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Photo-regenerable multi-walled carbon nanotube membranes for the removal of pharmaceutical micropollutants from water

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Fig. S1. MWNTs-TiO$_2$ membranes with different loadings. The MWNTs vs. TiO$_2$ ratio was kept constant at 1:1. The membranes were prepared by depositing 1, 5, 10, 20, and 50 mg each of MWNTs TiO$_2$ on mixed cellulose acetate filter paper using vacuum filtration.

Fig. S2. The SEM micrographs of anatase TiO$_2$ spheres (a) before and (b) after in-house treatment. The surface area was increased upon treatment of TiO$_2$. 
Fig. S3. Contact angle of deionized water with (a) MWNTs membrane and (b) MWNTs-TiO$_2$ membrane. The contact angle is $<90^\circ$, depicting that both surfaces are hydrophilic. However, MWNTs-TiO$_2$ appeared relatively more hydrophilic when compared to MWNTs membrane. The contact angle was measured by dropping ~3 μL deionized water on dry membrane surface at room temperature.
Fig. S4. Removal of (a) Acetaminophen, (b) Ibuprofen, and (c) Carbamazepine from water by MWNTs-only membrane (□), MWNTs-TiO₂ membrane (○) and MWNTs-TiO₂ membrane after photo-regeneration (△) under same conditions. The influent pharmaceutical’s concentration was 10 mg/L. Adsorption was performed at room temperature and concentrations of influents and effluents were determined using UV-Vis.
References