

SUPPORTING INFORMATION

Results

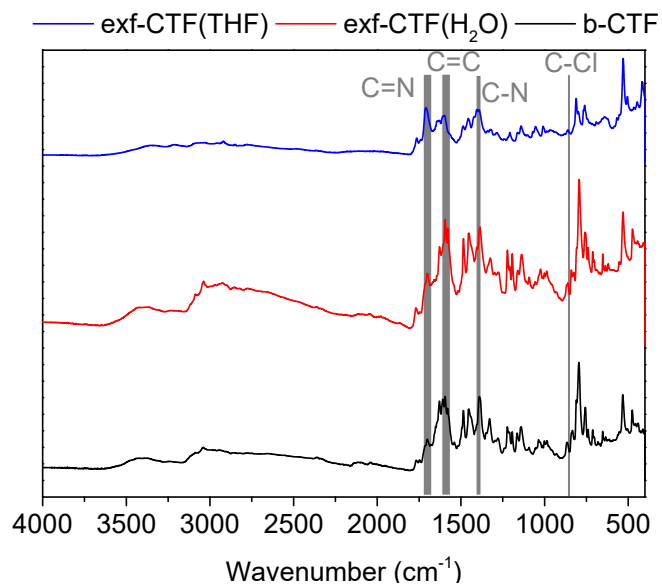


Figure S1. FTIR spectra of the final bulk covalent triazine frameworks after the nucleophilic substitution and after its exfoliation in H₂O and THF

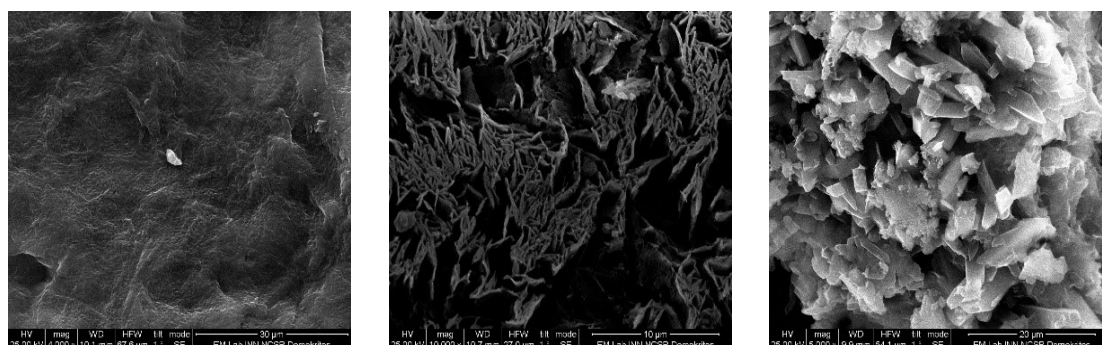


Figure S2. SEM images of a) b-CTF(from Toluene), its exfoliated forms in H₂O (b) and rearrangement in THF (c)

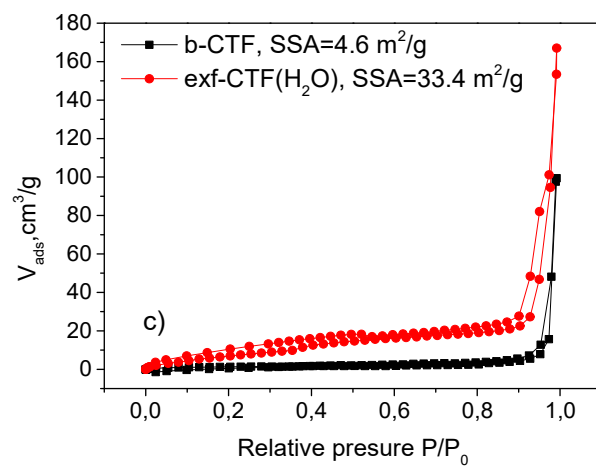


Figure S3 N_2 adsorption/desorption isotherm profile and SSA values of b-CTF and exfoliated exf-CTF(H_2O)

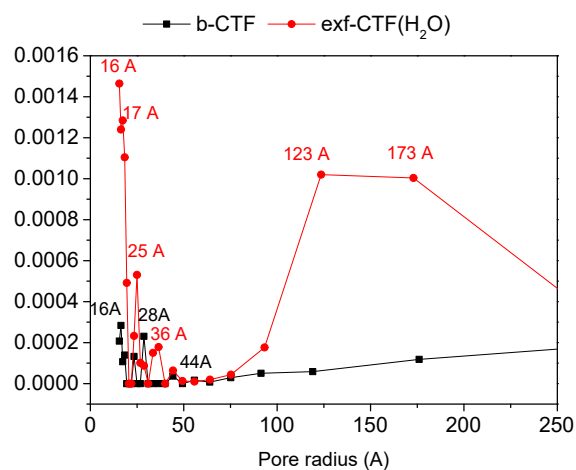


Figure S4. BJH pore size distribution of b-CTF and exfoliated CTF in H_2O

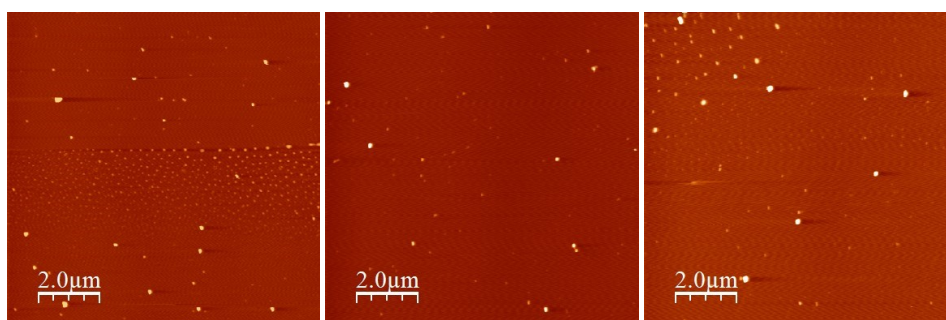


Figure S5. Three different areas captured by atomic force microscopy of spin coated $5.59 \cdot 10^{-5}$ M b-CTF deposited on Si wafer (vertical scale : 40 nm)

