

ABSTRACT

TiO₂ based solar cell has been of interest due to it is low cost and simple fabrication, regardless it is low efficiency and it is light absorption of only above 3.1 eV (ultraviolet spectrum). As a solution, people have used carbon nanoparticelles to increase it's absorption capability. However, the carbon nanoparticles are usually expensive with the solar cell efficiency remains about 4%. Therefore we propose an alternative cheaper carbon sources and investigate their effects on the increasing of the efficiency. In this study, a micro-sized graphite were inserted into TiO₂ solar cells using a doctor blade and spin coating method. We found that efficiency of solar cells depends on graphite mass and the rotational speed of the spin coating. By using 0.7 grams of TiO₂ coated on the surface of FTO wafer and a mixture of PVA and LiOH electrolyte, it is shown that the best efficiency of 0.06% is reached when the mass of graphite 0.4 grams. Suprisingly, we found that the doctor blade technique provided comparable results with the spin coating method.

Keywords: solar cell based on TiO₂, graphite, spin coating