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Investigations of electrical properties of Eu- and Pd-doped titanium dioxide thin films on silicon

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Keywords

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Abstract

In this work, investigations of electrical properties of Eu- and Pd-doped TiO_2 thin films have been outlined. Thin films were deposited by low pressure hot target reactive magnetron sputtering from metallic Ti-Eu-Pd mosaic target on conventional silicon wafers. For electrical characterization of prepared thin films both temperature dependent resistivity and current to voltage (I–V) characteristics have been examined. It has been shown that incorporation of Pd and Eu dopants into TiO_2 matrix modified its properties to obtain *n*-type oxide-semiconductor which is electrically and optically active at room temperature. Additionally from I–V measurements the formation of heterojunction at the interface of thin film–silicon was confirmed.