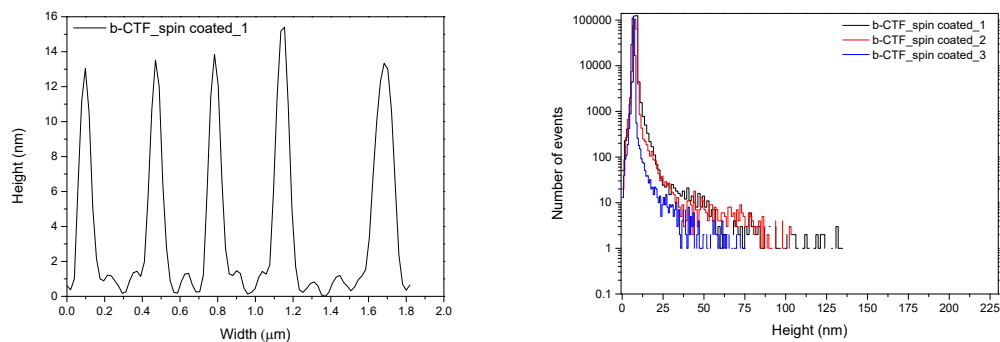


Figure S6. 2D-Profile of a region at b-CTF_spincoated_1 to the right and the histograms of the 2 μm areas captured at spin coated b-CTF aqueous dispersion to the left

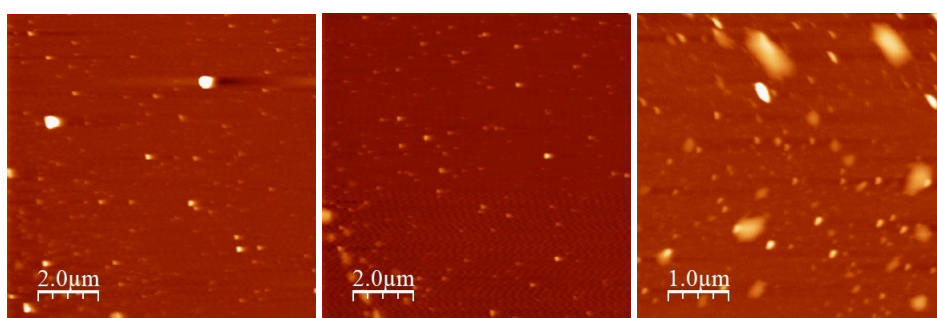


Figure S7. Three different areas captured by atomic force microscopy of spin coated $5.59 \times 10^{-6} \text{ M}$ b-CTF irradiated for 2 minutes under UV light (vertical scale : 60nm)

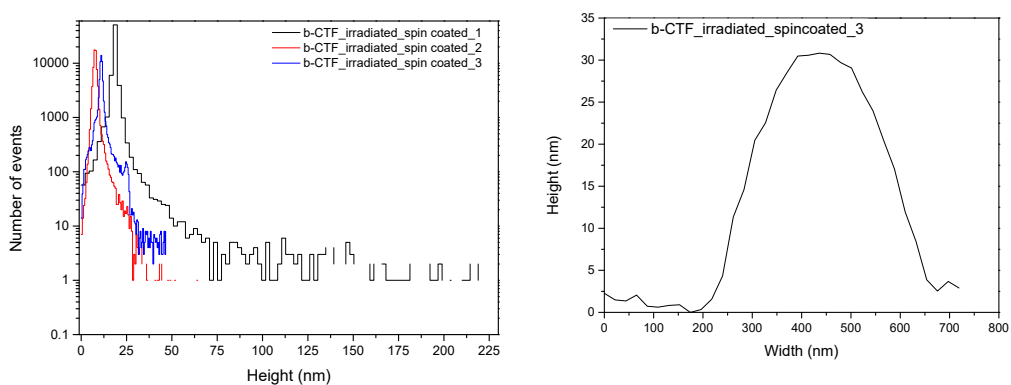


Figure S8. The histograms of the 2 μm areas captured at spin coated b-CTF_irradiated aqueous dispersion (left) and to the right a 2D-Profile of a region at b-CTF_irradiated_spincoated_1

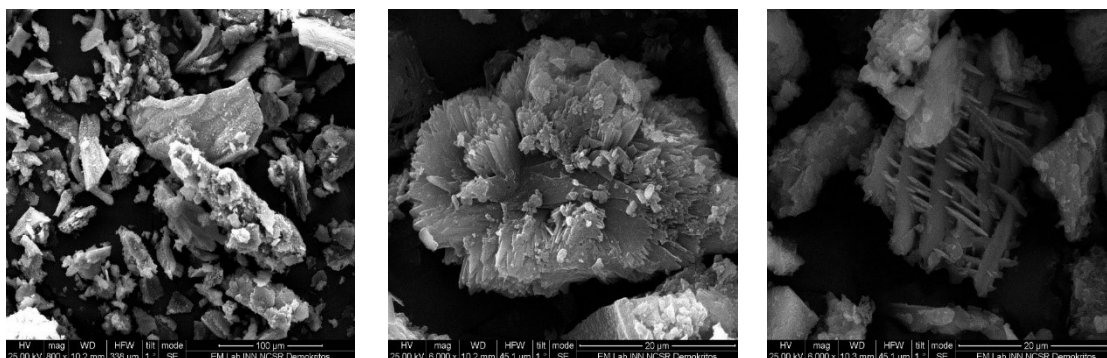


Figure S9. SEM images of *b*-CTF irradiated in an aqueous dispersion.

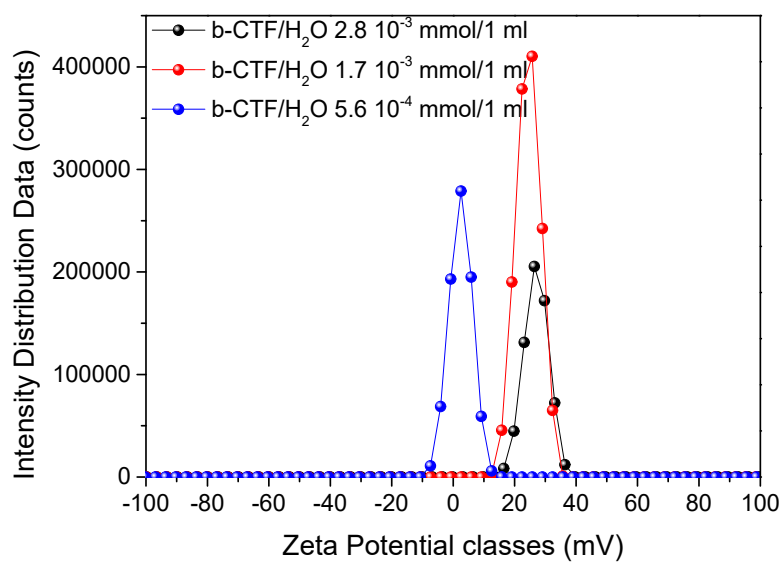


Figure S10. Zeta potential measurements in three different concentrations of *b*-CTF/ H_2O

