ELECTRONIC SUPPLEMENTARY INFORMATION (ESI)

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

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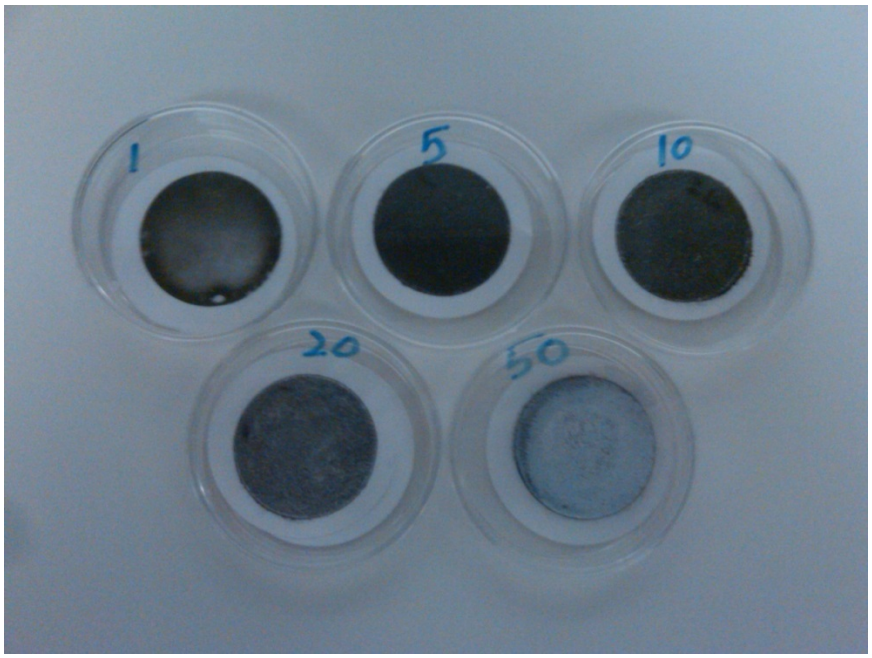

Fig. S1. MWNTs-TiO_2 membranes with different loadings. The MWNTs vs. TiO_2 ratio was kept constant at 1:1. The membranes were prepared by depositing 1, 5, 10, 20, and 50 mg each of MWNTs TiO_2 on mixed cellulose acetate filter paper using vacuum filtration.

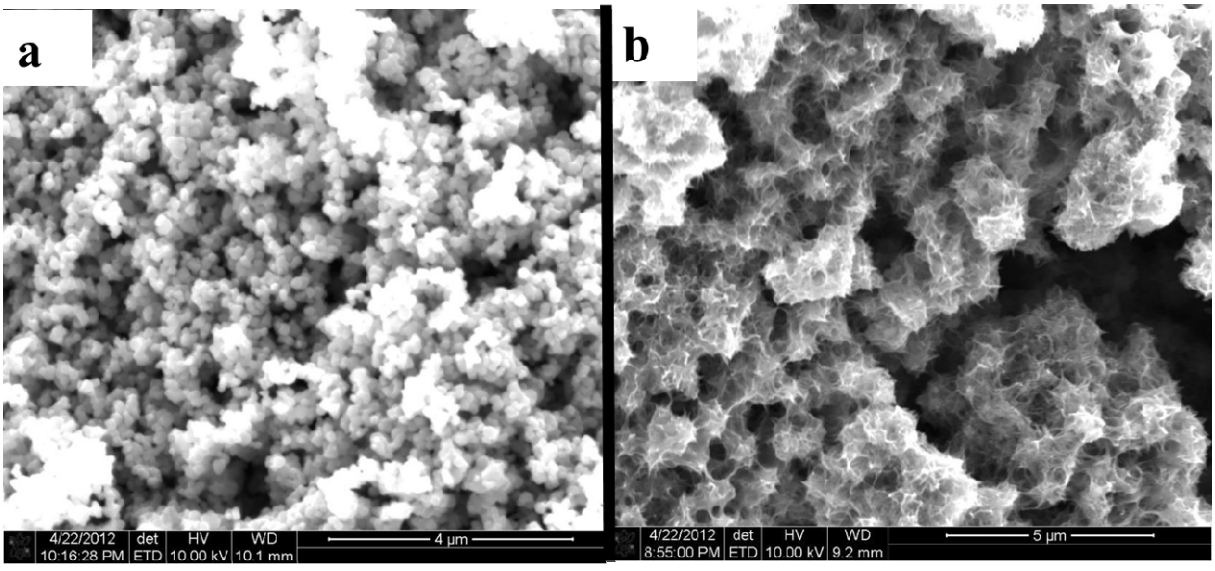

Fig. S2. The SEM micrographs of anatase TiO_2 spheres (a) before and (b) after in-house treatment. The surface area was increased upon treatment of TiO_2.

