

I-V performance analysis of flexible back Illuminated Dye Sensitized Solar cells (DSSCS) with various platinum catalyst contents

ABSTRACT

Flexible based Dye Sensitized Solar Cells (DSSCs) in nanotechnology revolution have always been in the thick of things where fabrication method and achieving good performances are concerned. Such concerns were adjudicated by improvising four(4) innate DSSCs structures composed of photoanode, semiconductor, electrolyte and counter electrode. This paper aims to observe the impact of changing Platinum(Pt) volumes on the counter electrodes of DSSCs by conducting tests on 0.2mm Titanium (Ti) foil based photoanode DSSCs. The deposition of Pt was varied into 70 μ l, 50 μ l and 30 μ l accordingly by spin coating technique at 1500 rpm. All samples were synthesized, deposited with Pt and assembled before being tested under solar light simulator of 1000W/cm². Samples with 70 μ l Pt deposition indicated a higher efficiency (η) of 2.83%, even though it allowed less light penetration, while the 30 μ l Pt deposition sample provided efficiency (η) of 0.88% with more light penetration.

Keyword: Dye sensitized solar cells; Flexible; Platinum; Titanium; Spin coating