



Concentration induced damping of gas sensitivity in ultrathin tellurium films

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Abstract

The damping of sensitivity induced by high gas (NO₂) concentration in tellurium films was observed for the first time. The phenomenon becomes apparent in ultrathin (less than 40nm) shown by AFM, SEM and XRD analyses to be in amorphous state. Sensitivity of 30nm thickness Te film decreases near linearly with concentration increase between 150 and 500ppb of nitrogen dioxide. Results are explained in terms of formation of a nitrogen dioxide catalytic gate in which a molecule adsorbs (and desorbs) without reacting.