

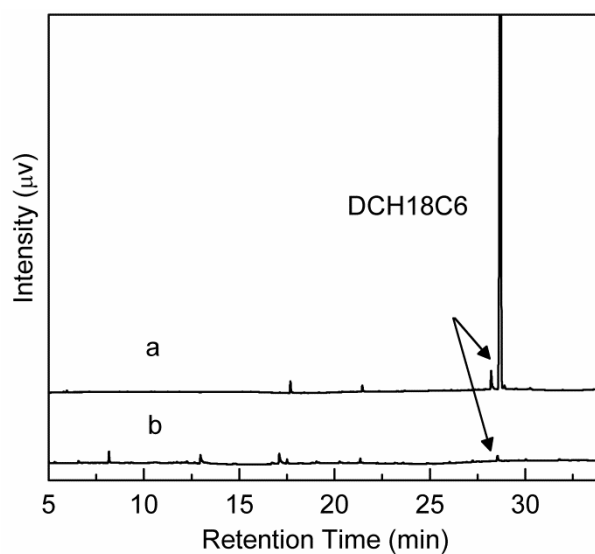
Supplementary Material (ESI) for Soft Matter

**One-step radiation-induced construction of multi-responsive  
self-assemblies using simple cyclic ethers †**

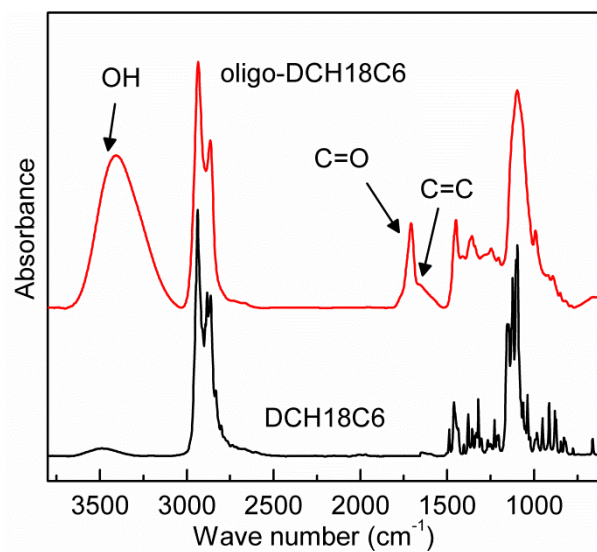
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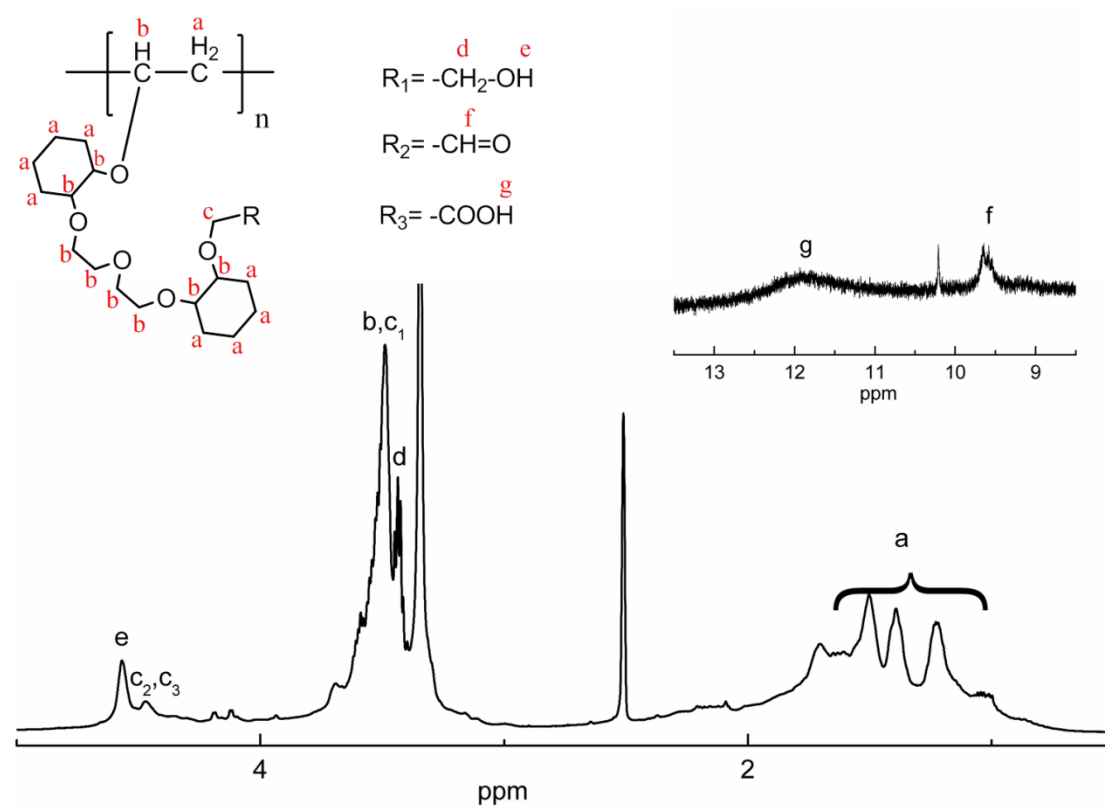
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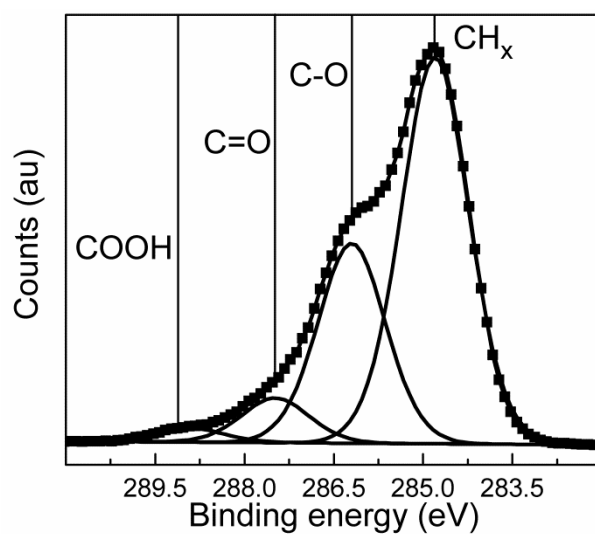
**Fig. S1** GC spectra for the DCH18C6 aqueous solution before and after 55.6 h irradiation: a. the 0.01 M DCH18C6 aqueous solution without irradiation, b. the 0.01 M DCH18C6 aqueous solution after 55.6 h irradiation.



