

Electronic Supplementary Information:

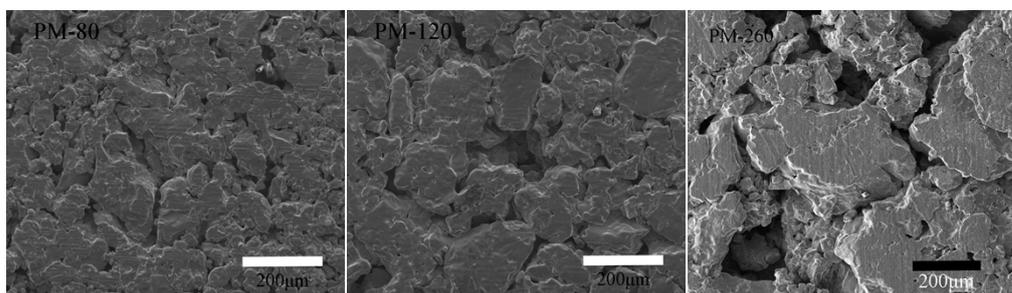


Figure S1. SEM images of representative porous Ti membranes with maximal pore size (Φ_{\max}) of 80, 120 and 260 μm , which were denoted as PM-80, PM-120 and PM-260 respectively.

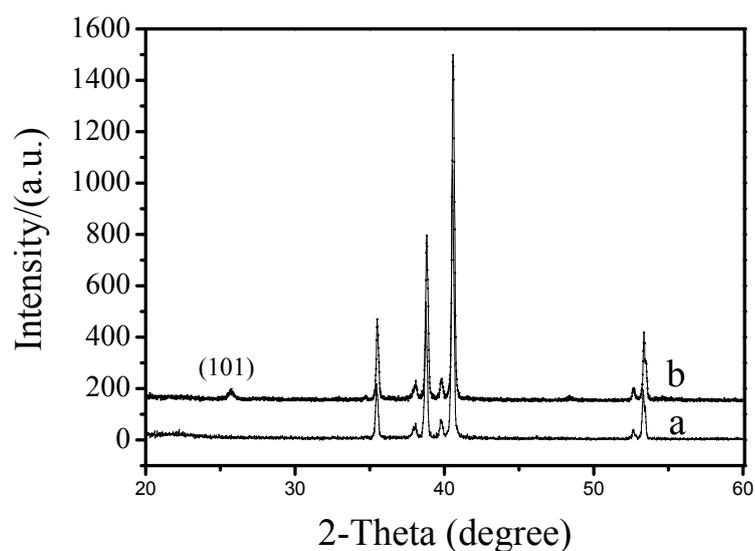


Figure S2. XRD patterns of porous Ti membrane before (a) and after anodization (b). The diffraction peak at $\sim 25.7^\circ$ identified anatase crystallization of TiO_2 nanotubes.

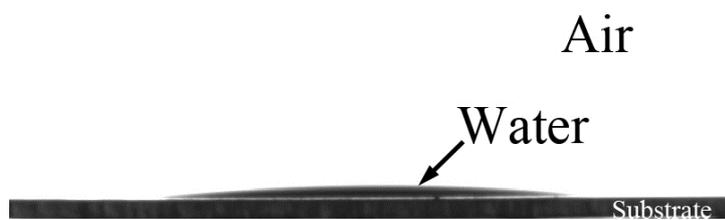


Figure S3. The water contact angle of as-calcined TiO_2 nanotubes on smooth Ti foil. The surface is hydrophilic.

