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Nanorods Titanium Oxide Humidity Sensors

By: [Hendi, AA](#) (Hendi, A. A.)

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Abstract

The nanostructure titanium oxide was synthesized by hydrothermal method. The nanostructure of the titanium oxide was confirmed by X-ray diffraction and atomic force microscope techniques. The AFM images indicate that the titanium oxide sample is formed from the nanorods. The titanium oxide based on microbalance (QCM) humidity sensor was prepared and humidity sensing properties of the sensor were analyzed by frequency-time characteristics. The response time and recovery time values of the sensor were determined. The sensor exhibited a fast response due to easy diffusion of water molecules between titanium oxide nanopowders. The prepared sensor having 50.93 nnn TiO2 particles has a high reproducibility and sensitivity. The obtained results indicate that the prepared sensors can be used in humidity sensing applications.

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Author Information

Reprint Address: Hendi, AA (reprint author)

+ King Abdulaziz Univ, Sci Fac Girls, Dept Phys, Jeddah 21589, Saudi Arabia.

Addresses:

+ [1] King Abdulaziz Univ, Sci Fac Girls, Dept Phys, Jeddah 21589, Saudi Arabia

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