Supporting Information

Citric Acid/Cysteine Modified Cellulose-based Materials: Green Preparation and Its Applications in Anti-counterfeiting, Chemical Sensing, and UV Shielding

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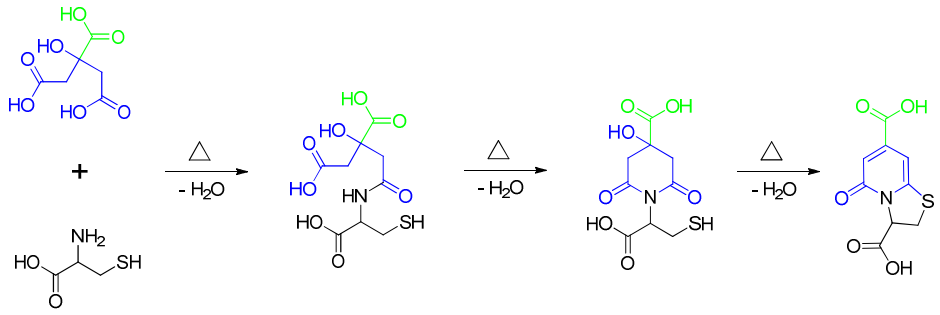

Figure S1. Schematic illustration of CCF formation from citric acid and cysteine through multi-dehydration.

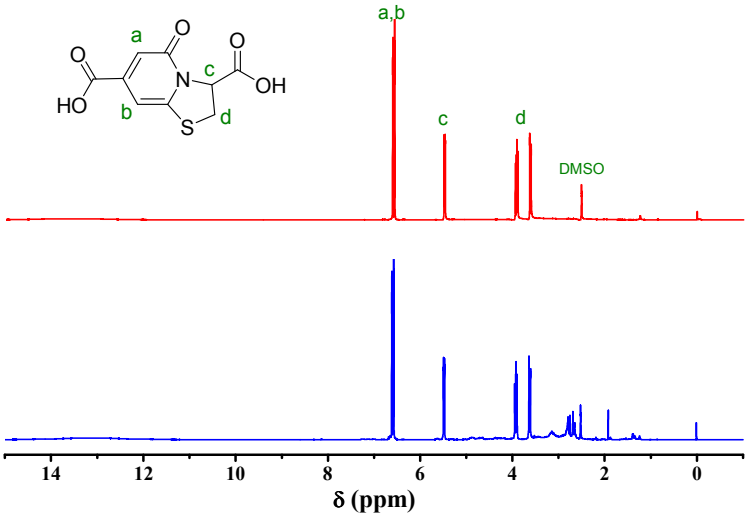

Figure S2. ^{1}H NMR spectra of TPA (red curve) and crude product of heating citric acid and cysteine (blue curve).

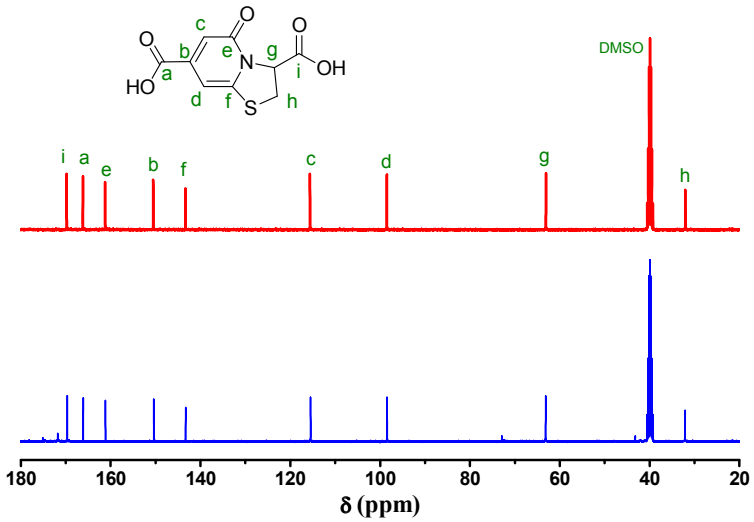

Figure S3. ^{13}C NMR spectra of TPA (red curve) and crude product of heating citric acid and cysteine (blue curve).

