

*Supporting Information*

**Water Induced Morphological Transformation of a Poly(aryl ether)  
Dendron Amphiphile: Helical Fibers to Nanorods; as Light-  
Harvesting Antenna System**

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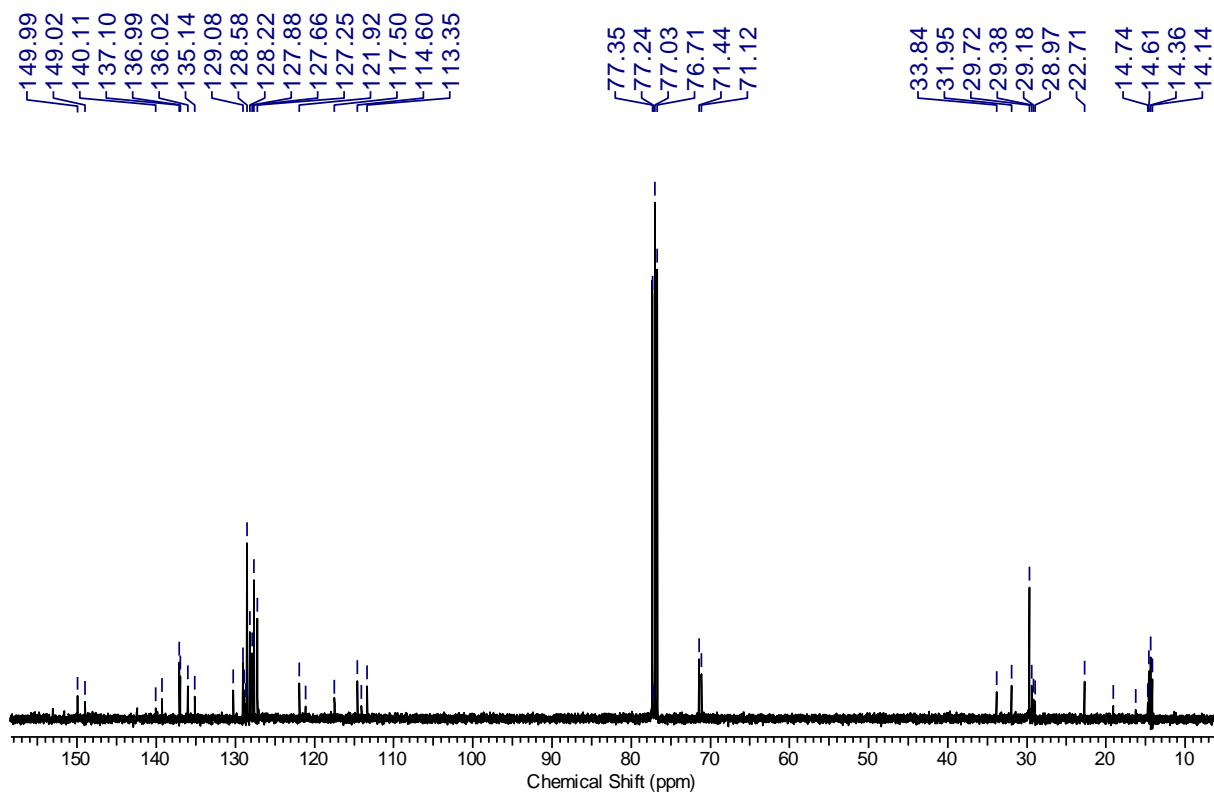
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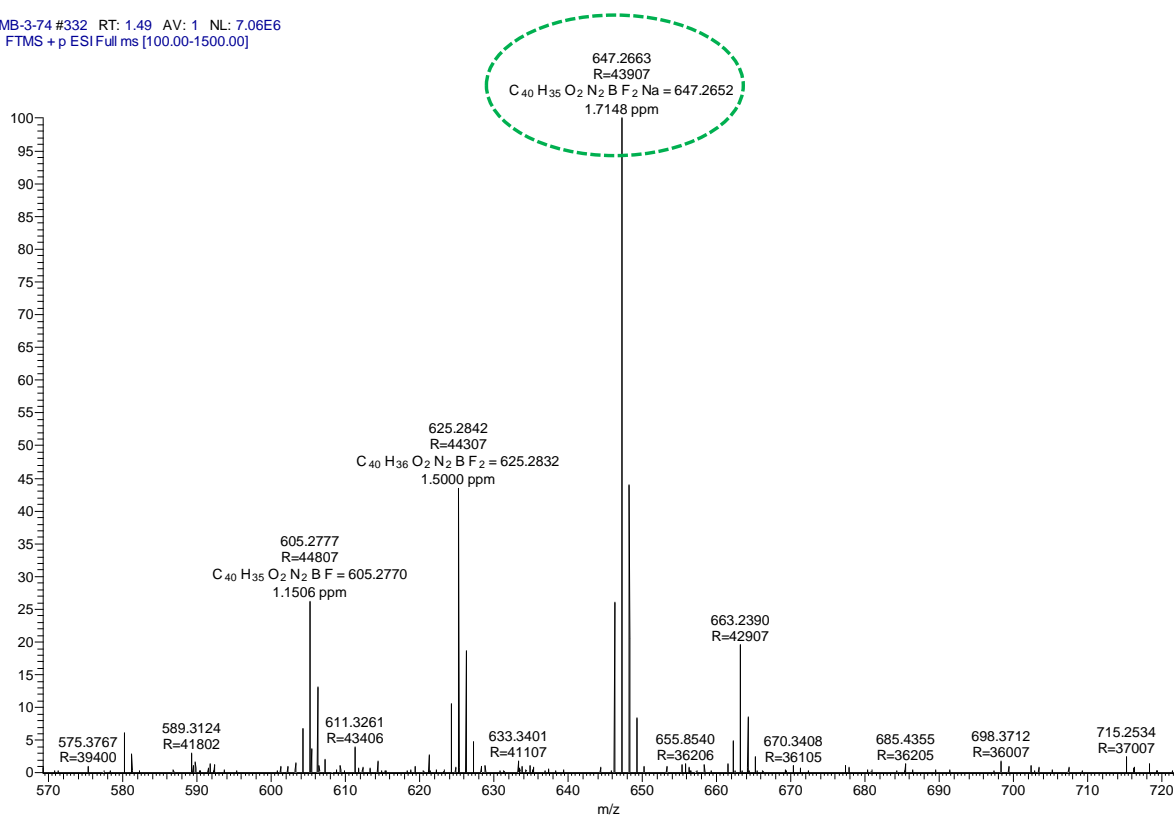
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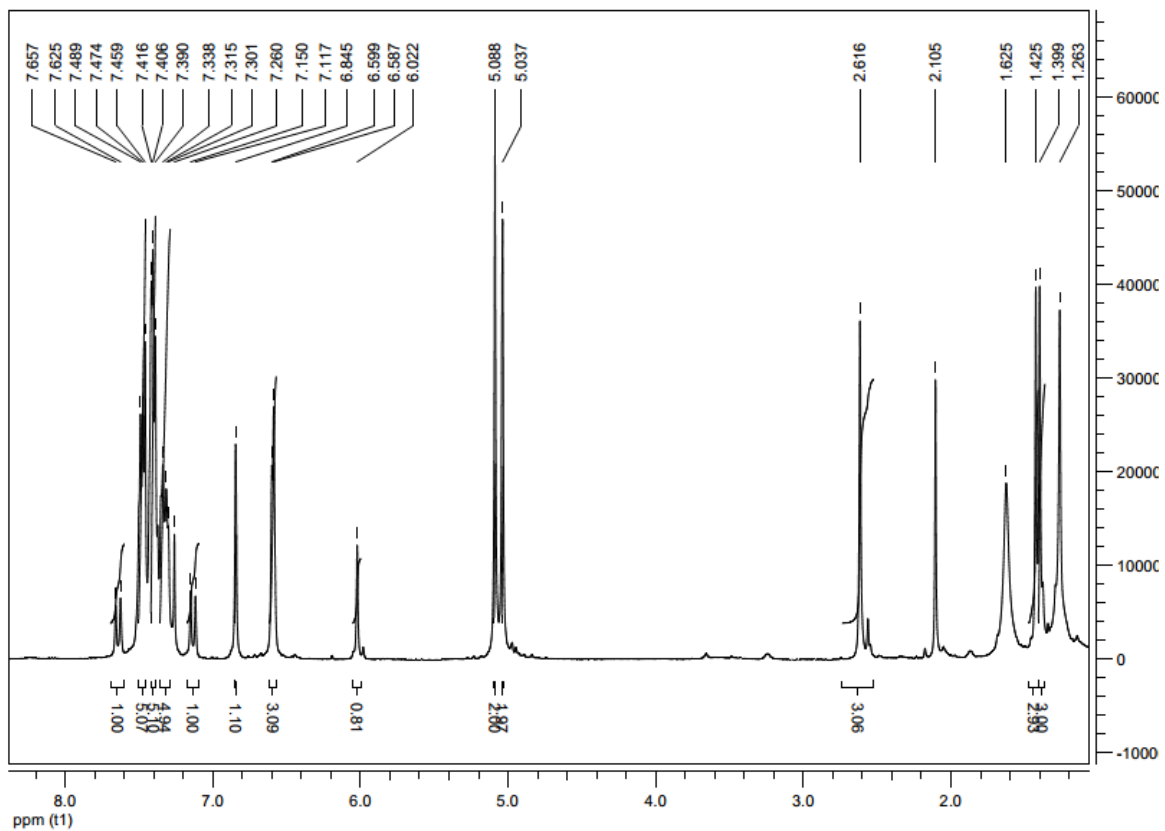


