

Supplementary Material for PCCP  
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## **Electronic Supplementary Information (ESI)**

### **J-aggregation of ionic liquid solutions of *meso*-tetrakis(4-sulfonatophenyl)porphyrin**

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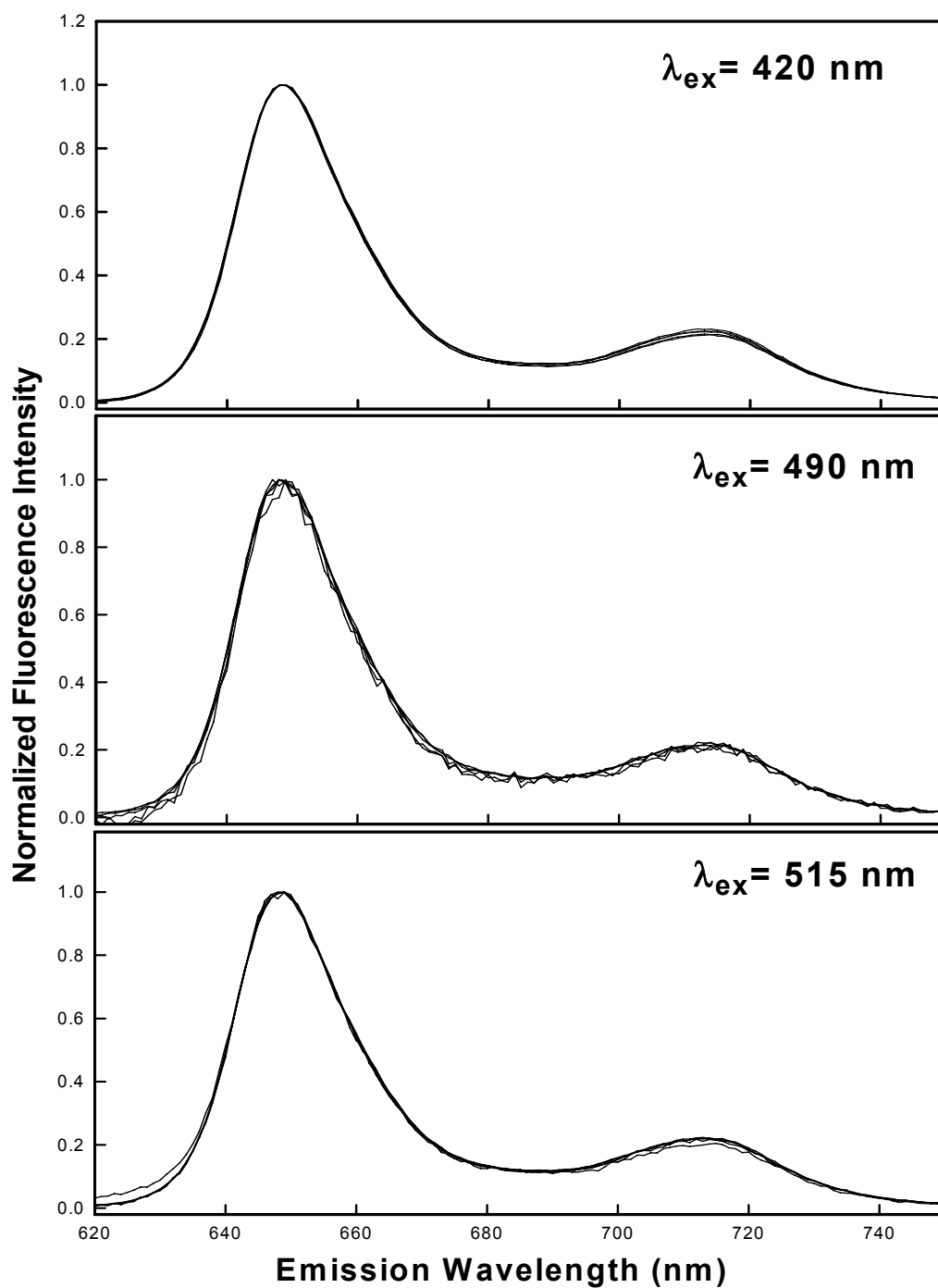
