



## Properties of PEDOT:PEG/ZnO/p-Si heterojunction diode

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Résumé en anglais	<p>The zinc oxide (ZnO) and poly(3,4-ethylenedioxythiophene) bis-poly(ethyleneglycol) (PEDOT:PEG) films were deposited on p-Si substrate by sputter and spin coating methods, respectively. An organic/inorganic heterojunction diode having PEDOT:PEG/ZnO on p-Si substrate was fabricated. The barrier height (BH) and the ideality factor values for the device were found to be <math>0.82 \pm 0.01</math> eV and <math>1.9 \pm 0.01</math>, respectively. It has been seen that the value of BH is significantly larger than those of conventional Au/p-Si metal-semiconductor contacts. The PEDOT:PEG/ZnO/p-Si heterostructure exhibits a non-ideal I-V behavior with the ideality factor greater than unity that could be ascribed to the interfacial layer, interface states and series resistance. The modified Norde's function combined with conventional forward I-V method was used to extract the parameters including the barrier height and series resistance. At the same time, the physical properties of ZnO and PEDOT:PEG films deposited by sputter and spin coating technique, respectively, were investigated at room temperature. The obtained results indicate that the electrical parameters of the diode are affected by structural properties of ZnO film and PEDOT:PEG organic film.</p>
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