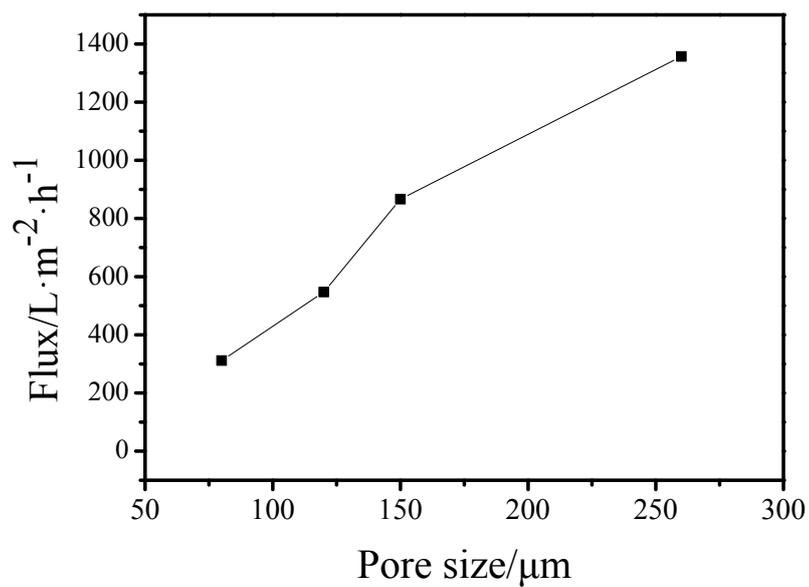


Figure S4. Gravity-driven water flux of anodized porous membrane with different maximal pore sizes (Φ_{max}).

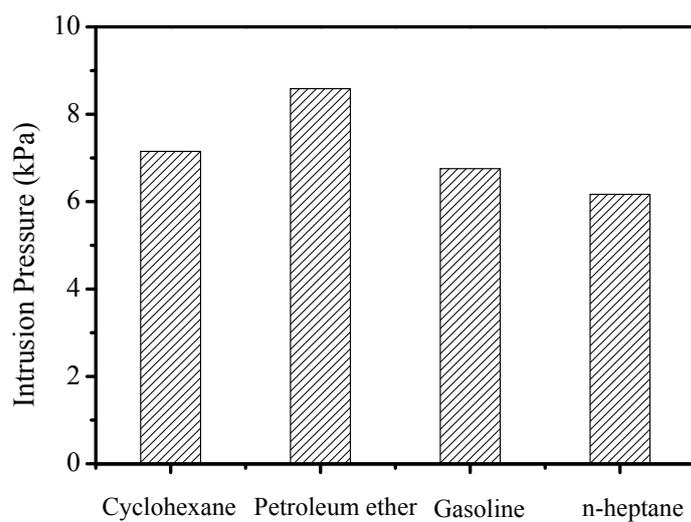


Figure S5. The experimental intrusion pressure of anodized porous membrane with a Φ_{\max} of 260 μm (APM-260) for various oils.

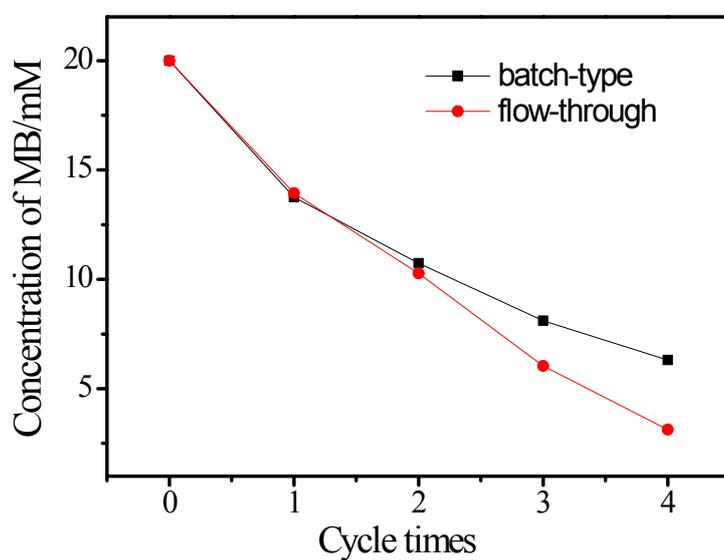


Figure S6. The flow-through and batch-type (stirring) photocatalytic performance of an anodized porous membrane with a Φ_{\max} of 80 μm (APM-80).