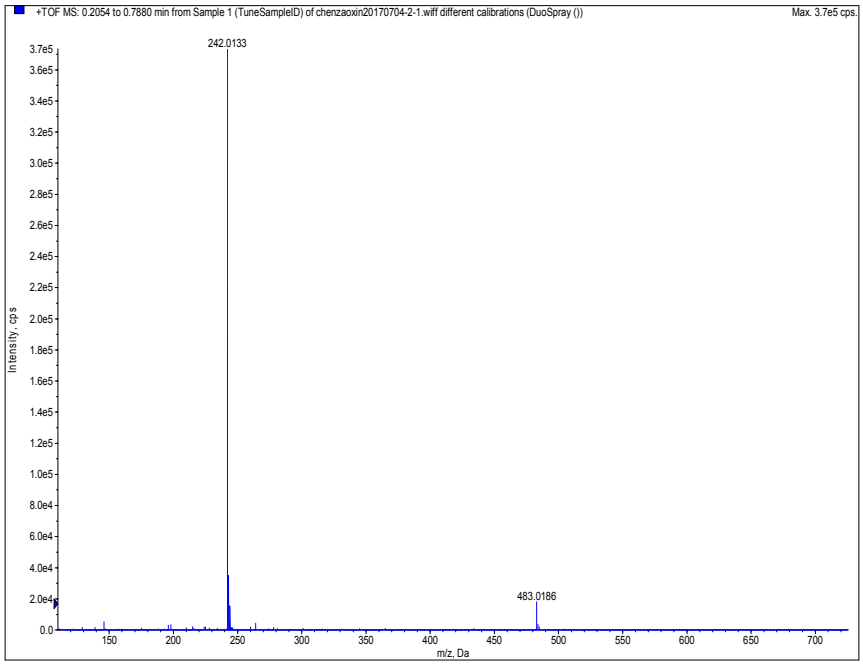

Figure S4. ESI-MS spectrum of TPA.

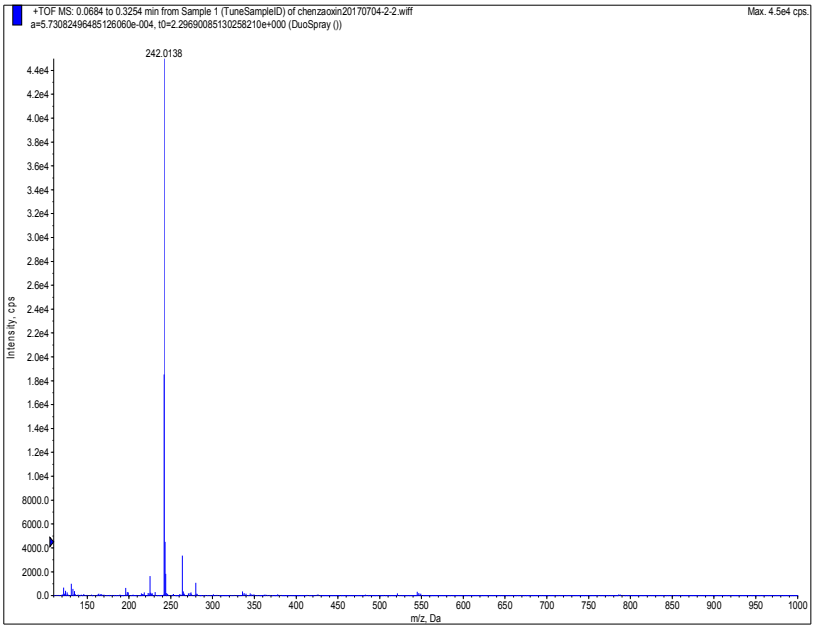

Figure S5. ESI-MS spectrum of crude product of heating citric acid and cysteine.

Figure S6. Digital photographs of CCF powders (left) and CCF-modified cellulose powders (right) under UV light (λ_{ex} = 365 nm) irradiation. CCF powders were prepared according to Shi et al's paper.[31]

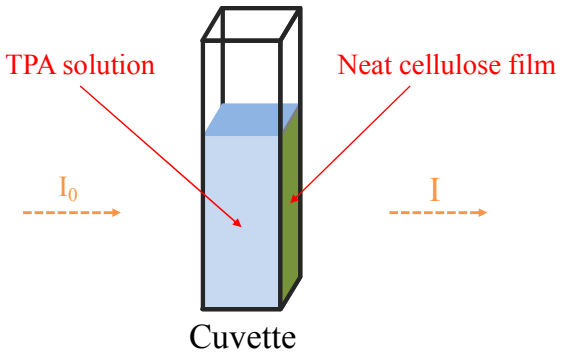

Figure S7. Schematic diagram of determining UV-Vis absorption of neat cellulose film in TPA solution.

