

Hydrophilic TiO₂ porous spheres anchored on hydrophobic polypropylene membrane for wettability induced high photo degrading activities

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Supporting Information

The supporting information contains 8 figures.

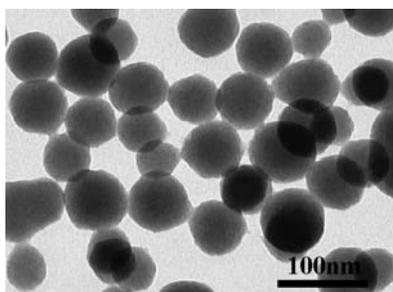


Figure S1 TEM image of TiO₂ nanosphere precursor

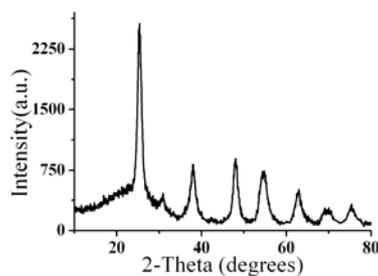


Figure S2 XRD patterns for TiO₂ porous nanospheres

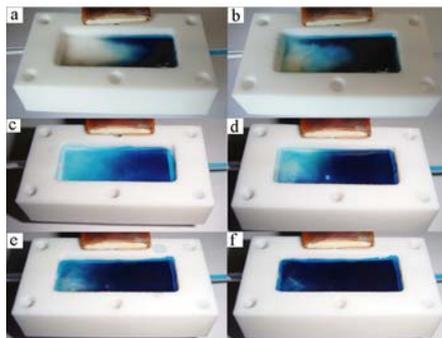


Figure S3 Photos of Methylene blue aqueous solution (100mg/L) degraded by TiO₂/PP composite film under UV irradiation at a flow rate of (a) 3 ml/h, (b) 4ml/h, (c) 5ml/h, (d) 6 ml/h, (e) 7 ml/h, and (f) 8 ml/h in the Teflon micro cell, respectively;

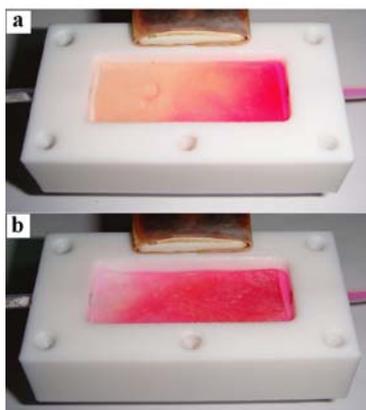


Figure S4 Photos of Rhodamine B aqueous solution (100mg/L) degraded by TiO₂/PP composite film under UV irradiation at a flow rate of (a) 4ml/h and (b) 5ml/h in the Teflon micro cell.

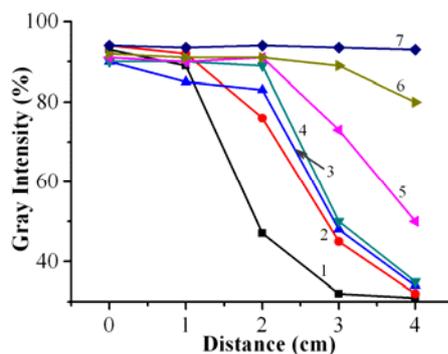


Figure S5 The concentration profiles of Methylene blue aqueous solutions along the flow direction with different flow rates. (1), (2), (3), (4), (5), and (6) refer to 3ml/h, 4ml/h, 5ml/h, 6ml/h, 7ml/h, and 8ml/h of flow rate, respectively. There is not any photo discoloration activity of polypropylene substrate (7) for Methylene blue aqueous solution.

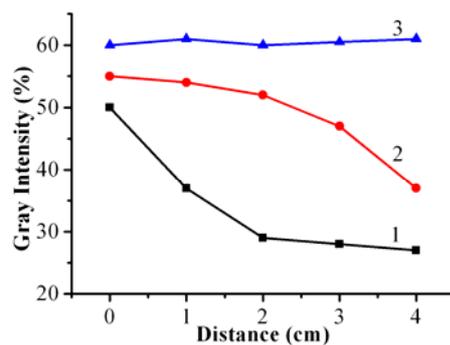


Figure S6 The concentration profiles of Rhodamine B solutions along the flow direction with different flow rates. (1) and (2) refer to 4ml/h and 5ml/h of flow rate. There is not any photo discoloration activity of polypropylene substrate (3) for Rhodamine B aqueous solution.

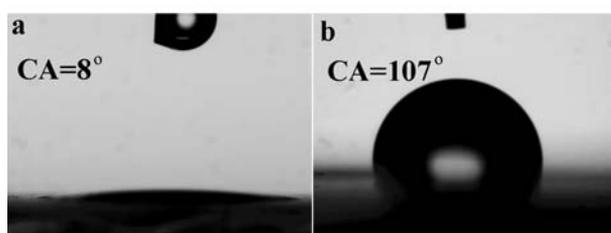


Figure S7 Photographs of a water droplet with a contact angle of (a) 8° for hydrophilic TiO₂ porous spheres deposited as a thin film on a glass substrate and (b) 107° on hydrophobic PP porous membrane.

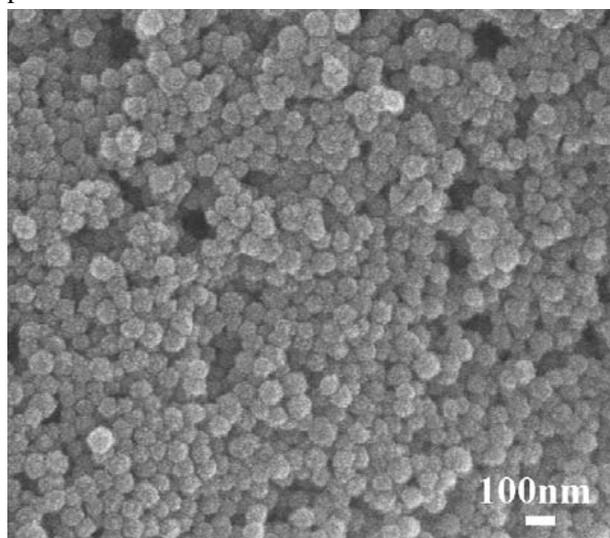


Figure S8 SEM image of TiO₂/PP composite thin film (with 0.29 mg of TiO₂ loading) after 60 h of photo degrading test at a flow rate of 8 ml/h, which shows no noticeable difference to the SEM image of fresh ones.