$^{13}\text{C}$  NMR (100 MHz) of the BODIPY based acceptor molecule **A-1** in  $\text{CDCl}_3$ .

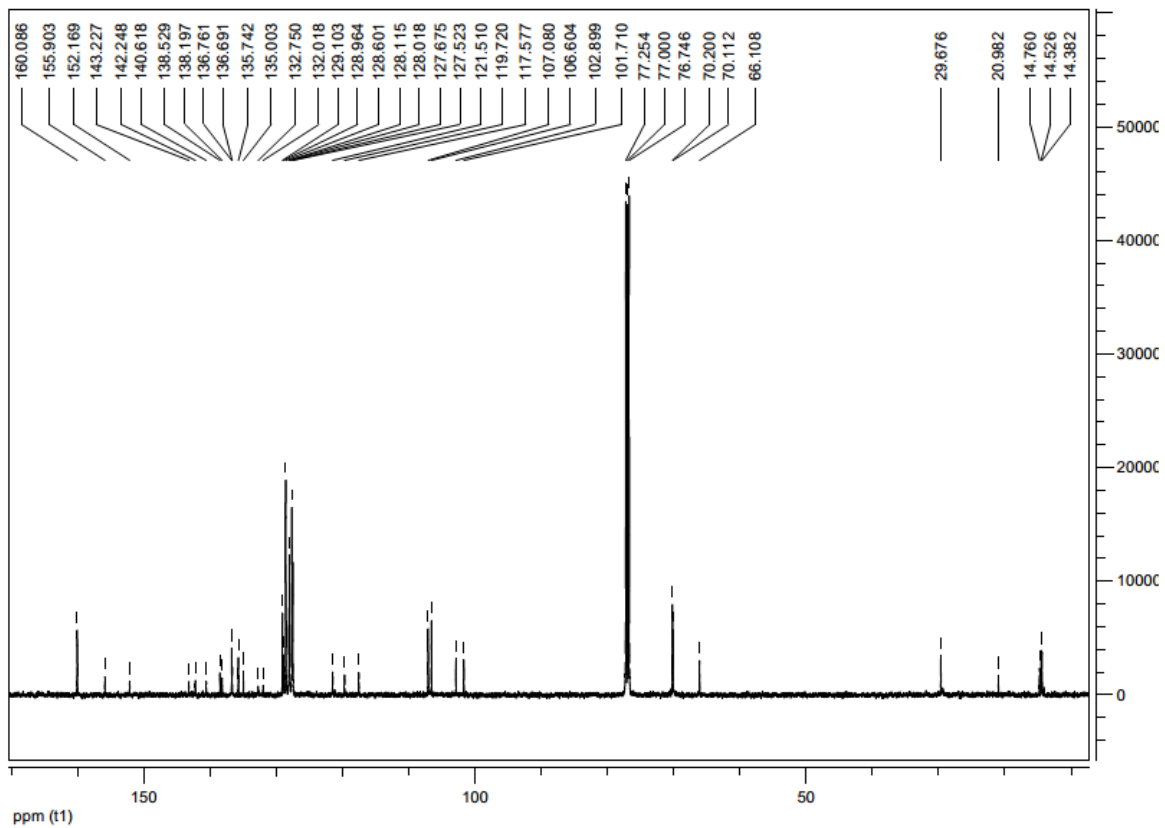
AMB-3-74 #332 RT: 1.49 AV: 1 NL: 7.06E6  
T: FTMS + p ESIFull ms [100.00-1500.00]



