

Sensing Properties of Tellurium Based Thin Films to Oxygen, Nitrogen and Water Vapour

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<https://doi.org/10.1109/SMICND.2006.283999>

Abstract

Effect of O₂, N₂ and H₂O to electrical behaviour of tellurium-based films has been studied at temperatures between 20 degC and 70 degC. The increase of oxygen partial pressure in NO₂ + O₂ carrier gas results in a nearly linear decreasing of the film resistance. The complete impulsive substitution of nitrogen by oxygen decreases the resistance of the film with ~6 % in 1.5 hours. The effect of humidity is more perceptible. At room temperature the resistance of the films increase with 15 % at 58%RH, but humidity has a negligible effect at temperatures higher than 50degC. The results suggest that effect of water vapour is due to simple physical adsorption, whereas effect of oxygen and nitrogen is the consequence of "weak" chemisorption of these molecules on the film surface.

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