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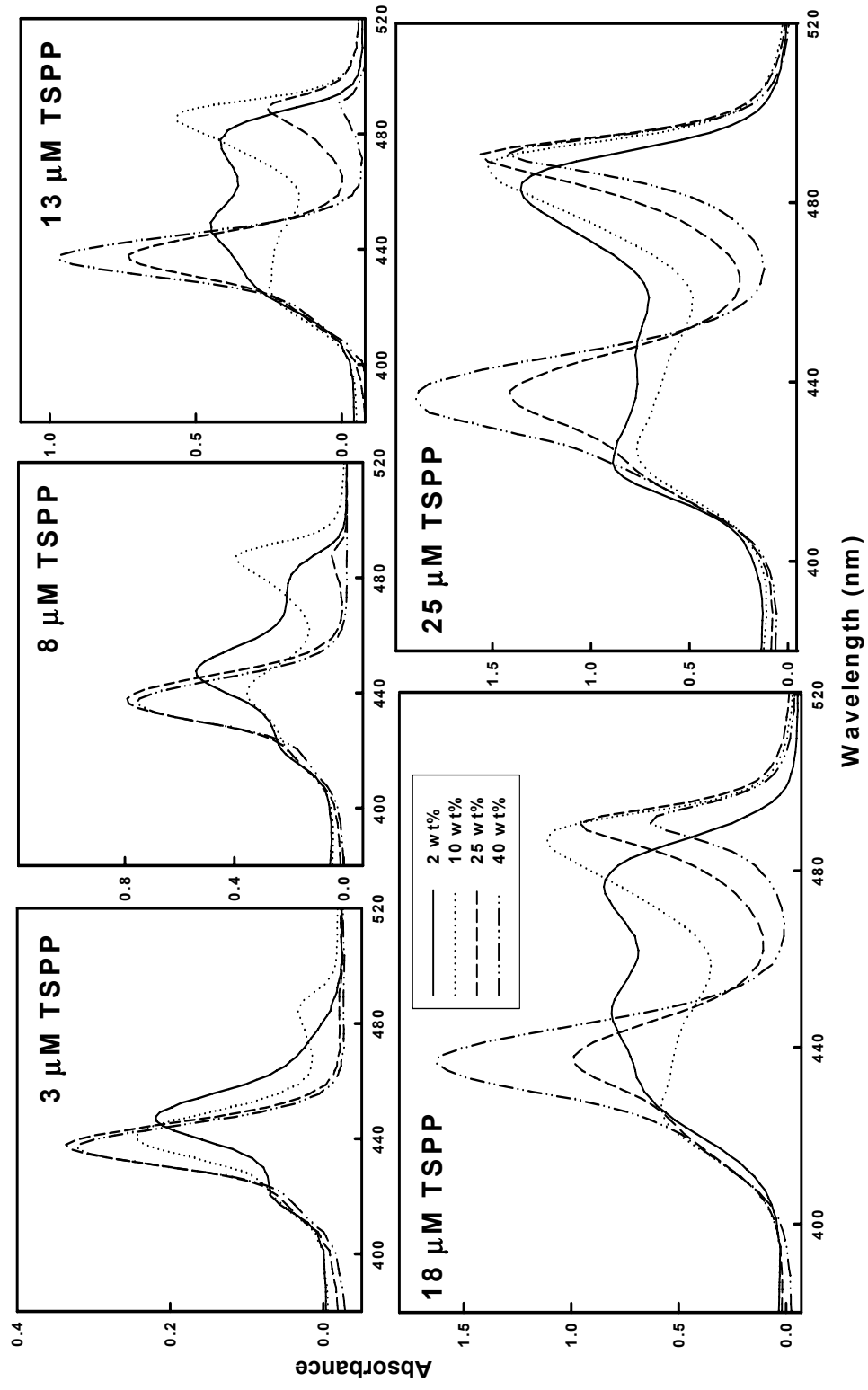
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**Table S1:** Absorbance ([TPPS] = 10.0  $\mu$ M) and fluorescence emission ([TPPS] = 5.0  $\mu$ M) maxima of TPPS in aqueous HCl-added [bmim][BF<sub>4</sub>] at ambient conditions.