**Fig. S2** Micro-FTIR spectra for the oligo-DCH18C6 and DCH18C6



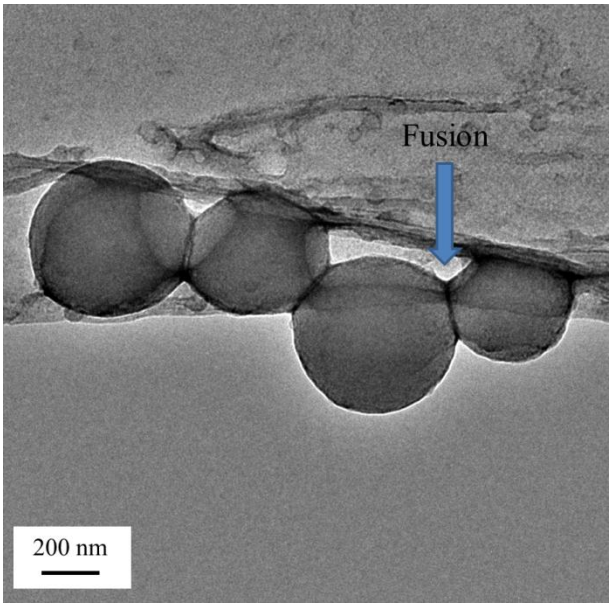
**Fig. S3**  $^1\text{H}$  NMR spectra for oligo-DCH18C6. The inset is  $^1\text{H}$  NMR spectra in the range of 8.5-13.5 ppm.



**Fig. S4** XPS spectra for the oligo-DCH18C6 obtained by irradiating 0.01 M DCH18C6 aqueous solution for 55.6 h

**Table S1** The content of functional groups in oligo-DCH18C6 determined by XPS.

Samples	Content of functional groups in the oligomers (%)			
	C-H <sub>x</sub>	C-O	C=O	COOH
oligo-DCH18C6	45.61	29.22	4.31	0.96



**Fig. S5** TEM images of the core-shell micelles of oligo-DCH18C6 at 38 °C in water

**Table S2** Average Sr-O coordination number derived from EXAFS measurements.

Sample <sup>a</sup>	$N_0$	Sr-O distance (Å)	$\sigma^2$	Irradiation time (h)
DCH18C6/Sr(NO <sub>3</sub> ) <sub>2</sub>	9.7	2.60	0.01738	0
DCH18C6/Sr(NO <sub>3</sub> ) <sub>2</sub>	6.6	2.57	0.00935	277.8
<sup>a</sup> DCH18C6 (0.005M)/Sr(NO <sub>3</sub> ) <sub>2</sub> (0.005M) aqueous solution				