

# Etude des composés n-ZnO et p-ZnO et leur application en optoélectronique

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**Abstract :** This work entitled "Study of compound ZnO for optoelectronics applications"high lights the physical and chemical properties of this compound II-VI include infamily of transparent oxides. The P-type doping in addition to its N-type doping allows to study the junction ZnO-P-N for its use as a laser diode in the ultraviolet spectrum for these multiple technological applications. The optical confinement of laser radiation within the active layer of the junction is achieved through the use ofproperties of  $Zn_{1-x}Mg_xO$  compound which changes in the refractive index according to the proportion x of Mg . The use of rate equations of the semiconductor laser will enable us to simulate the operation of the laser diode with regard to fluctuations of the optical signal in time and in the generation of the modulated spectral emission inamplitudes and frequencies centered both on the wavelength  $\lambda = 380$  nm.

**Keywords :** ZnO, semi-conducteur ZnO, Dopage de ZnO, Diode laser