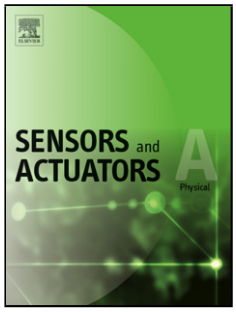

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Fabrication and Characterization of Nitrogen Doped p-ZnO on n-Si Heterojunctions

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Research Highlights

- P-type ZnO thin films are grown on n-type Si substrate using RF sputtering method.
- Hetrojunction behavior is confirmed by I-V measurement of the films.
- The effect of photon incident and stability of hetrojunction is also observed with respect to time duration.
- The p ZnO/n Si hetrojunction has potential application in optoelectronic devices.

Abstract

Metal oxide semiconductors are promising materials for fabricating p-n heterojunctions which are technologically important for many electronic devices. The reason is their unique characteristics of tuneable electrical properties that can be controlled by doping. In the present work, a p-n heterojunction was fabricated by depositing nitrogen doped zinc oxide (ZnO:N) thin films on an n-type Si substrate using the radio frequency (RF) sputtering method. X-ray diffraction patterns shows the preferred orientation (002) peak of ZnO, which deteriorated with increasing N concentration. The crystallite size varied from 35 to 20 nm for