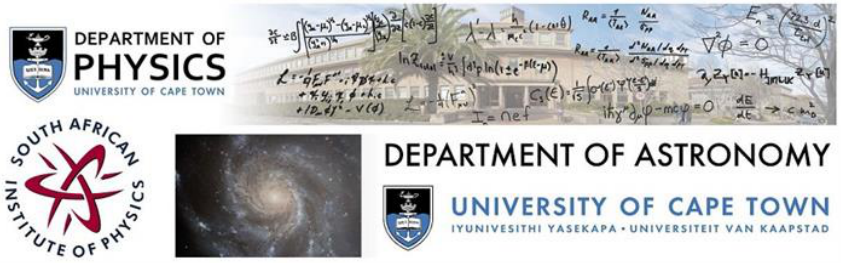

Contribution ID: **450** Type: **Poster Presentation**

Characterisation of the optical properties of silver nanoparticles (Ag NPs) for use in the enhancement of the performance of an organic photovoltaic (OPV) device.

Tuesday, 5 July 2016 16:10 (1h 50m)

Abstract content
   (Max 300 words)
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The study was performed with an aim of enhancing the overall performance of the photovoltaic device through incorporation of silver nanoparticles (Ag NPs). Starting with eight glass plates with Indium tin oxide (ITO) on one side, two of them were etched by reacting hydrochloric acid with zinc powder. ITO is one of the most widely used transparent conducting oxides endowed with desirable properties such as electrical conductivity , optical transparency and the ease with which it can be deposited as a thin film. Silver nanoparticles of varying concentrations were then deposited on the substrates using radio frequency (RF) sputtering method. Poly(3,4-ethyleredioxythiopene) polystyrene sulfonate (PEDOT:PSS), a popular a conductive polymer used for fabrication of an organic light emitting diode, was deposited onto the etched substrates using spin coating method. The optical properties were investigated using UV-Visible absorption spectroscopy where the surface plasmon peaks were recorded approximately 347 nm and 576 nm for transmittance and absorption respectively. Our results tell us that less concentration of Ag NPs will result in more light passing through and as the concentration of Ag NPs increases, the peaks shifted to the visible region. In addition, we observed that PEDOT:PSS reduces the reflective properties of glass and generate a negative absorbance which allows more light to go through to the active layer hence leading to more electron-hole pairs.

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