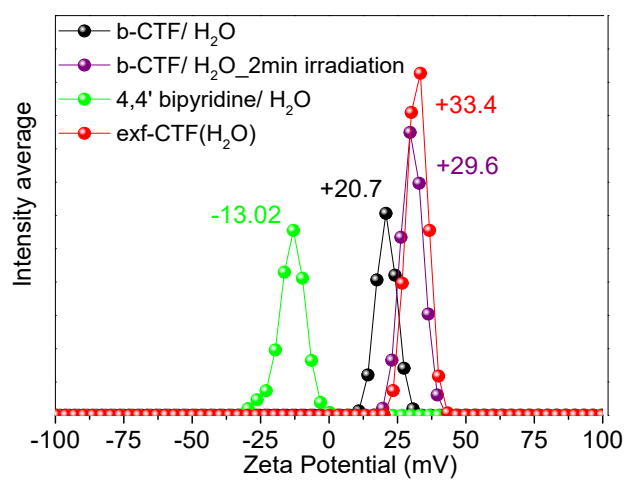


Figure S11. Dynamic light scattering of 4,4' bipyridine in H_2O , *b*-CTF/ H_2O , *b*-CTF/ H_2O UV-irradiated 2 min and exf-CTF(H_2O)

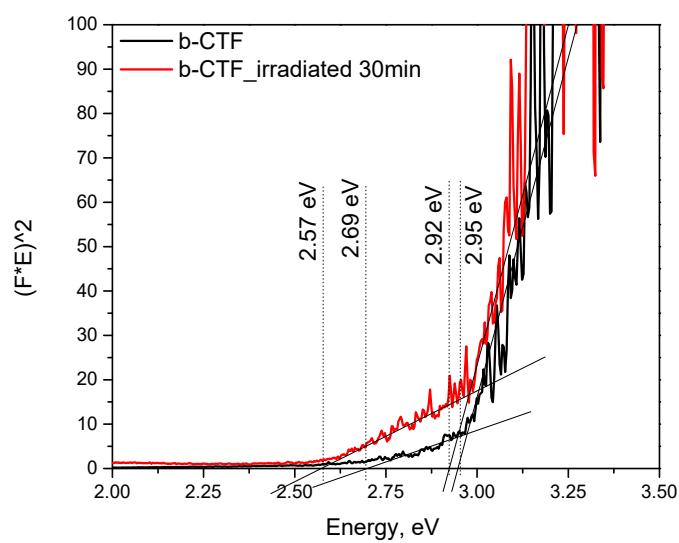


Figure S12. Direct energy gap before and after UV irradiation of the b-CTF powder and the new intermediate states created from the irradiation

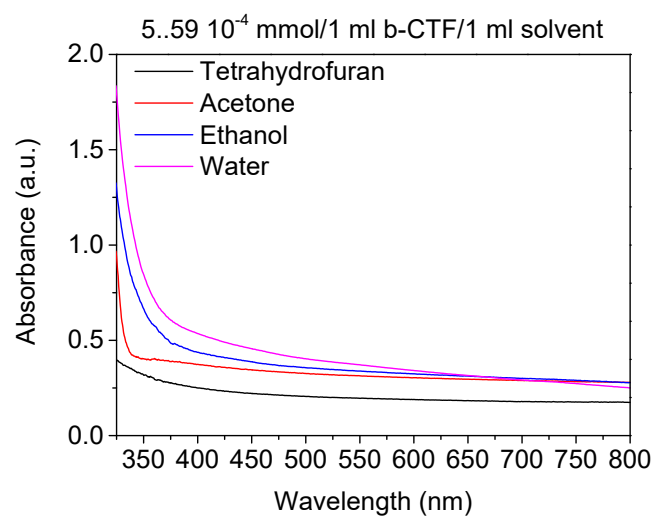


Figure S13. Solvatochromic effect of b-CTF in different solvents at the stable concentration of $5.59 \cdot 10^{-4}$ M.

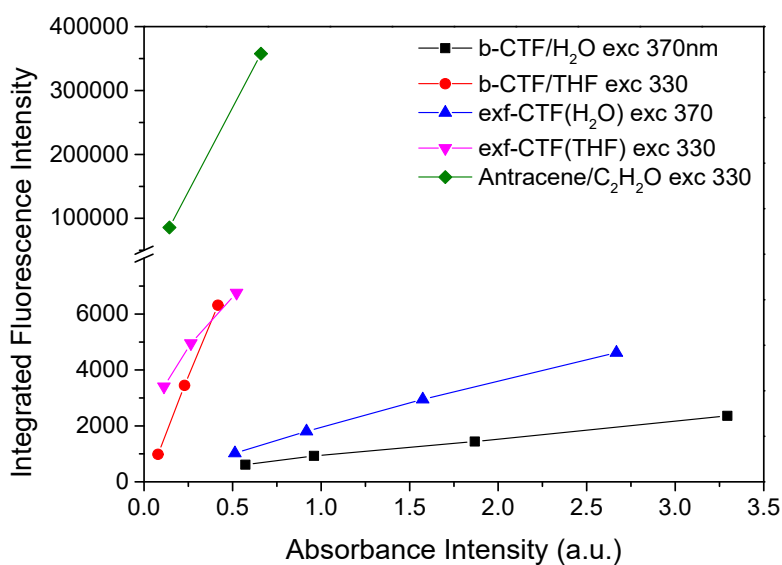


Figure S14. Intensity-absorbance curve of the b-CTF in THF and H₂O dispersions, exf-CTF(H₂O) and exf-CTF(THF)solutions in comparison with C₁₄H₁₀ in C₂H₆O for quantum yield measurements

Table S1. Results of linear fit and quantum yield calculations of the b-CTF dispersed in THF and H₂O and exf-CTF in H₂O and in THF

