## Electronic Supporting Information Influence of Hydrogen-Bonding on Excitonic Coupling and Hierarchal Structure of a Light-Harvesting Porphyrin Aggregate

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Figure S1. Absorbance spectra of 50  $\mu$ M TSPP diacid monomer in 0.001 M HCl in H<sub>2</sub>O (black) and in 0.001 M DCl in D<sub>2</sub>O (red). Insets show the slight blue shift which occurs upon deuteration for the B-band (37 cm<sup>-1</sup>) and Q-band (22 cm<sup>-1</sup>).





Table S1. Depolarization Ratios of Prominent Raman Modes of TSPP-h Aggregates Excited at 514.5 nm and 496.5 nm.

Wavelength (nm)\Raman Shift (cm <sup>-1</sup> )	243	316	698	983	1013	1228	1533
514.5	0.51	0.47	0.51	0.38	0.51	0.36	0.40
496.5	0.41	0.41	0.52	0.52	0.58	0.54	0.53



Table S2. Depolarization Ratios of Prominent Raman Modes of TSPP-d Aggregates Excited at 514.5 nm and 496.5 nm .

Wavelength (nm)\Raman Shift (cm <sup>-1</sup> )	239	315	697	957	1004	1225	1534
514.5	0.53	0.47	0.52	0.36	0.51	0.38	0.49
496.5	0.39	0.40	0.44	0.45	0.53	0.49	0.56



of the intensities of the two low frequency modes.



Figure S6. Depolarization ratio dispersion graph for the seven prominent modes of the TSPP-h aggregate resonance Raman spectrum. The six points for the six excitation wavelengths implemented (465.8 nm, 472.7 nm, 476.5 nm, 488 nm, 496.5 nm, and 514.5 nm) are connected by a polynomial spline fit.

