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Titanium Oxide Nanotube Arrays for Quartz Crystal Microbalance

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Abstract : Titanium oxide nanotube arrays were fabricated by the anodization of pure titanium thin film deposited at 500°C on silicon substrates. The titania nanotubes were grown by anodization in nonaqueous-base electrolytes at different potentials between 5 V and 30 V. TiO₂ nanotube array with a small pore diameter of 40 nm and long titanium oxide layer of 4 μm was obtained. The TiO₂ nanotube array was used as a porous electrode for quartz crystal microbalance (QCM). Nanoporous morphology of electrode will increase the sensitivity of microbalance.

Key Words : TiO₂, nanotubes, Anodization, Glycerol, Microbalance