	$y=a+b*x$	Error	R^2	Quantum yield
Anthracene / C ₂ H ₆ O	$b=525937.33$	-	-	0.27
b-CTF / H ₂ O	$b=631.23$	17.7	0.99764	$3.11 \cdot 10^{-4}$
b-CTF / THF	$b=14885.93$	482.5	0.99686	$8.2 \cdot 10^{-3}$
exf-CTF(H ₂ O)	$b=1658.24$	57.8	0.99636	$8.16 \cdot 10^{-4}$
exf-CTF(THF)	$b=2624.56$	835.5	0.97864	$4.40 \cdot 10^{-3}$

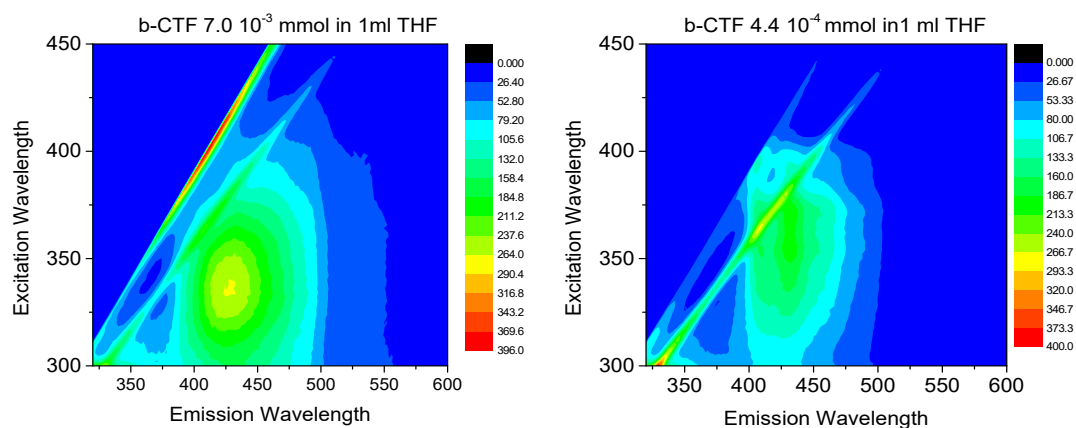


Figure S15. Fluorescence dependence of b-CTFs' concentration in THF

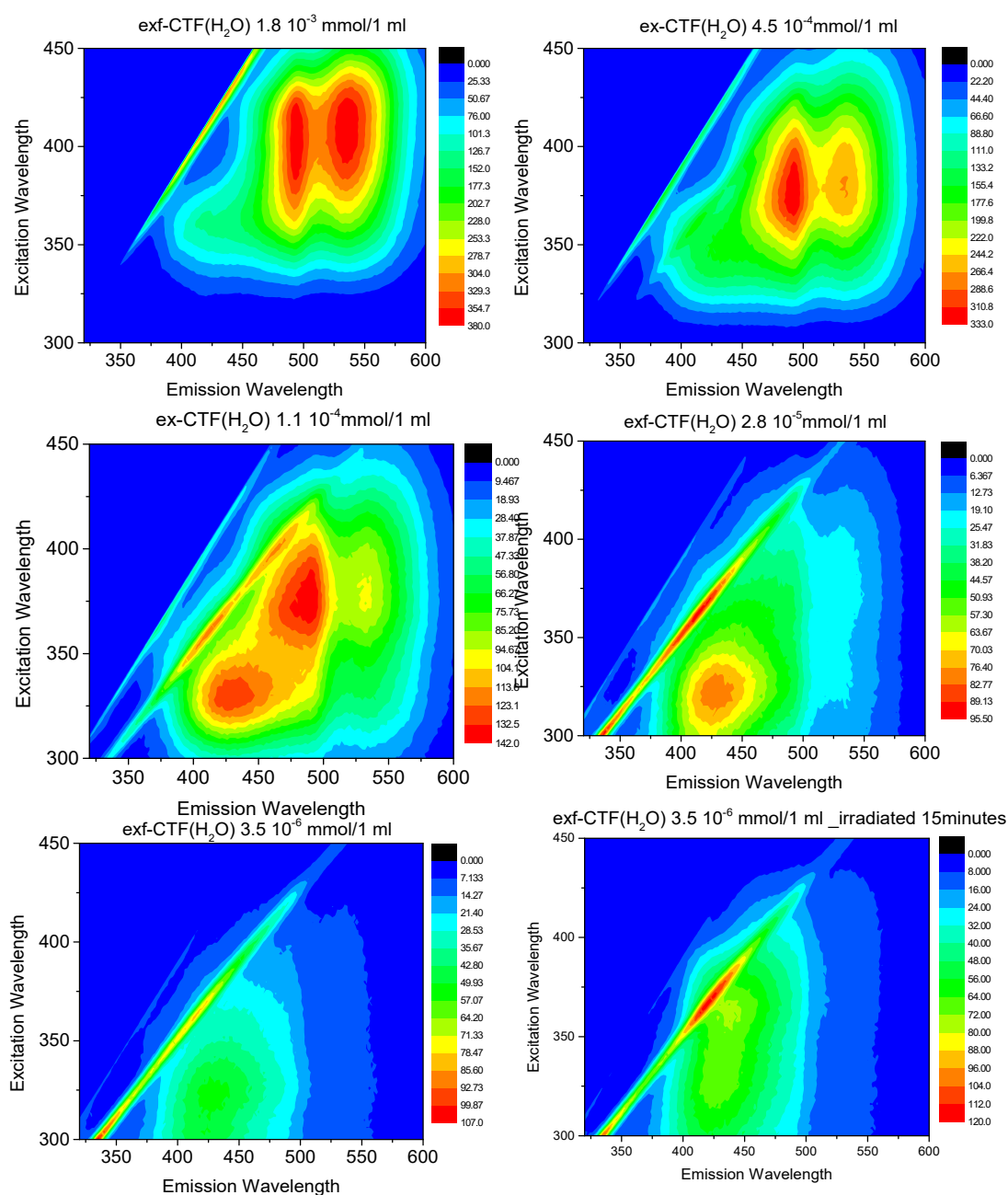


Figure S16. Fluorescence dependence on concentration of the exf-CTF in H_2O .