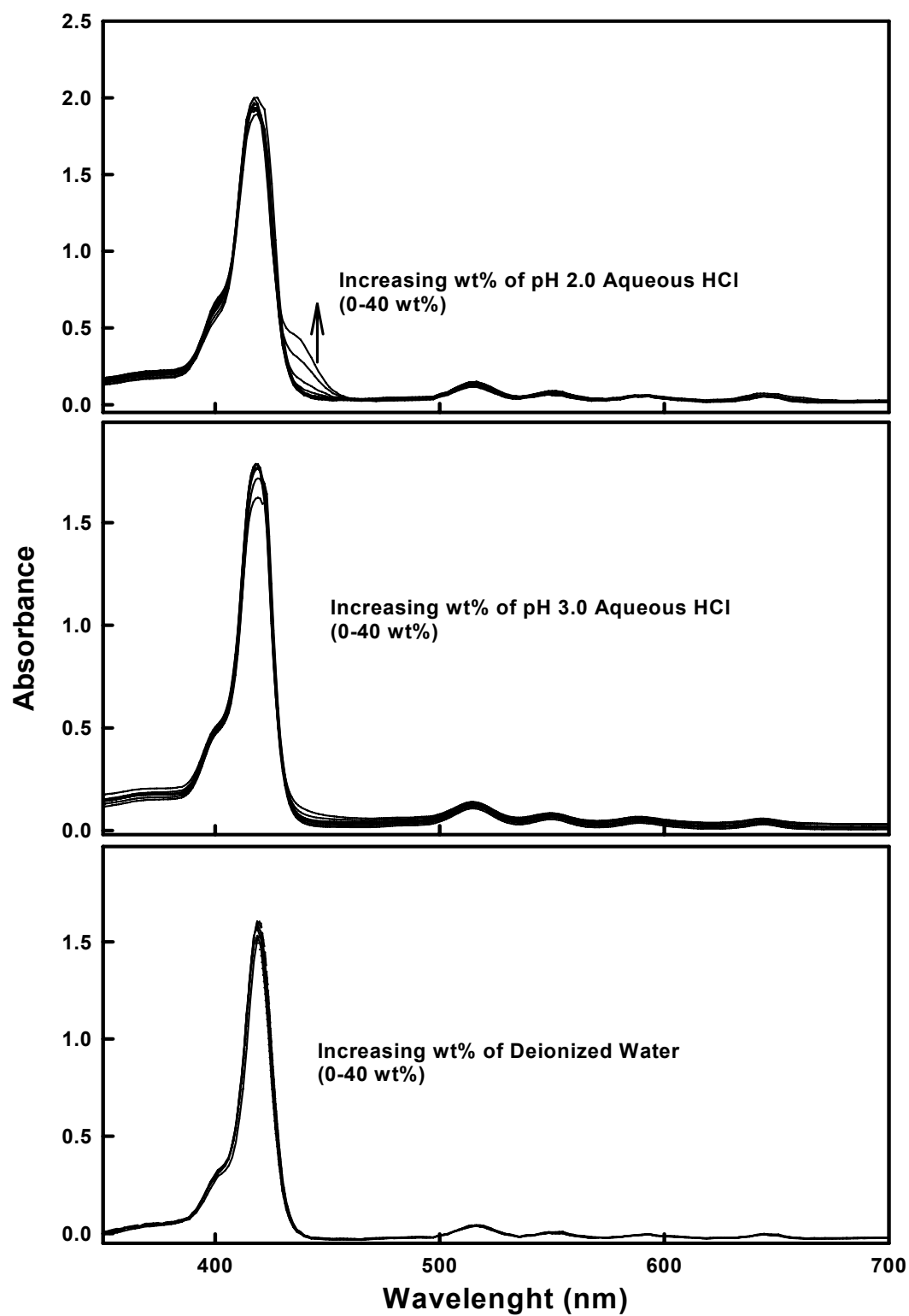
wt% of Water	Soret Bands (nm)			Emission Band (nm)/ $\lambda_{\text{excitation}}$ : 440 nm		
	Aqueous HCl			Aqueous HCl		
	0.1 M	0.2 M	1.0 M	0.1 M	0.2 M	1.0 M
0.0	418	418	418	651	651	649
2.0	418, 446	448, 478	448	651	649	695
5.0	418, 446, 487	445, 485	447, 487	651	686	690
10.0	418, 438, 487	444, 486	446, 489	683	681	691
25.0	418, 438	438, 489	441, 489	680	678	686
40.0	418, 436	436, 491	439, 492	678	677	682



