Flexible TiO_2/Cellulose Acetate Hybrid Film as Recyclable Photocatalyst

Xiujuan Jin[a], Jing Xu[a], Xianfu Wang[a], Zhong Xie[a], Zhe Liu[a,b], Bo Liang[a,b], Di Chen*[a] and Guozhen Shen*[b]

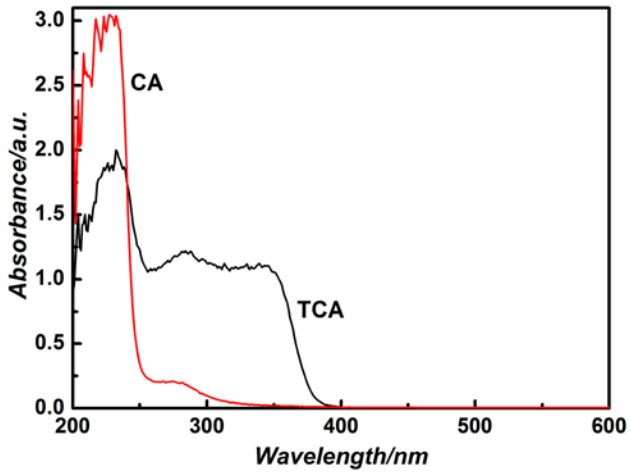

Figure S1. UV-vis absorption spectra of CA film and TCA hybrid film.

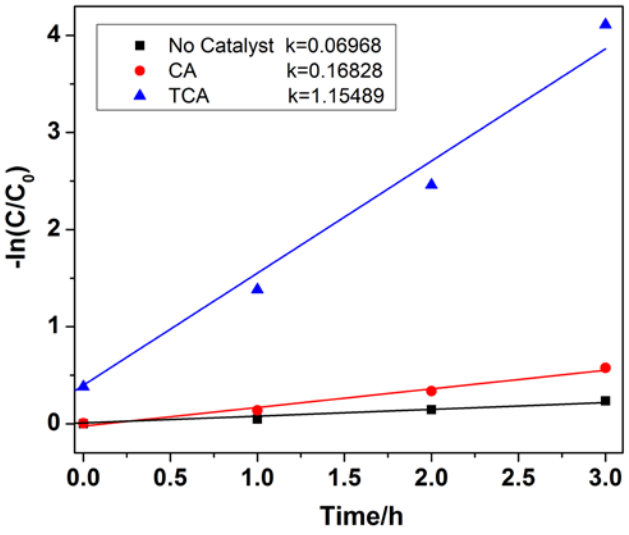

Figure S2. Kinetic linear simulation curves of MB photocatalytic degradation. The vertical line at t=0 separates the dark period from the UV-irradiated one.

It is well known that the photocatalytic degradation of MB followed the Langmuir-Hinshelwood kinetics. The values of the apparent first-order reaction rate constant k can be determined from below equation:

$$\ln(C_0/C)=kt$$

Therein, k is the degradation reaction rate constant, C_0 and C are the initial concentration and the concentration at reaction time t for MB, respectively.

References:

1 M.R. Hoffmann, S.T. Martin, W. Choi, D.W. Bahnemann, *Chem. Rev.* ,1995, **95**, 69.
2 C. Y. Su, Y. F. Tong, M. Y. Zhang, Y. Zhang, C. L. Shao, *RSC Advance*, 2013, **3**, 7503.

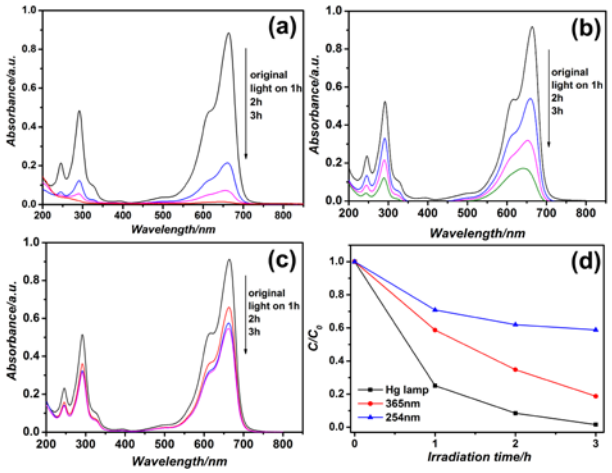

Figure S3. UV-vis adsorption spectra of MB solution under different light sources in the presence of TCA hybrid film. (a) Hg lamp, (b) UV-365 nm LED and (c) UV-254 nm LED. (d) MB concentration changes under different light sources.

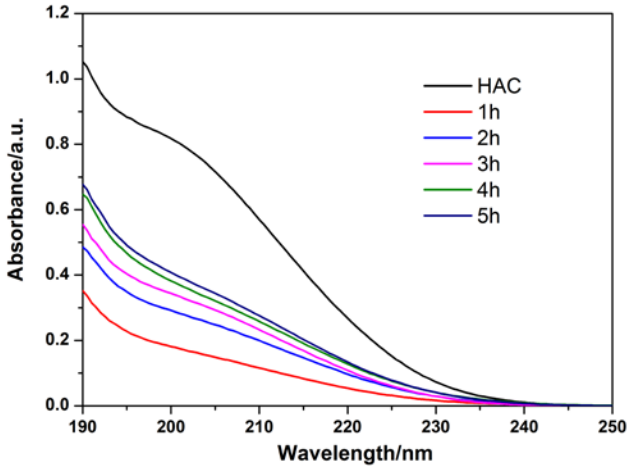

Figure S4. UV-vis absorption spectra of aqueous solution with CA film under the irradiation of UV light.