**HRMS (ESI)** spectrum of the BODIPY based acceptor molecule **A-1**.

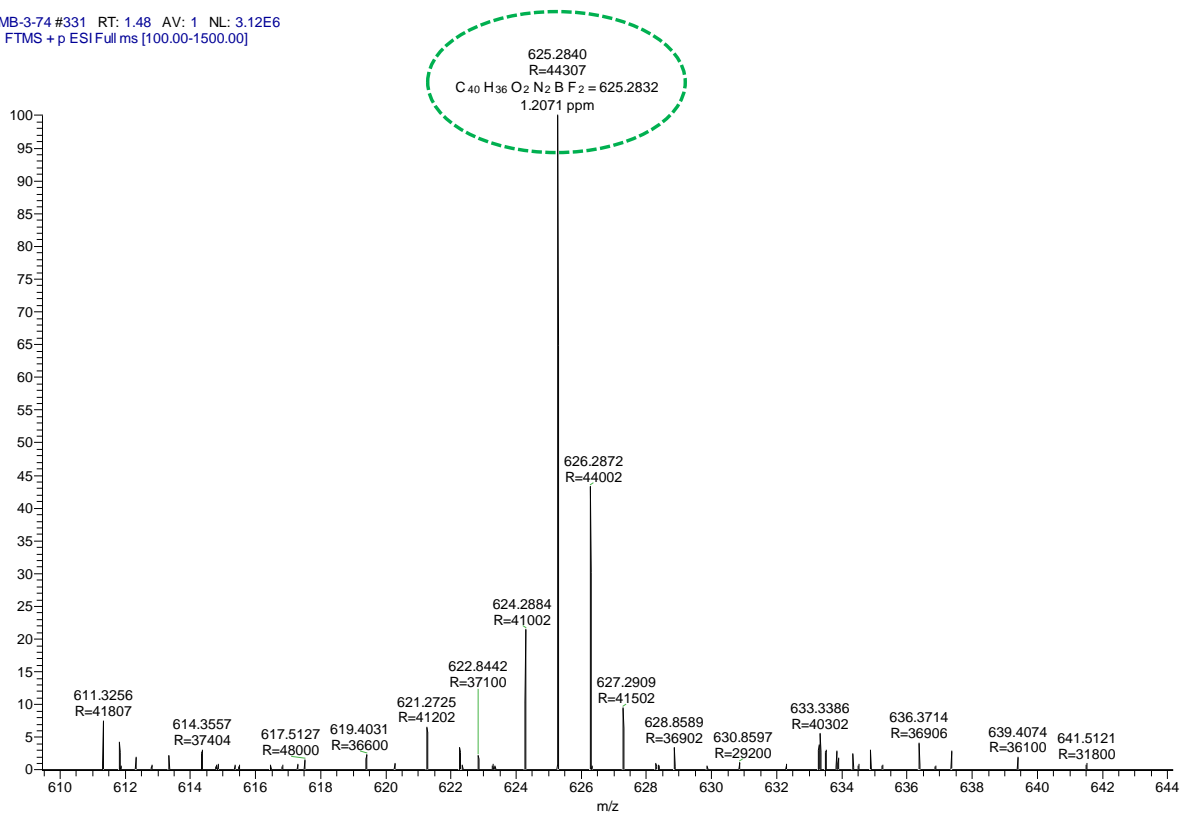


$^1\text{H}$  NMR (500 MHz) of the BODIPY based acceptor molecule **A-2** in  $\text{CDCl}_3$ .

