

ABSTRACT

Solar cells are environmentally friendly power plants that utilize by sunlight. In its development, solar cells have arrived at the third generation. Photon absorption in third generation of solar cells usually used TiO₂ (Titanium Dioxide) or ZnO (Zinc Oxide) materials. TiO₂ material is used in this study because it has good light absorption capability in light conditions and under shaded conditions. Several studies have stated that photocatalysts and the manufacture of the best solar cells use crystalline anatase. However, anatase TiO₂ has a large energy gap (3,2 ev) so that the deposition of certain metals is needed in order to increase efficiency. In this study Cu was replaced with Ag particles because the conductivity value of Ag material is greater than Cu and Au, so it is expected that efficiency can be increased. The deposition of TiO₂ in the FTO using the doctor blade method and the deposition of Ag particles using the electroplating method. The depositing of Ag particle is expected to reduce the recombination in TiO₂ solar cells. The particle mass of Ag which is deposited on FTO/TiO₂ is 0,001566 grams when given a voltage of 1,5 volts for 7 seconds. For average diameter Ag particles are deposited at 10,05 micrometers. The efficiency value obtained by TiO₂ solar cells is 0,00176%, while the efficiency value of TiO₂/Ag obtained is 0,09938% which shows an increase of 56,46 times better when deposited by Ag.

Keywords: TiO₂ solar cells, AgNO₃, LiOH, doctor blade method and electroplating method.