Optical spectroscopy and surface properties of doped nanocrystalline ZnO thin films on interdigital electrodes

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Zinc oxide (ZnO) is a low cost and environmentally friendly material with unique optical properties and a variety of nano and microstructures imposing challenges for energy conversion, scintillators, photocatalytic wastewater treatment, electrochemical energy storage, or sensing applications. In this work, the nominally undoped and Al doped nanocrystalline ZnO thin films were pulsed laser deposited (PLD) [1] on commercial interdigitated gold electrodes gold-based Interdigitated Electrodes (IDE) on a glass substrate and tested using photothermal deflection (PDS) and photocurrent (PCS) spectroscopy [2]. Surface properties were characterized by Correlative Probe and Electron Microscopy (CPEM), that integrates Atomic Force Microscopy (AFM) and Scanning Electron Microscopy (SEM) to perform simultaneous correlated measurements of the same sample region.

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