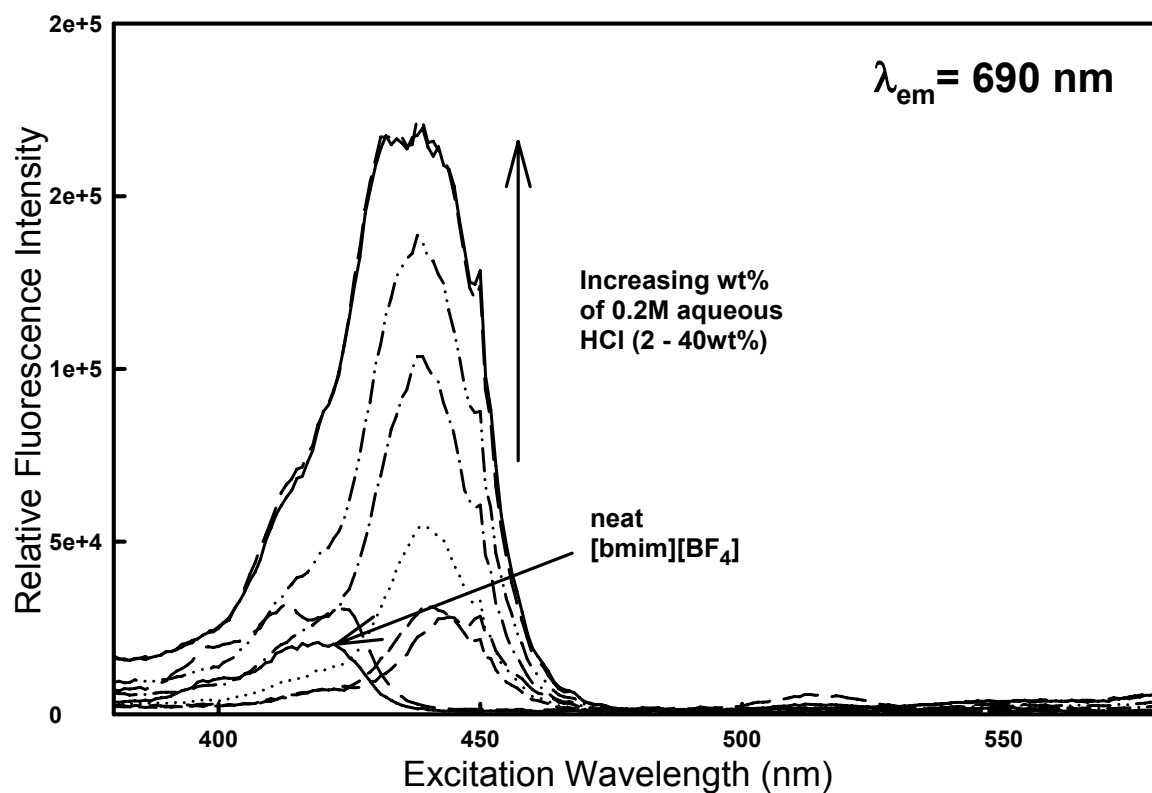
**Figure S1:** Fluorescence emission spectra of TPPS (1-20 μM), at different excitation wavelengths within neat [bmim][BF<sub>4</sub>] at ambient conditions.



