## **Supporting information**

## A CO<sub>2</sub>-Responsive Smart Fluid Based on Supramolecular Assembly Structures Varying Reversibly From Vesicles to Wormlike Micelles

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Figure S1. <sup>1</sup>H NMR spectra of (a) N-[3 (dimethylamino) propyl] oleamide (NDPO) and (b) gemini cationic surfactant -- trimethylene  $\alpha$ ,  $\omega$ -bis (oleate amide propyl dimethyl ammonium bromide).



Figure S2. Comparison of the <sup>1</sup>H NMR spectra for  $G_{70}$  sample in the presence and absence of CO<sub>2</sub>. The solvent is D<sub>2</sub>O.



Figure S3. Intensity weighted distribution of apparent hydrodynamic diameter for 2wt% smart fluids with different proportions ( $G_{60}$ ,  $G_{65}$ ,  $G_{70}$ ,  $G_{75}$ ,  $G_{80}$ , and  $G_{100}$ ).