

Abstract Submitted  
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**Study on the Electrical Properties of the Nanoparticles in the Active Layer in Organic Solar Cell** HYUN SOO KANG, RICHARD KYUNG, CRG-NJ — Sustainable energy is an important field of research amidst the 21st century energy crisis. Organic polymer-based solar cells(OSCs) have been found to be new and better alternatives to inorganic cells in several ways due to their advantageous qualities such as light weight, flexibility and lower manufacturing costs. In this research, a nano technology has been used in the electrochemical fields where an organic solar cell produces electricity from sunlight by the photovoltaic effect. Light absorption and charge of the cell were studied and modeled by creating conductive organic polymers using a molecular editing program. To define the efficiencies of the nanoparticles, this research focuses on calculating the optimized energy, finding the dipole moment which is caused by different values of electronegativity of different atoms in a molecule and obtaining electrostatic potential map diagram that shows any charge-related details of a molecule. In the modeling the active layer of the solar cell unit, the organic polymer molecules are assumed to dispersed before the polymers are polarized to electron donors and acceptors in the OSCs.

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