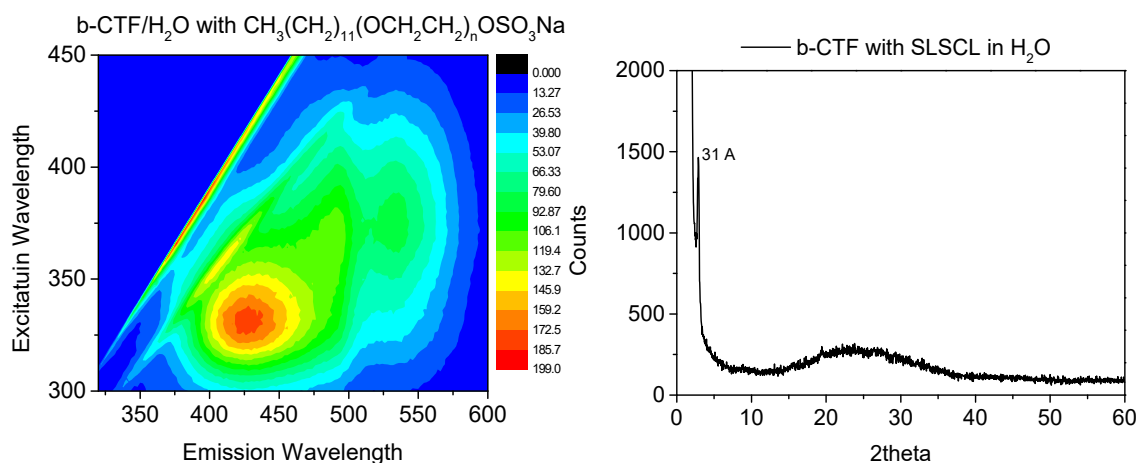


Figure S17. Fluorescence mapping of the 5.6×10^{-4} M b-CTF aqueous dispersion with the addition of sodium lauryl sulfate and its X-ray diffraction pattern.

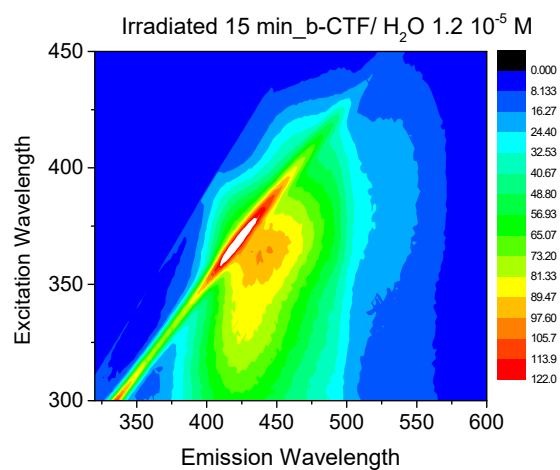


Figure S18 Excitation dependent fluorescence mapping of 1.2×10^{-5} M b-CTF/ H_2O after 15 min under UV irradiation

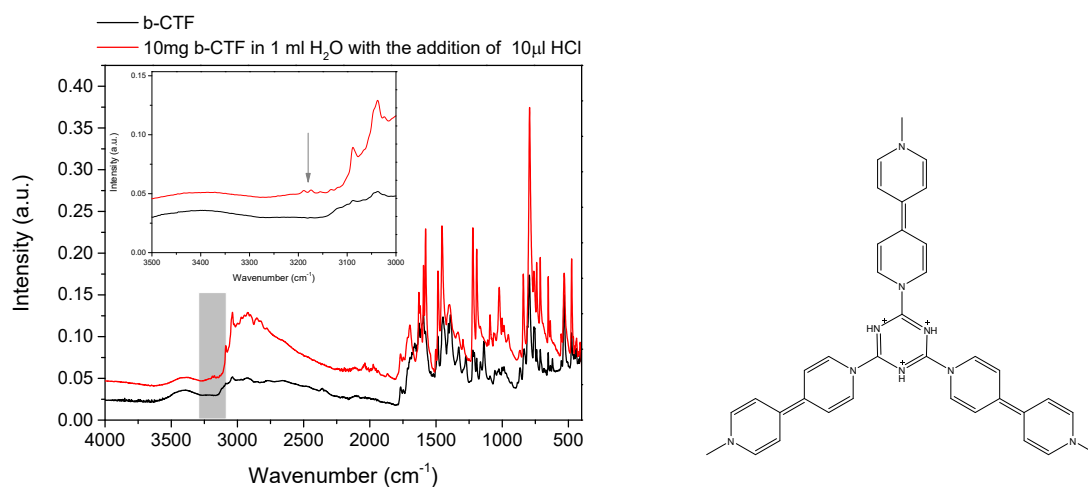


Figure S19. FTIR spectra before and after the protonation of the networks with HCl. The spectra are indicating the symmetric and antisymmetric vibration modes of N-H bonds, after protonation of the nitrogen of the central triazine unit and terminal pyridine groups. The area corresponding to a protonated nitrogen is shown as an inset.

