

Pulsed laser deposition of TiO₂ thin film

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Pulsed laser deposition(PLD) has been quickly emerged as the unique tool to grow high quality films of complex chemical compounds that are typically difficult to synthesize by other techniques.

In this paper, pure titanium dioxide(TiO₂) films were prepared by pulsed laser deposition on a single crystal Si(100) substrate with Nd:YAG laser(355nm). We have investigated the crystallinity of titanium dioxide films with respect to different substrate temperatures and ambient oxygen pressures by X-ray diffraction.

In order to apply PLD to a real commercial process we have tried to control the particulate problems which are commonly faced on the film surface in the PLD process by investigating the correlation between the target modification according to the number of laser shots and the morphology of thin films. The morphology of the thin films is observed by SEM and AFM.