Para-quaterphenyl thin films were deposited onto glass and quartz substrates by thermal evaporation method. p-quaterphenyl thin films were exposed to gamma radiation of Cobat-60 radioactive source at room temperature with a dose of 50 kGy to study the effect of γ-irradiation on the structure and the surface morphology as well as the optical properties of the prepared films. The crystalline structure and the surface morphology of the as-deposited and γ-irradiated films were examined using the X-ray diffraction and the field emission scanning electron microscope. The optical constants (n & k) of the as-deposited and γ-irradiated films were obtained using the transmittance and reflectance measurements, in the wavelength range starting from 250 up to 2500 nm. The analysis of the absorption coefficient data revealed an allowed direct transition with optical band gap of 2.2 eV for the as-deposited films, which decreased to 2.06 eV after exposing film to gamma irradiation. It was observed that the Urbach energy values change inversely with the values of the optical band gap. The dispersion of the refractive index was interpreted using the single oscillator model. The nonlinear absorption coefficient spectra for the as-deposited and γ-irradiated p-quaterphenyl thin films were obtained using the linear refractive index.

**Keywords**