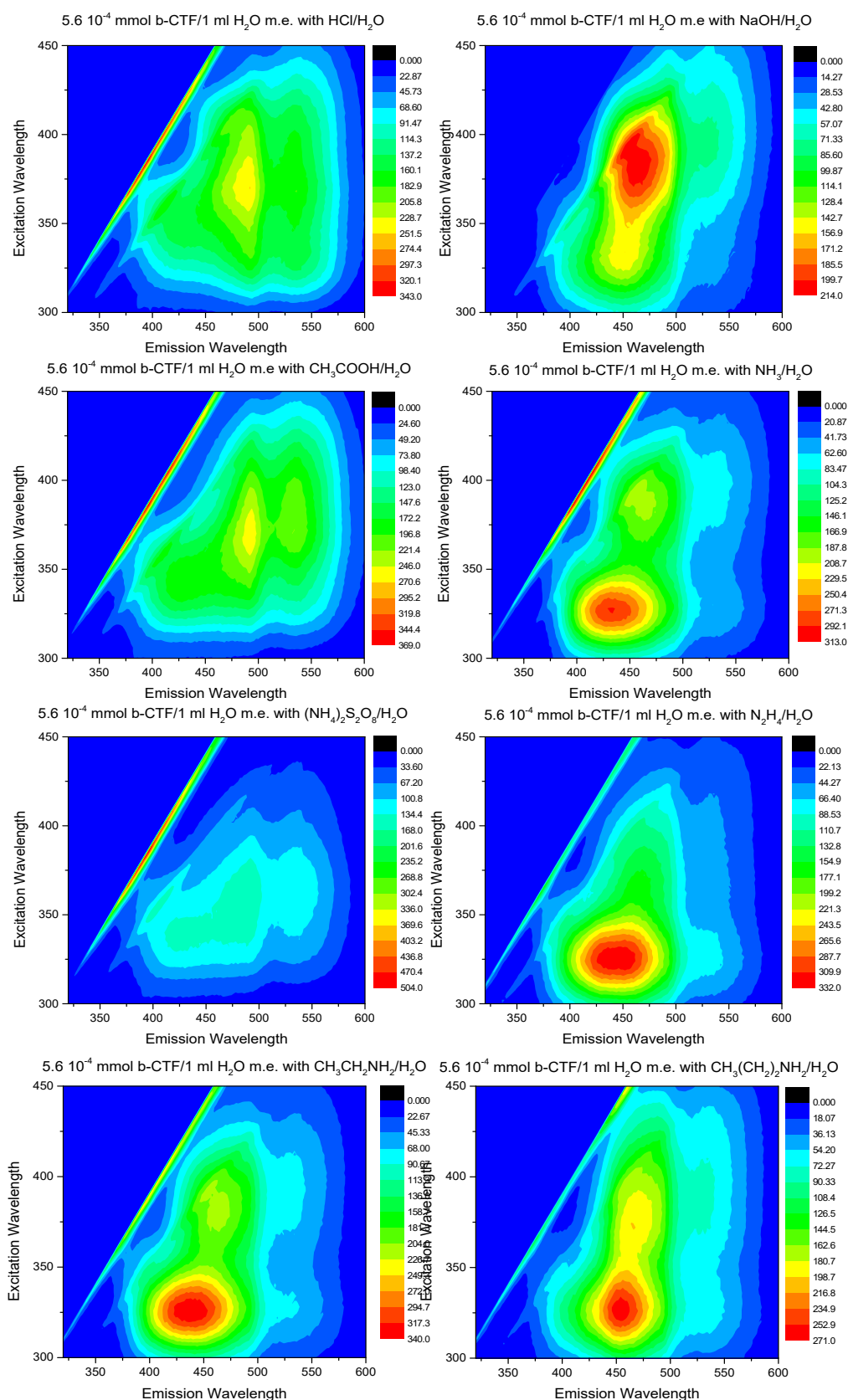


Figure S20. Fluorescence mapping of additions in molecular equivalence with 5.6×10^{-4} mmol b-CTF in 1 ml aqueous dispersions