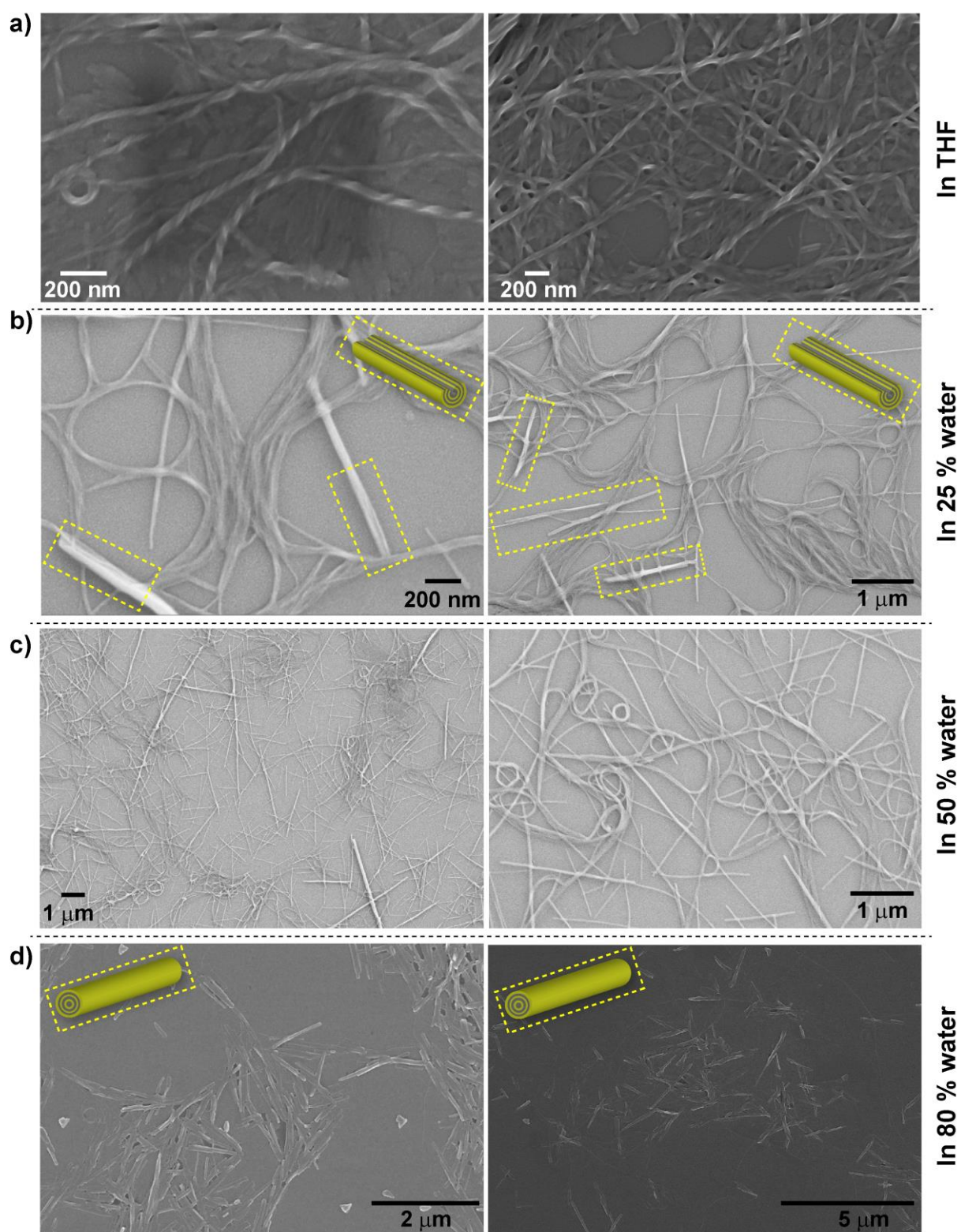


$^{13}\text{C}$  NMR (125 MHz) of the BODIPY based acceptor molecule **A-2** in  $\text{CDCl}_3$ .

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T: FTMS + p ESI Full ms [100.00-1500.00]