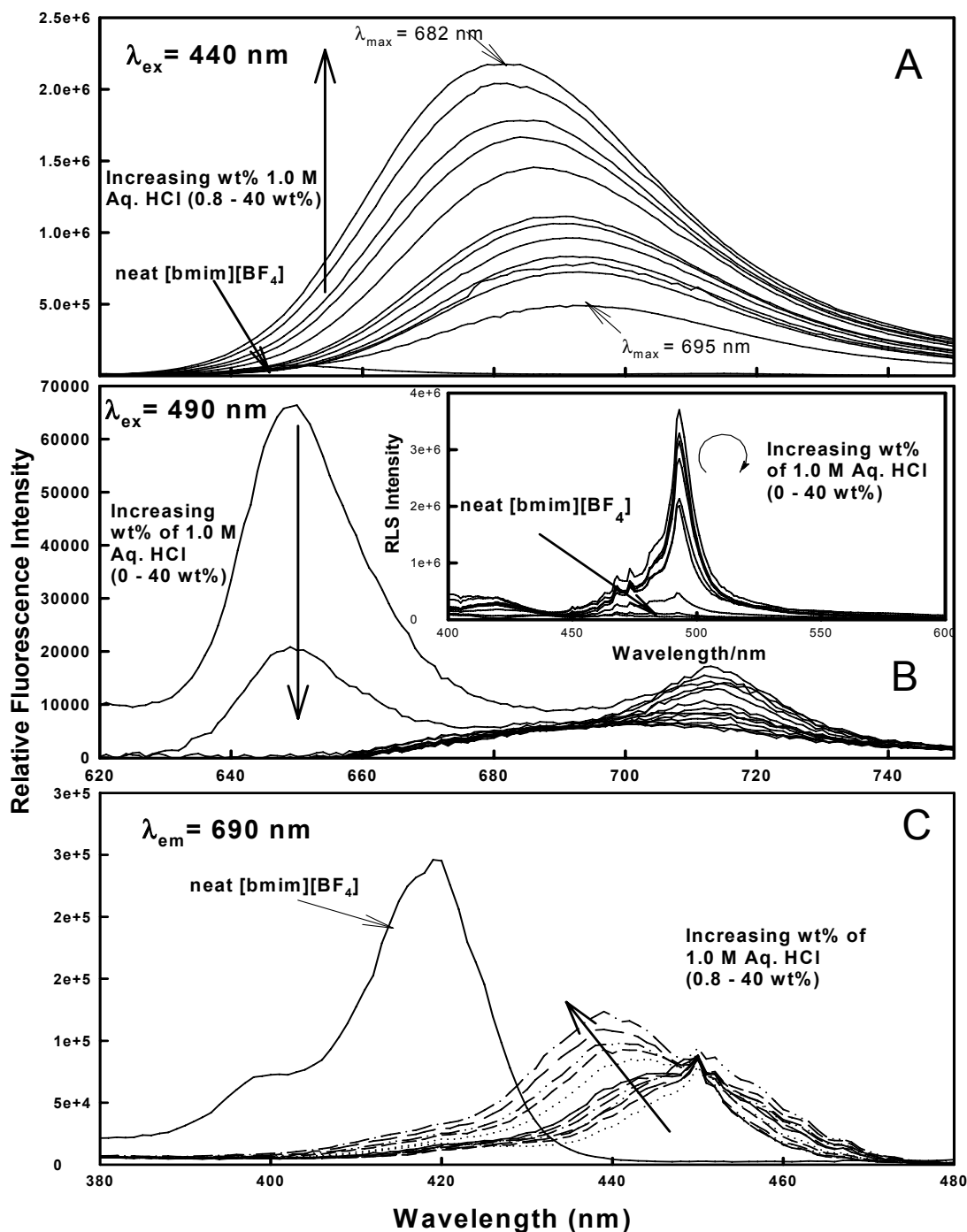
**Figure S2:** TPPS concentration-dependent absorbance spectra within [bmim][BF<sub>4</sub>] in presence of different wt% of 0.2 M aqueous HCl at ambient conditions.



**Figure S3:** Absorbance spectra of TPPS (10 μM) within [bmim][BF<sub>4</sub>] in presence of different wt% of pH 2.0 and 3.0 aqueous HCl and deionized water at ambient conditions.