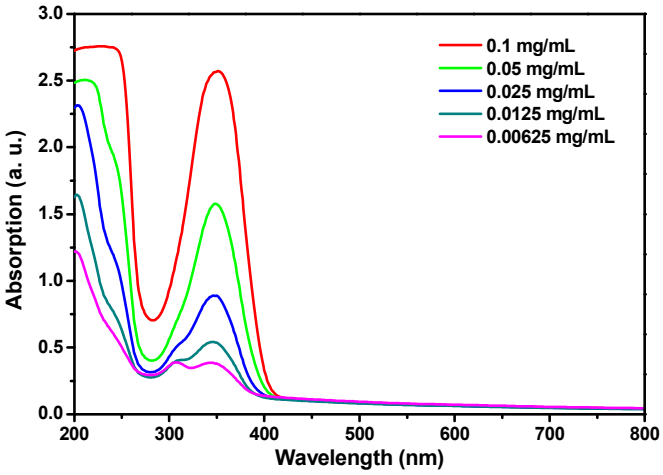

Figure S8. UV-Vis spectra of neat cellulose film in TPA aqueous solutions of different concentrations.

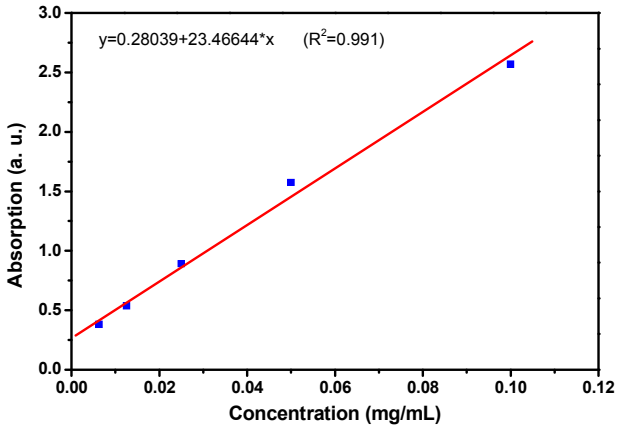

Figure S9. Standard calibration curve of neat cellulose film in TPA aqueous solutions of different concentrations (absorbance measured at 351 nm).

Figure S10. Doped fluorescent fibers in Hong Kong dollar banknote observed under UV light (λ_{ex} = 365 nm) (top) and visible light (bottom) irradiation.

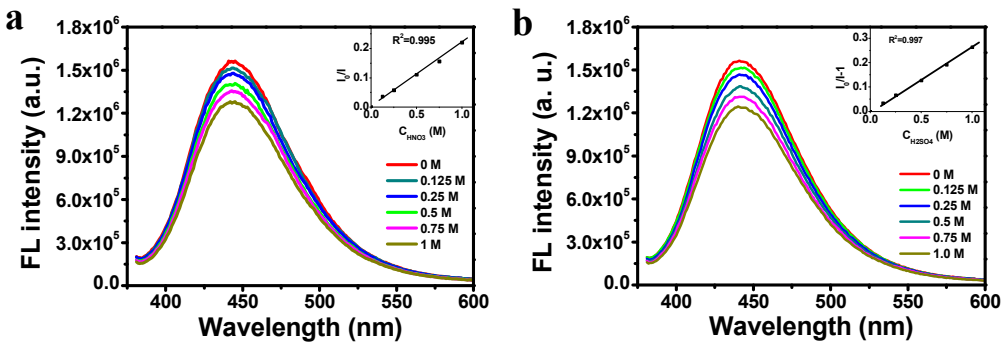

Figure S11. Emission spectra of CCF-modified cellulose film in aqueous HNO_3 solutions of different concentrations (a), and that of CCF-modified cellulose film in aqueous H_2SO_4 solutions of different concentrations (b).