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Single tube electric transport properties of synthesized Titania nanotubes MOHAMED ABDELMOULA, LATIKA MENON, Northeastern University — Titania nanotube arrays fabricated by means of electrochemical anodization is currently the main interest of several research groups due to its promising applications. The high aspect ratio, durability, cheap and scalable fabrication technique make it highly attractive material for efficient solar cell. In this regard extensive research work is being carried out to investigate its properties. In our previous work we were able to find a mechanism for separating a single titania nanotube from the titania nanotube arrays and to measure its electric transport properties using e-beam lithography technique, In this work we investigated the effect of thermal annealing on the transport properties, we studied the effect of different annealing temperatures, heating and cooling rates, and in different gases. As a result, we were able to find the optimal annealing conditions to enhance the transport properties in blank titania nanotube. Under these optimal conditions, we were able to study the effect of coating TNTs with N719 dye and gold nanoparticles on the transport properties. As a result of our work we were able to optimize the treatments for more efficient solar cell fabrication.

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