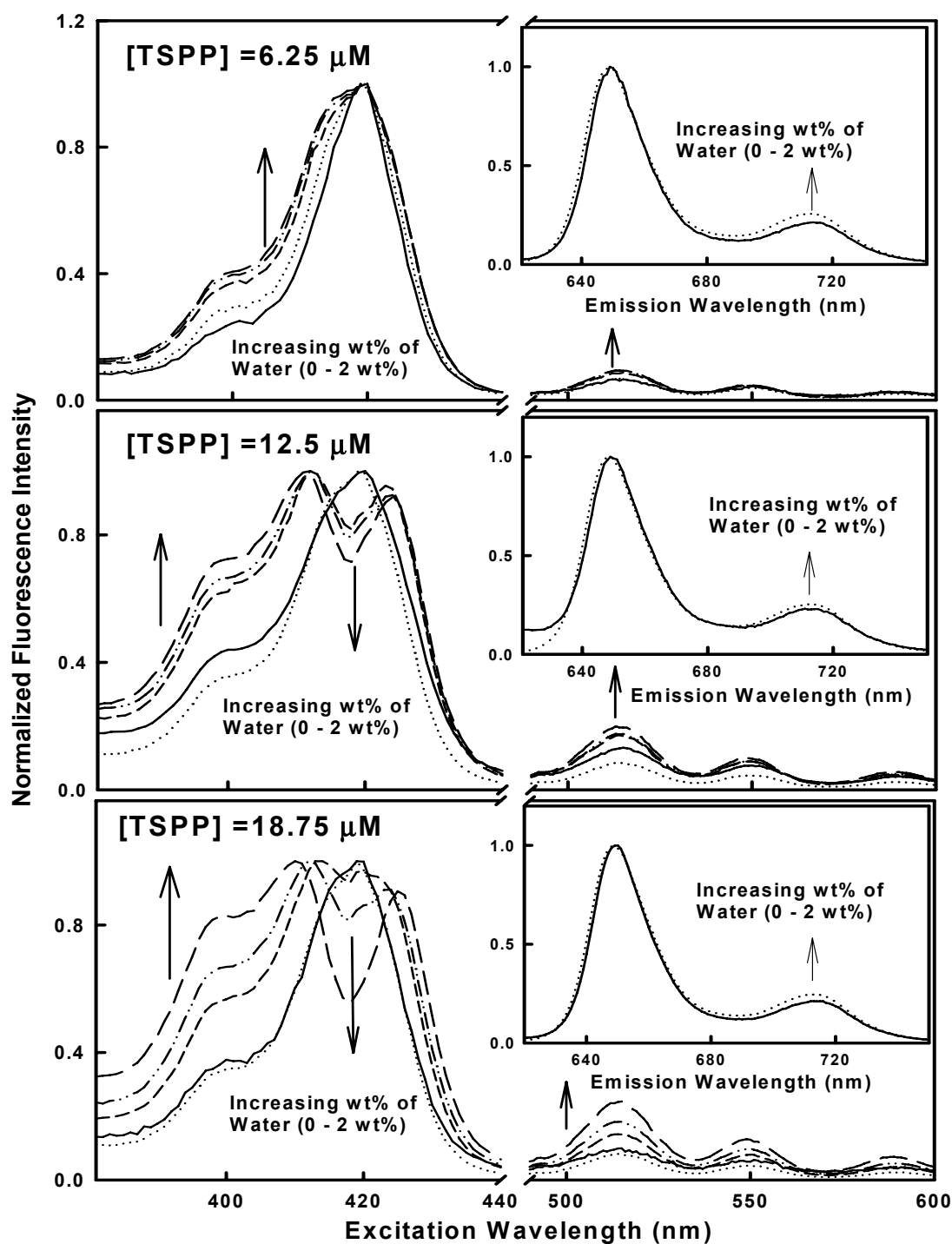


**Figure S4:** Fluorescence excitation spectra with  $\lambda_{emission} = 690 \text{ nm}$  of TPPS ( $5 \mu\text{M}$ ) within [bmim][BF<sub>4</sub>] in presence of 0 to 40 wt% of 0.2 M aqueous HCl at ambient conditions.



**Figure S5:** Emission spectra of 5  $\mu\text{M}$  TPPS with  $\lambda_{\text{excitation}} = 440 \text{ nm}$  (panel A) and  $\lambda_{\text{excitation}} = 490 \text{ nm}$  (panel B) within [bmim][BF<sub>4</sub>] in presence of different wt% of 1.0 M aqueous HCl at ambient conditions. Panel C and inset of panel B shows excitation spectra with  $\lambda_{\text{emission}} = 690 \text{ nm}$  and RLS spectra of same solutions, respectively, at ambient conditions.





**Figure S6:** Excitation spectra of TPPS with  $\lambda_{em} = 650$  nm at different TPPS concentrations within [bmim][BF<sub>4</sub>] in presence of varying wt% of deionized water at ambient conditions. Insets shows the emission spectra of the same solutions at  $\lambda_{ex} = 420$  nm.