

## D6

## UV PHOTODETECTOR BASED ON P-N JUNCTION OF NICKEL OXIDE THIN FILMS AND n-TYPE SILICON PREPARED BY THERMAL OXIDATION

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**ABSTRACT-** Transition metal oxides semiconductors are well known multifunction compounds, some show an n-type behaviour such as zinc oxide, titanium oxide and the others behave as p-type semiconductors. In this study nickel oxide (NiO) thin films (as a p-type semiconductor) was prepared via two-step process, first Ni metal is thermally evaporated on an n-type silicon substrate in high vacuum thermal evaporation unit, then thermal oxidation was employed to convert the Ni metal to NiO in a controllable tube furnace at atmospheric ambient. The prepared thin films were characterized through X-ray diffraction to verify its phase structures, ultraviolet–visible spectrophotometry to study its optical properties. The prepared p-n junction based on NiO thin films and the Si substrate was tested as UV-visible photodetector. The results show a blind sun light photodetector with high selectivity to UV light. The device performance as a UV photodetector will be explored.

**Keywords:** photodetector, NiO, p-n Junction, uv detector.