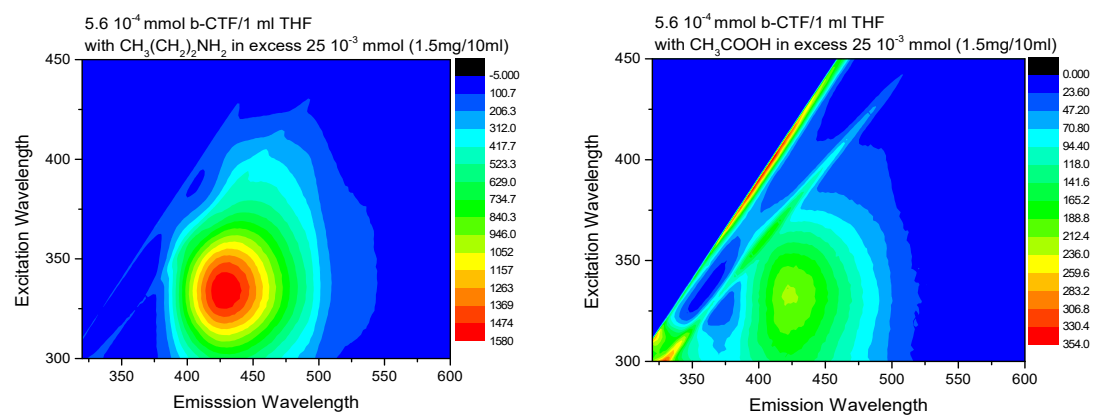


Figure S21. Addition of weak base and acid in mass equivalence with b-CTF in THF

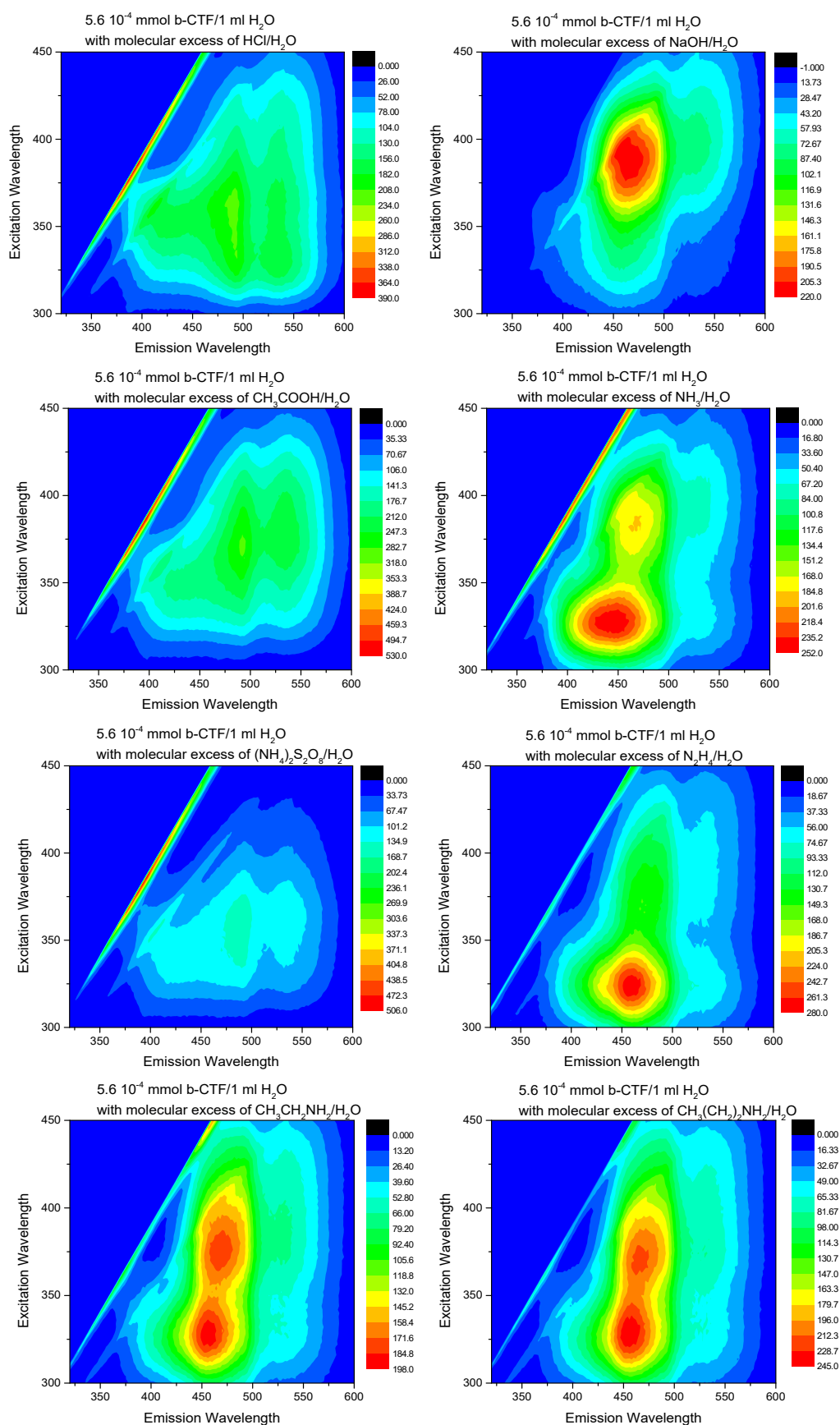


Figure S22. Fluorescence mapping of additions in molecular excess(x10times) with 5.6×10^{-4} mmol b-CTF in 1 ml aqueous dispersions

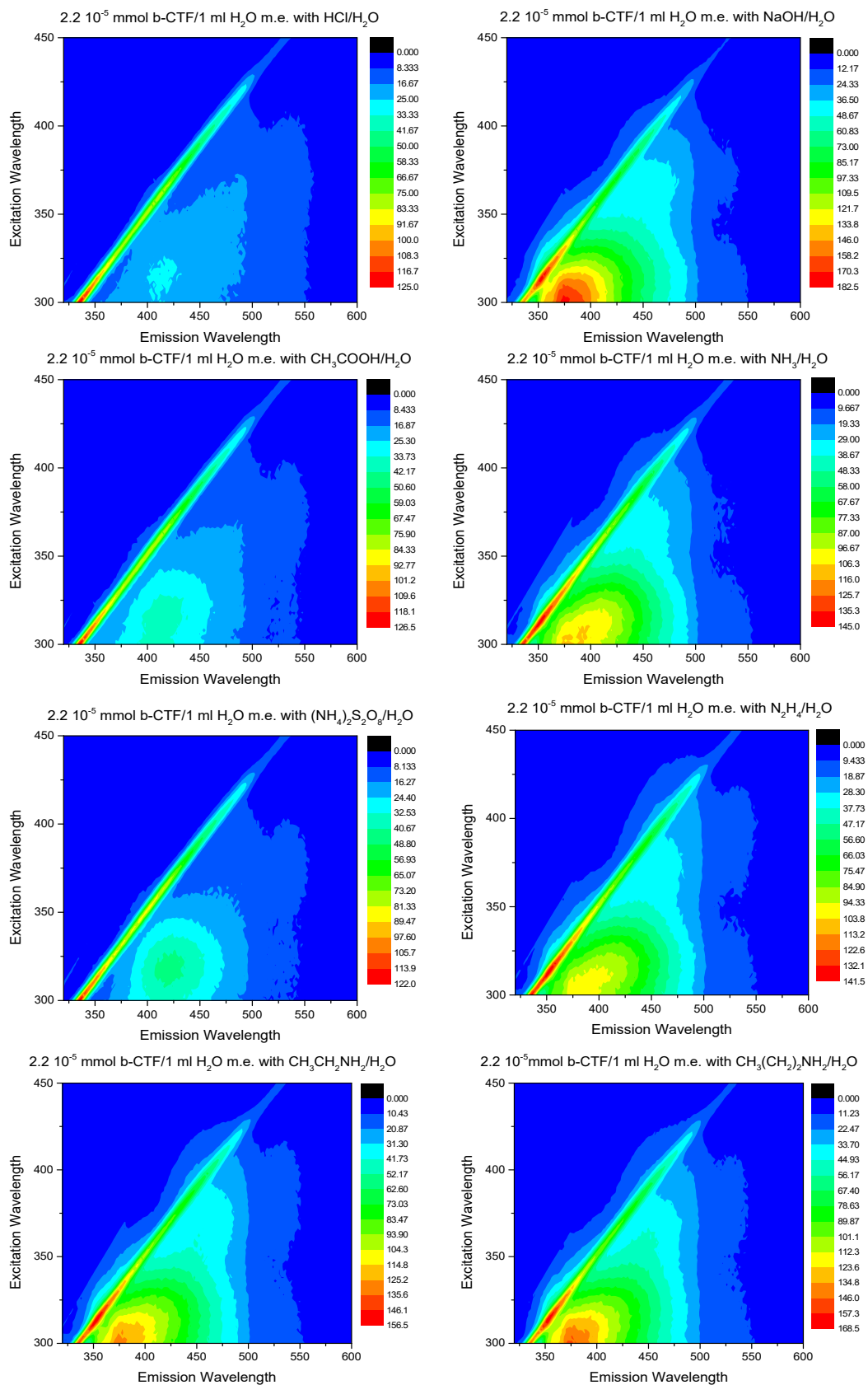


Figure S23. Fluorescence mapping of additions in molecular equivalence with 2.2×10^{-5} mmol b-CTF in 1 ml aqueous dispersions

