Supporting Information

Efficient Photocatalytic Degradation of Gaseous Acetaldehyde by Highly Ordered TiO_2 Nanotube Arrays

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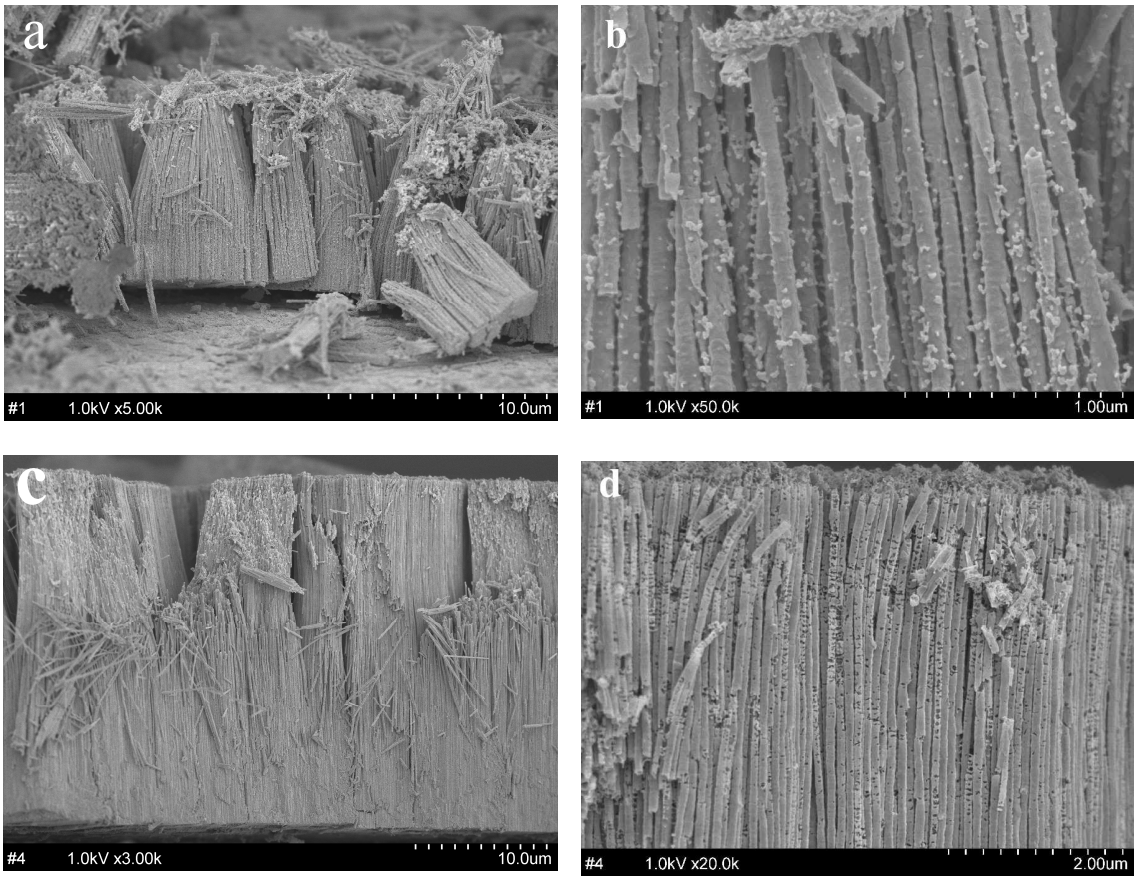

Figure S1. Cross-sectional images of TiO_2 nanotube arrays prepared by anodizing Ti foil at 20 V in formamide-based electrolyte for 1 h (a, b) and 12 h (c, d)

