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**Template-Assisted Large Scale Vertical Implantation of Crystalline Titania Nanotube Arrays** SVETLANA KHVAN, JUNKYUNG KIM, SANG-SOO LEE, Korea Institute of Science and Technology, POLYMER HYBRID RESEARCH CENTER TEAM — This work presents an AAO template-assisted method to fabricate the TiO<sub>2</sub> nanotube arrays implanted on a transparent electroconducting glass substrate. The titania nanotubes well aligned within the template were adhered orthogonally to the substrate with the assistance of a thin particulate titania layer. By controlling the fabrication procedure such as pre-etching, sintering, thickness of the AAO template and etching conditions, and by manipulating the filter layer of the AAO membrane, diverse morphology of the final titania nanostructure layer was attained. As observed from SEM images, the assisting nanoparticulate titania layer provided implantation of the high- aspect-ratio titania nanotube arrays perpendicularly to the substrate. It is likely that the thickness of the assisting titania layer could be further reduced to a minimum. Exploration for an optimal design of the nanostructured titania film to achieve a high performance of the electrode in DSSC is the challenge of our on-going work.

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