensing. In dependence of method for nanostructurization, a gas response of about 2 – 3 at 200 °C operating temperature was obtained. In case of K⁺ doped samples, the hydrogen response was enhanced to about 7.5. To explain the obtained results, the gas sensing mechanism based on catalyst properties of Pd nanoparticles and generation of oxygen vacancies is discussed in details.