

Abstract

Organic solar cells refer to photo voltaic cells and it is a kind of green energy source of great potential applications because of low production costs, mechanical flexibility devices. This work focuses on studying the electrical, optical and structural properties for polymeric solar with many layers by using new prepared polymer (polyimine) (which was characterized by spectroscopic techniques Fourier Transform Infrared (FT-IR), UV-Visible, Nuclear magnetic resonance (NMR) and also by X-Ray system and nanoparticles named Aluminum oxide (Al_2O_3). The range of the particle size was between (14-31) nm and Titanium Oxide (TiO_2) with particles size of (42-71) nm. The utilizing of nano particles (Al_2O_3 and TiO_2) helps to shift and change the absorbance of the polymer. The solar cells had suited coating (by using spin coating) and excellent efficiency due to laser technique where the efficiency of an synthesized solar cells that had the Al_2O_3 and TiO_2 NPs with and without laser technique were 5.6%, 3.7% (Al_2O_3 NPs), 12.03% and 10.5% (TiO_2 NPs) respectively. The laser has a big benefit in polymer solar cell in shifting the wavelength and changes the absorbance.