

# Numerical simulation of a high responsivity ultraviolet photodetector

**F. Bouzid, L. Dehimi, M. HADJAB, A. HADJ LARBI, A. Haboussi**

**Abstract :** Ultraviolet photodetectors (UV PDs) are important devices that can be used in various scientific, commercial and military applications. In this work, a numerical simulation study of nitride-based "p+-n-n+" front illuminated UV PD, designed with an aluminum composition achieving a true solar blindness, has been reported using the commercially available Atlas package from Silvaco international. It has been found that the proposed structure is sensitive to the UV rays in the wavelength range investigated, where the spectral response reaches its maximum then declines sharply with a good performance of solar-blind at room temperature and zero-bias voltage. Furthermore, it was also found by simulating the evolution of the current density according to different wavelengths of the incident radiation that the designed structure is able to act as a wavelength selector device.

**Keywords :** AlGaN, Ultraviolet, Solar blind, Photodetector, Spectral response