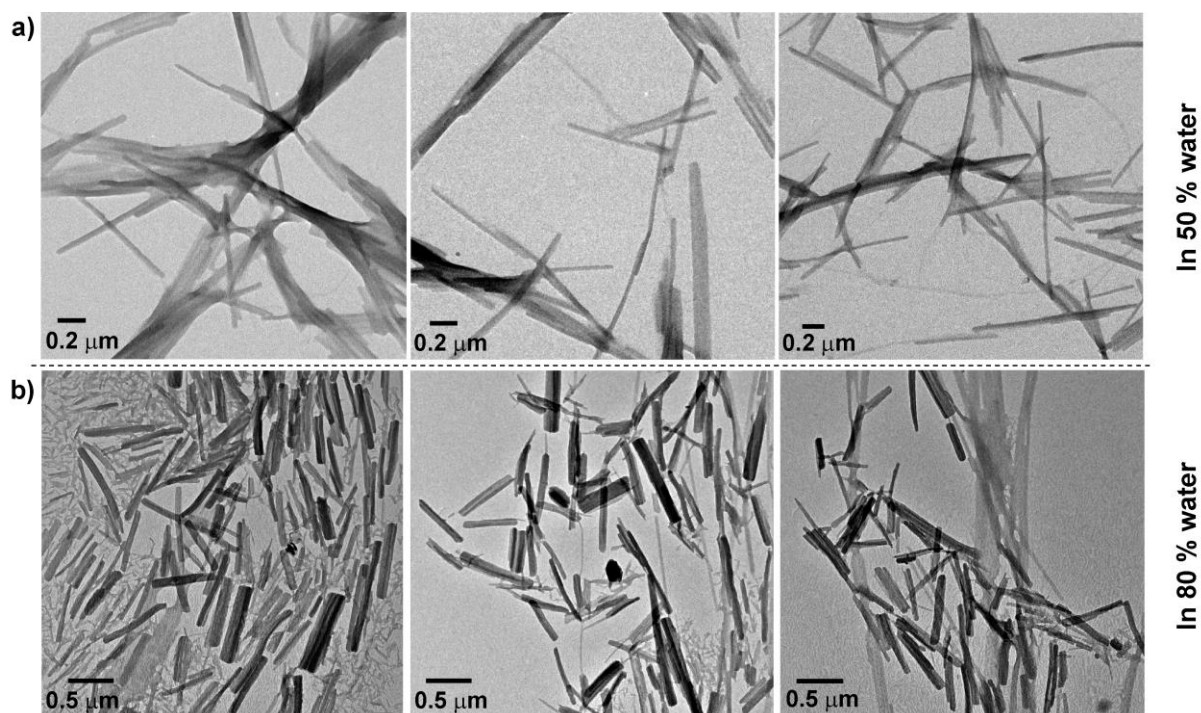


HRMS (ESI) spectrum of the BODIPY based acceptor molecule **A-2**.

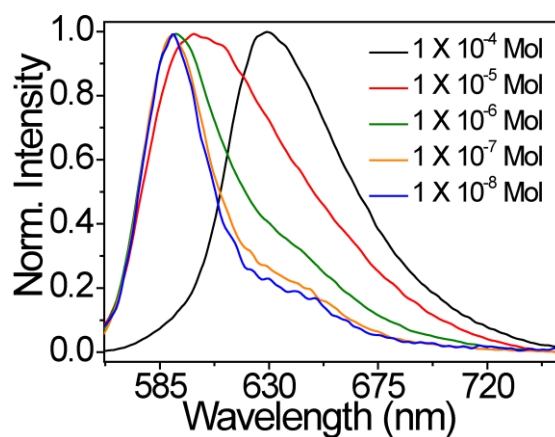


**Fig. S1:** FESEM Images of amphiphile **1(D)** (20 μM) nanostructures obtained from THF and THF/water mixed solvent content different percentage of water.

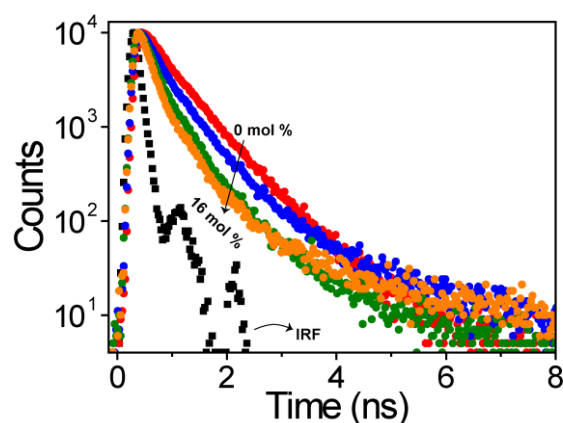




**Fig. S2** TEM images of the obtained nanorods of **1(D)** in THF/water mixed solvent content different percentage of water.



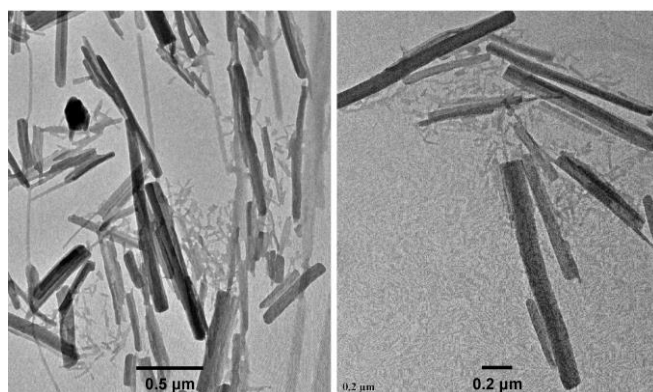
**Fig. S3:** Concentration dependent emission spectra of BODIPY based acceptor molecule **A-1** in THF/water mixed solvent content 80 % water ( $\lambda_{ex} = 545$  nm). With increasing the concentration of **A-1** the emission maxima shifted to longer wavelength, indicates **A-1** is self-aggregated in higher concentration range.



