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## Influence of post annealing on optical and structural properties of Eu and Pd-doped TiO<sub>2</sub> thin films

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### Keywords

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### Abstract

This work presents optical and structural characterization of europium and palladium doped titanium dioxide thin films prepared by modified magnetron sputtering. The metallic Eu and Pd dopants have been co-sputtered from a base Ti target (mosaic target) and deposited on SiO<sub>2</sub> substrates. After the deposition samples were additionally annealed in air ambient for 2 hours at the temperatures of 200 °C, 400 °C, 600 °C and 800 °C, respectively. Structural properties of TiO<sub>2</sub>:(Eu, Pd) thin films were examined using X-ray diffraction (XRD). XRD patterns recorded after thermal treatment showed the dominating TiO<sub>2</sub>-rutile phase, independently of the temperature of annealing. Optical properties were studied as defined by optical transmission. It has been shown, that doping shifts the fundamental absorption edge of TiO<sub>2</sub> toward the longer wavelength range. As the samples were additionally annealed the band gap widening has been observed from 1.7 eV, for as deposited sample up to 2.31 eV for those annealed at 800 °C.



363.1 kB

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