# 염료 감응형 태양전지에서 Mesoproso $TiO_2$/FTO 사이에 완충층으로써의 PLD로 증착한 $TiO_2$ 박막에 관한 연구

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# A Study on $TiO_2$ Thin Film by PLD for Buffer Layer between Mesoproso $TiO_2$ and FTO of Dye-sensitized Solar Cell

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**Abstract** : Dye-sensitized Solar Cell (DSC) is a new type of solar cell by using photocatalytic properties of $TiO_2$. The electric potential distribution in DSCs has played a major role in the operation of such cells. Models based on a built-in electric field which sets the upper limit for the open circuit voltage(Voc) and/or the possibility of a Schottky barrier at the interface between the mesoporous wide band gap semiconductor and the transparent conducting substrate have been presented. $TiO_2$ thin films were deposited on the FTO substrate by Nd:YAG Pulsed Laser Deposition(PLD) at room temperature and post-deposition annealing at 500 $^0$C in flowing $O_2$ atmosphere for 1hour. The structural properties of $TiO_2$ thin films have investigated by X-ray diffraction(XRD) and atomic force microscope(AFM). Thickness of $TiO_2$ thin films were controlled deference deposition time and measurement by scanning electron microscope(SEM). Then we manufactured a DSC unit cells and I-V and efficiency were tested using solar simulator.

**Key Words** : DSC, $TiO_2$, PLD