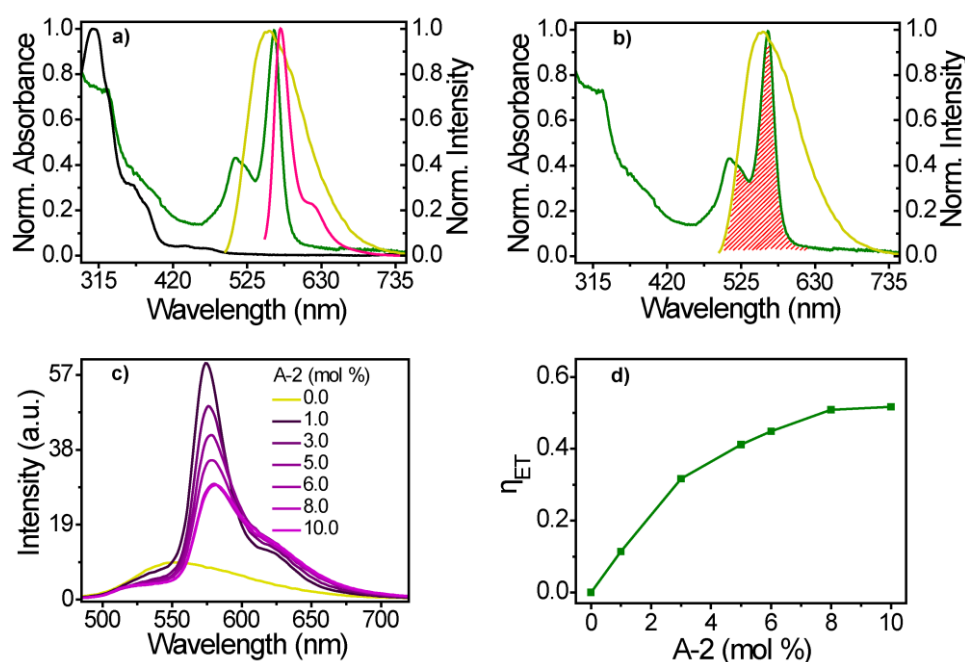
**Fig. S4:** Fluorescence lifetime decay profiles ( $\lambda_{\text{ex}} = 374 \text{ nm}$ , monitored at  $555 \text{ nm}$ ) of poly(aryl ether) dendron amphiphile **1(D)** on addition of different amounts of BODIPY acceptor **A-1** (0-16 mol %). IRF = instrument response function.