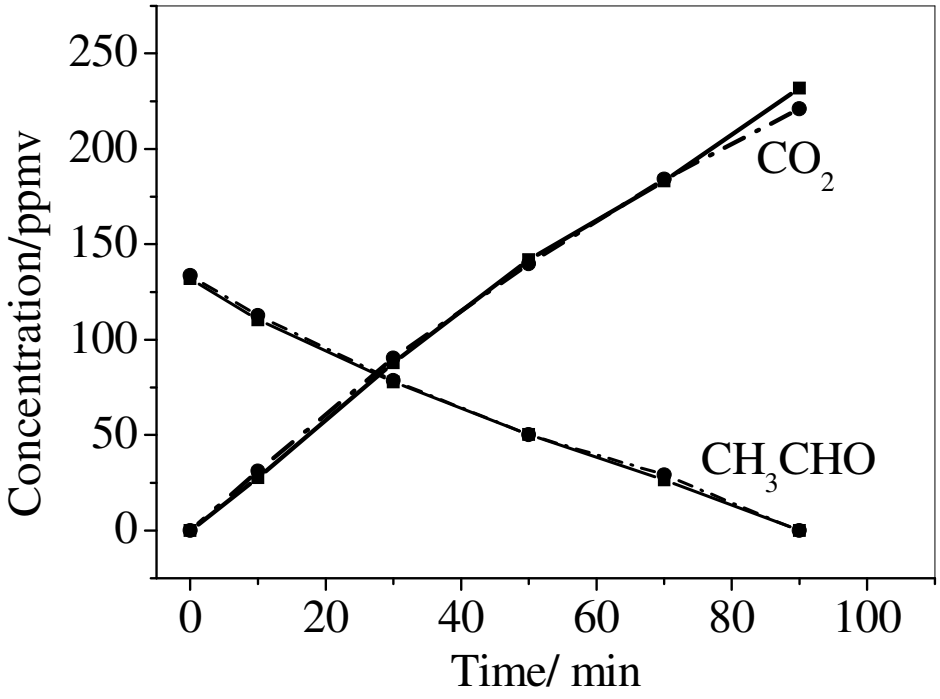

Figure S2. Plots of the change in acetaldehyde and CO_2 concentration vs. irradiation time for decomposing about 130 ppmv acetaldehyde by TiO_2 nanotube arrays with length of 17 μm (dotted line) and 27 μm (solid line).

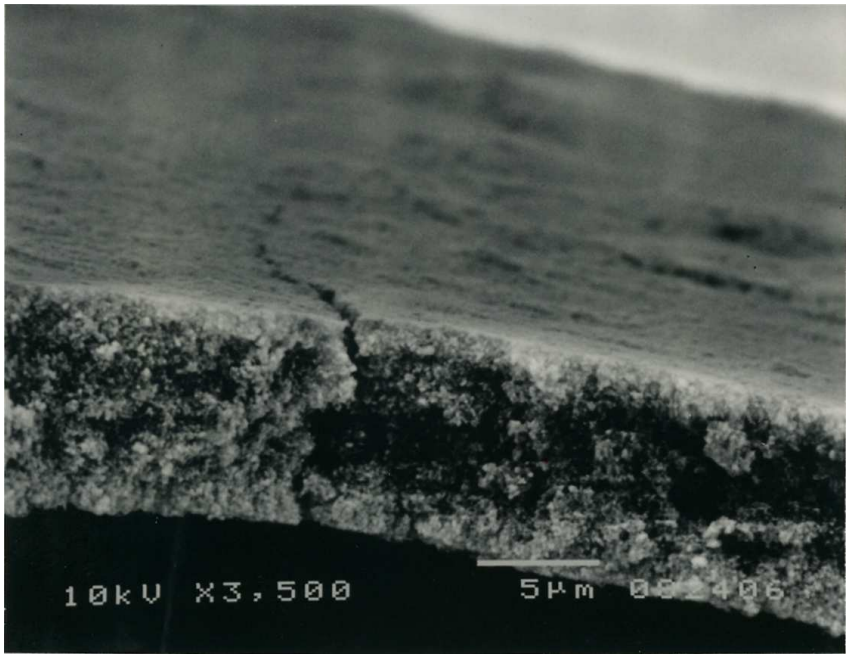

Figure S3. Cross-sectional image of P25 TiO_2 nanoparticulate film

P25 TiO_2 nanoparticulate film was deposited on the titanium foil substrate by a doctor-blade method using a slurry of 20 % P25 TiO_2 in ethanol (which is similar to the reported method [1, 2]), however, without a posttreatment of pressing. The as-prepared film was dried in room temperature.

(1) Lindström H.; Holmberg, A.; Magnusson, E.; Lindquist, S. E.; Malmqvist, L.; Hagfeldt, A. *Nano Lett.* 2001, ***1***, 97.

(2) Lindström H.; Holmberg, A.; Magnusson, E.; Malmqvist, L.; Hagfeldt, A. *J. Photochem. Photobio. A: Chem.* 2001, ***145*,** 107.

