

Abstract Submitted  
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**The Optical Properties of Free Standing Titania Nanotube Arrays Fabricated by Electrochemical Anodization** MOHAMED ABDELMOULA, LATIKA MENON, Northeastern University — Titania nanotube arrays fabricated by anodization has become the main interest of many research groups, mainly due to its promising applications. Solar energy harvesting is one of the most anticipated applications, in which the light conversion to electron-hole pairs can be carried out on the surface of these nanotubes, taking advantage of its high aspect ratio and low recombination probability. In our work we are studying the optical properties of free standing titania nanotubes arrays, which allows us to measure the optical properties of the nanotubes more precisely. We are investigating the transmission of light through the nanotubes for different tube lengths. This will allow us to find the most effective tube length for light maximum absorption. In order to carry out a systematic study we will investigate the propagation of light incident from one side of the film (nanotubes open side). We will also investigate the propagation of light incident from the other side of the film (nanotubes closed side), and the reflection of light from the titanium layer underneath the nanotube arrays. Also an investigation of the effect of annealing conditions on the optical properties will be carried out. As a result, we will report the most effective nanotube parameters that maximize the solar spectrum absorption.

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