**Table S1:** Variation of the emission lifetime of **1(D)** with increase of 0 to 16 mol % of **A-1**.

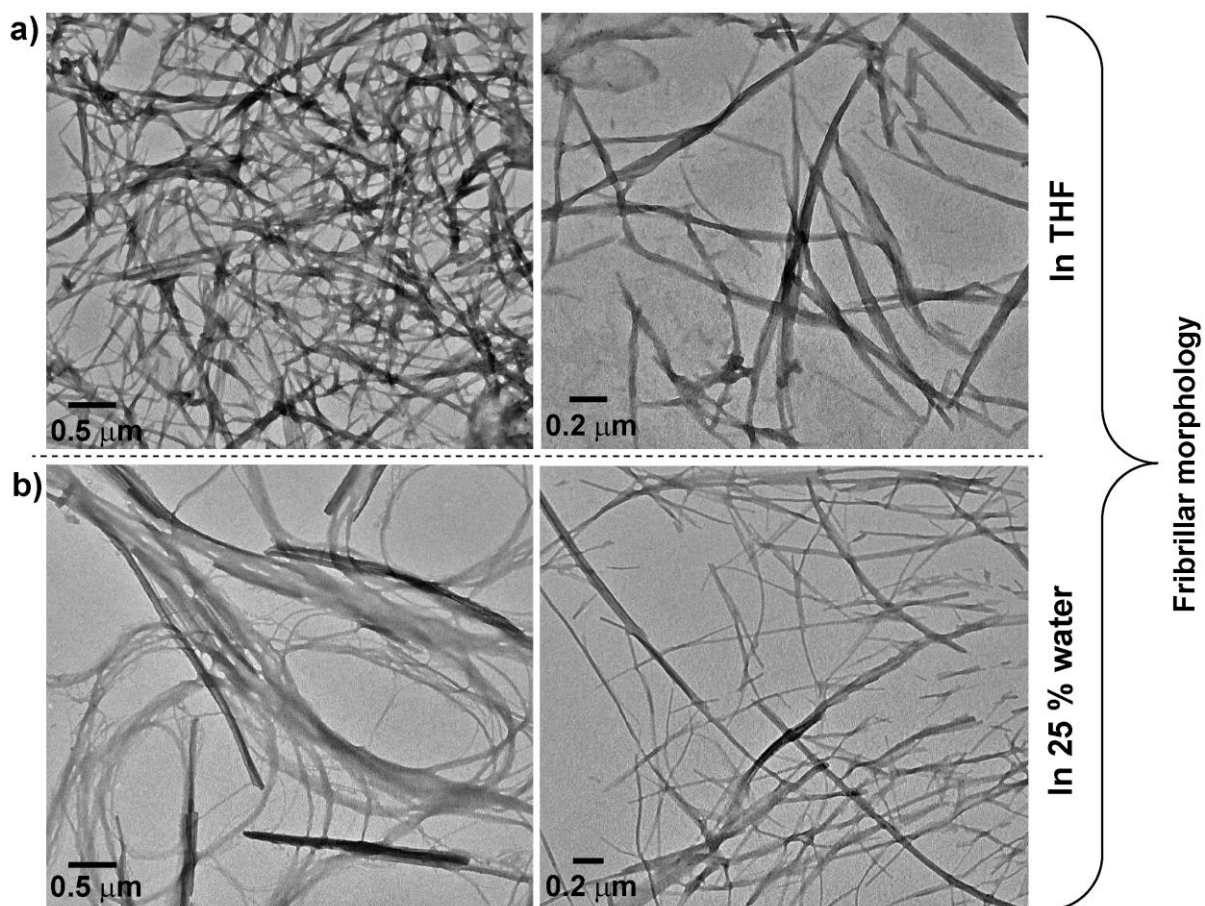
System	Monitoring wavelength (nm)	$\tau_1$	$\tau_2$	$\tau_3$	$\tau_{\text{av}}$
<b>1(D)</b> only	555	0.39 ns (77 %)	0.85 ns (23 %)	--	0.49 ns
<b>1(D)</b> + 1 % <b>A-1</b>	555	0.16 ns (53 %)	0.50 ns (45 %)	2.05 ns (2%)	0.35 ns
<b>1(D)</b> + 5 % <b>A-1</b>	555	0.08 ns (61 %)	0.32 ns (36 %)	1.10 ns (3%)	0.19 ns
<b>1(D)</b> + 16 % <b>A-1</b>	555	0.09 ns (71 %)	0.36 ns (27 %)	1.50 ns (2 %)	0.17 ns



**Fig. S5:** TEM images shows the nanorod-shaped morphology of 20  $\mu\text{M}$  solution of **1(D)** in presence of 1.0 mol % **A-1**. Solvent used; THF/water mixed solvent (content 80 % water).



**Fig. S6:** (a) Absorption spectra of **1(D)** (black), **A-2** (green) and emission spectra of **1(D)** (yellow), **A-2** (magenta). (b) Spectral overlap of the emission of **1(D)** (yellow) and absorption of **A-2** (green) in THF/water mixed solvent content 80% water (concentration used 20  $\mu\text{M}$ , for both **1(D)** and **A-2**;  $\lambda_{\text{ex}} = 306$  nm for **1(D)** and 506 nm for **A-2**,  $l = 1$  cm). (c) Emission intensity ( $\lambda_{\text{ex}} = 306$  nm) of **1(D)** on addition of different mol % of **A-2** (0-10 mol %). (d) Energy transfer efficiency as a function of **A-2** concentration.



**Fig. S7:** TEM images of the fibrillar morphology of the poly(aryl ether) dendron amphiphile **1(D)** in THF and THF/water mixed solvent (20 μm).