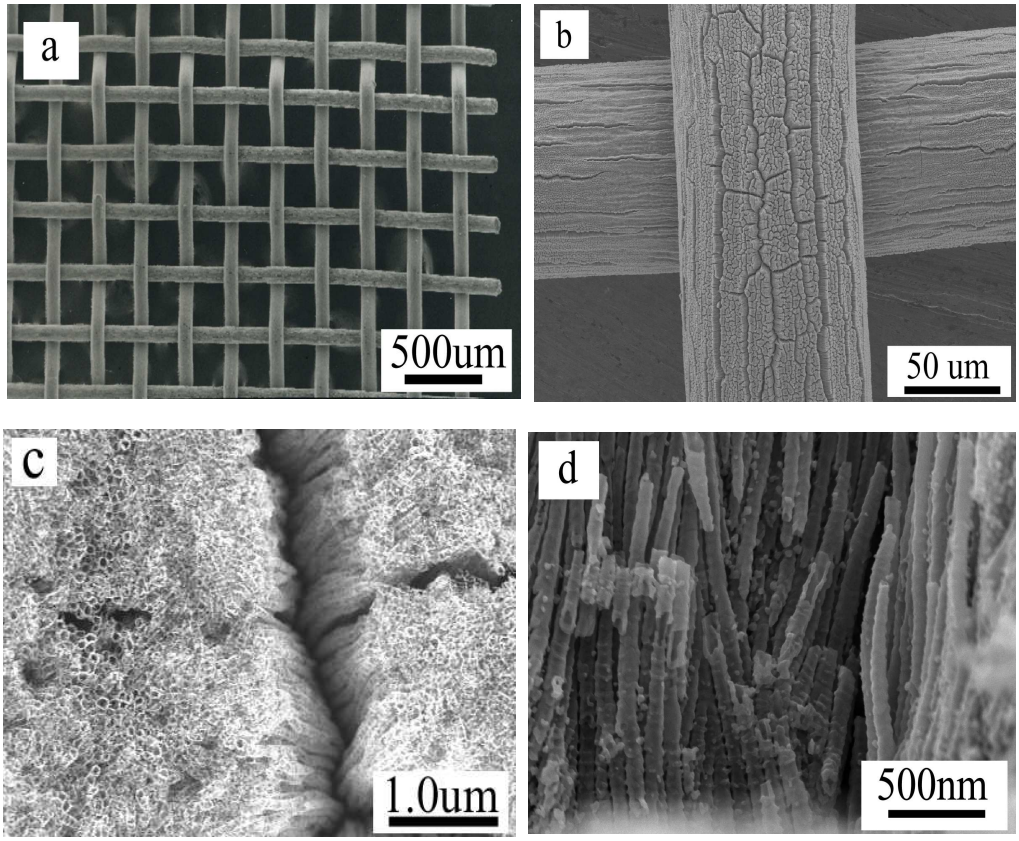

Figure S4. Top view (a, b, c) and cross-sectional (d) images of TiO_2 nanotube array on titanium mesh (80 meshes, Nilaco, Japan) by anodizing Ti mesh at 20 V for 1 h in formamide-based electrolyte.

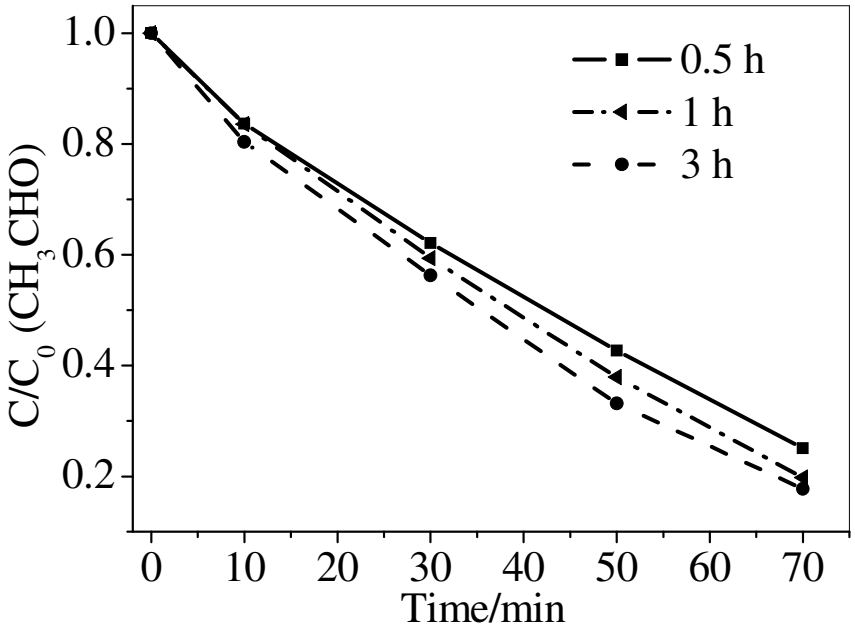

Figure S5. Photocatalytic degradation of gaseous acetaldehyde (approximate 130 ppmv) in a batch type reactor by TiO_2 nanotube arrays on titanium mesh (80 meshes) fabricated at 0.5, 1 and 3 h of anodization in formamide-based electrolyte.