



# ZnO thin films on semiconductor substrate for large area photodetector applications

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## Abstract

Heterojunctions with transparent and conductive layers of ZnO on Si and InP substrates were prepared and investigated for photodetector applications in order to increase the sensibility of the conventional photodetectors with metallic electrodes, and for large area photodetectors involving lateral photoeffects. The deposition of a ZnO thin film was made on a heated substrate (InP or Si) at 400°C by the thermal decomposition of Zn acetylacetonate. The surface morphology was investigated by AFM and, for the scanning area of 2043.5×2021.5 nm<sup>2</sup>, the deposited film showed a low roughness (<5 nm). The measured values for the main optoelectrical parameters of 0.52 V for VOC, 120 μA for ISC at EV=1 klx and the external quantum efficiency over 70% demonstrate that the realised ZnO/Si and ZnO/InP heterojunctions can be used for detection applications.