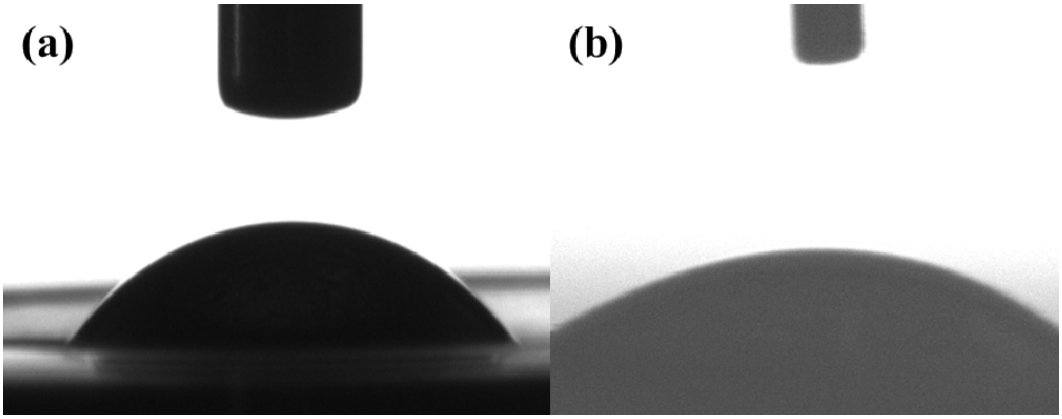

Fig. S3. Contact angle of deionized water with (a) MWNTs membrane and (b) MWNTs-TiO_2 membrane. The contact angle is <90°, depicting that both surfaces are hydrophilic. However, MWNTs-TiO_2 appeared relatively more hydrophilic when compared to MWNTs membrane. The contact angle was measured by dropping ~3 µL deionized water on dry membrane surface at room temperature.

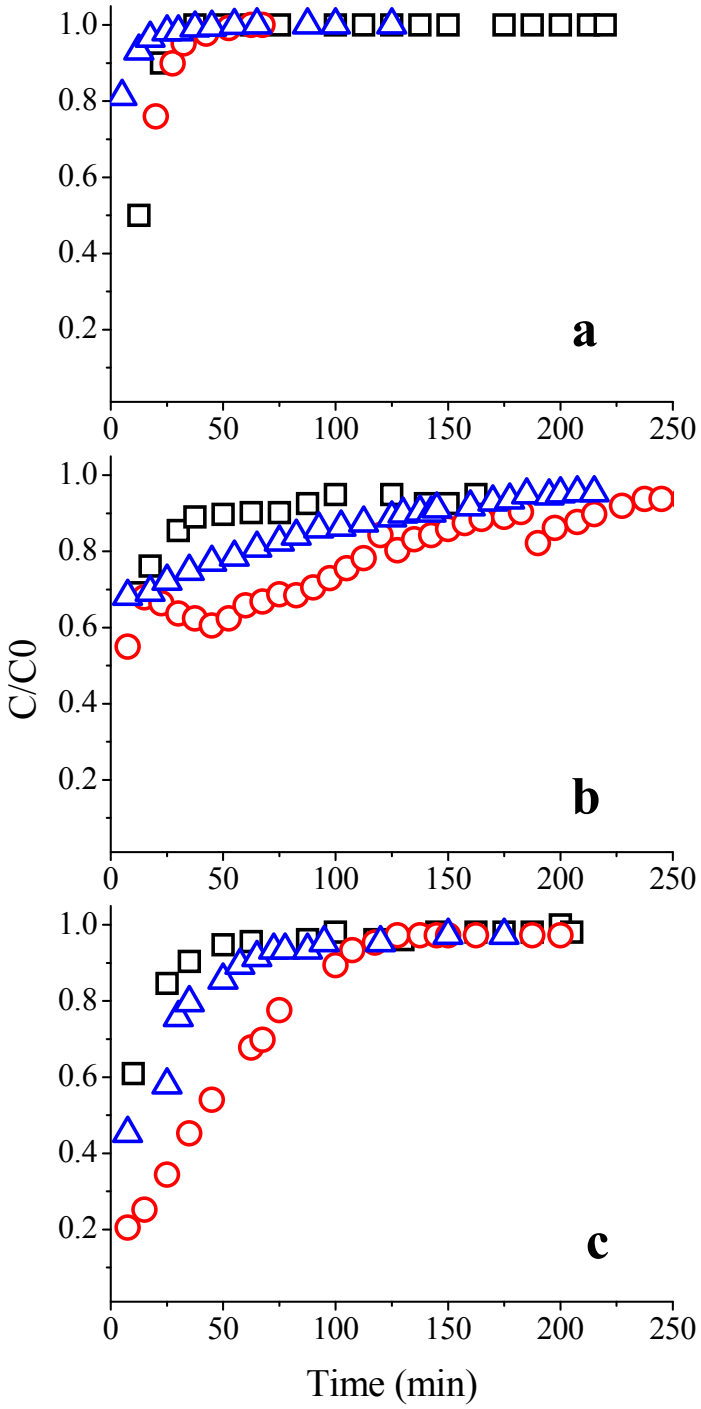

Fig. S4. Removal of (a) Acetaminophen, (b) Ibuprofen, and (c) Carbamazepine from water by MWNTs-only membrane (□), MWNTs-TiO_2 membrane (○)and MWNTs-TiO2 membrane after photo-regeneration (Δ) under same conditions. The influent pharmaceutical's concentration was 10 mg/L. Adsorption was performed at room temperature and concentrations of influents and effluents were determined using UV-Vis.

References

1. R. Förch, H. Schönherr, A. Tobias and A. Jenkins, in Surface Design: Applications in Bioscience and Nanotechnology, Wiley-VCH Verlag GmbH & Co. KGaA, 2009, pp. 471-473.