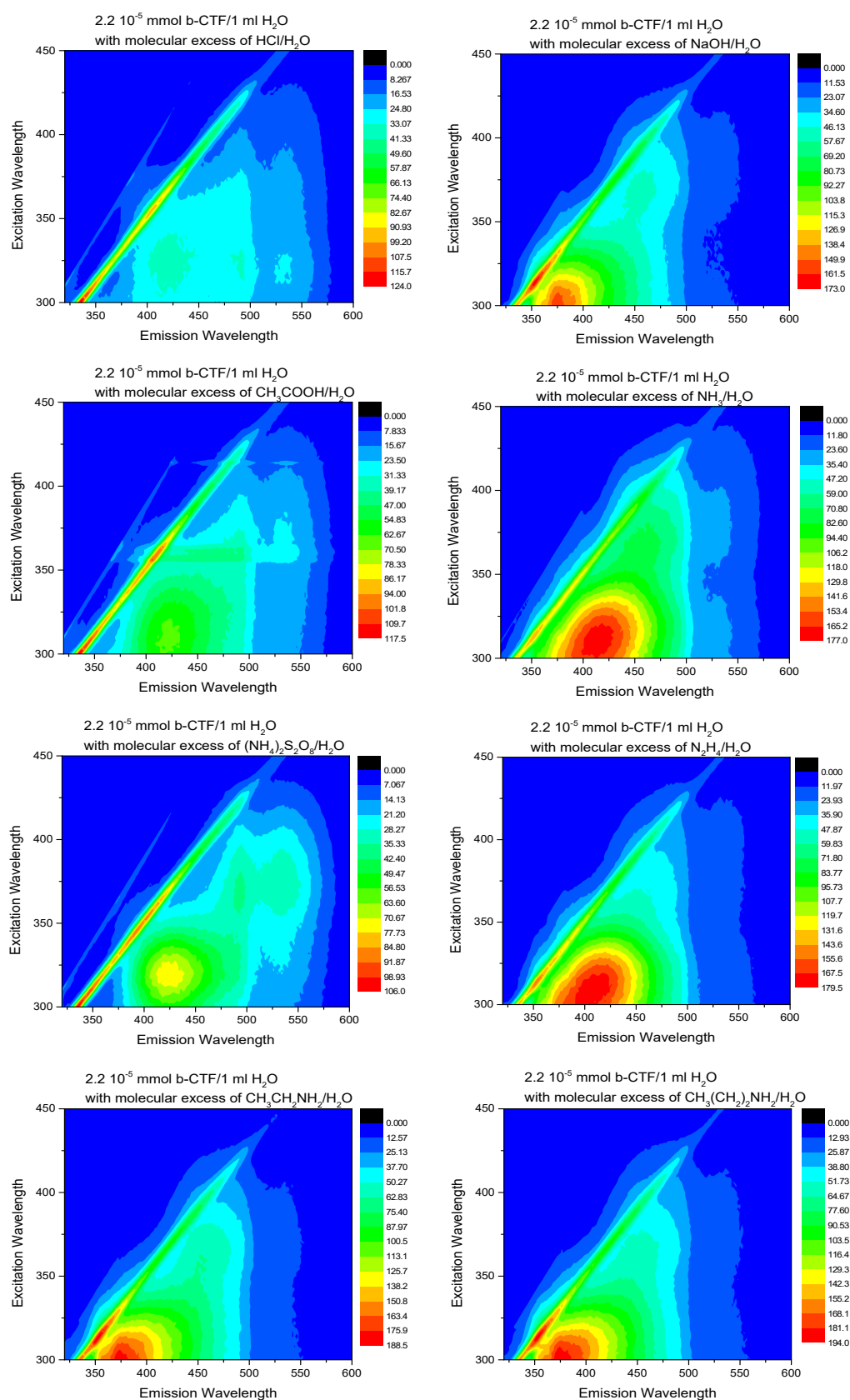


Figure S24. Fluorescence mapping of additions in molecular excess with 2.2×10^{-5} mmol b-CTF in 1 ml aqua dispersions

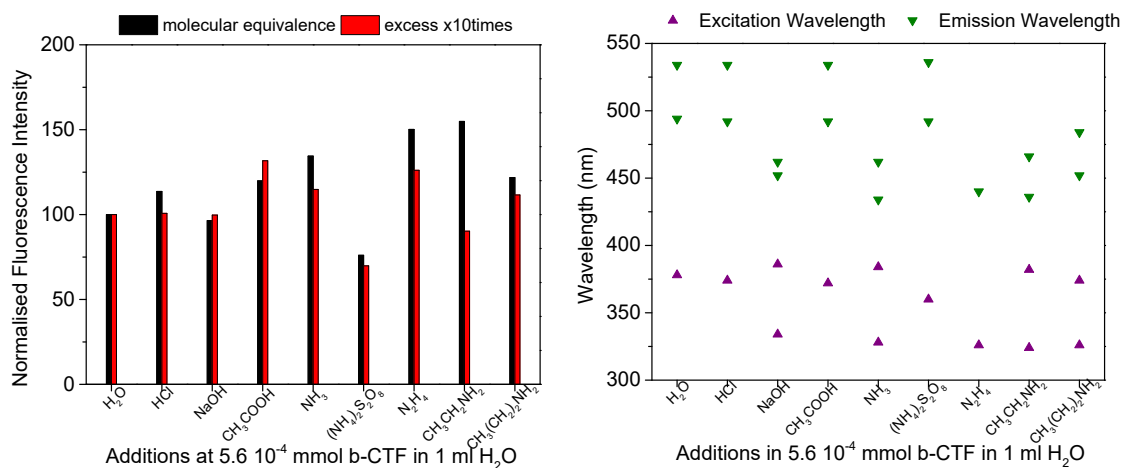


Figure S25. Fluorescence response chart depending on the added reagent and the provoked changes at the maximum intensity of the b-CTF. The concentration was 5.9×10^{-4} M and the excitation and emission positions obtained by the 3D fluorescence mapping after the additions.

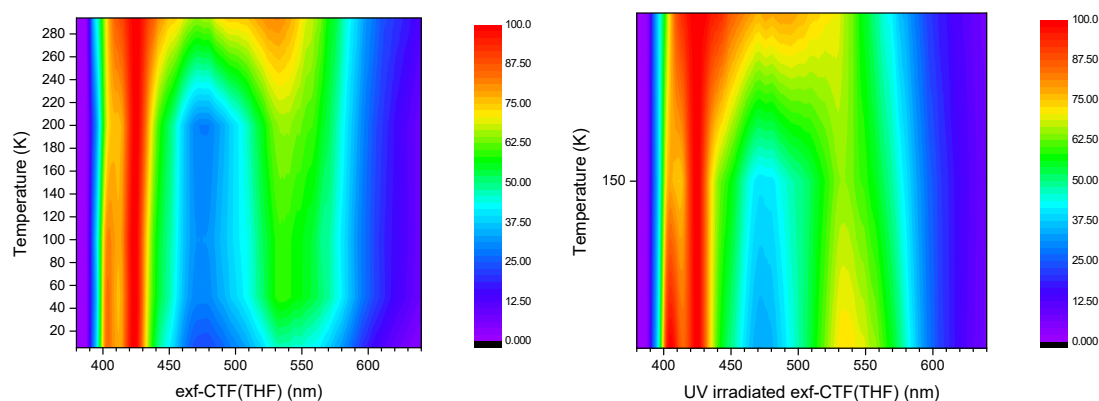


Figure S26. Heat maps of the exf-CTF(THF) emission depending on the temperature, before and after irradiation of 30min