Electronic Supplementary Information

Phase-selective Cellulose Nanofibrils-based Oil Gelling Agent for Oil Spill Recovery

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Number of Figure: 10 (Fig. S1-S10)

Number of Table: 2 (Table S1-S2)

Number of Movie: 2 (Movie S1-S2)

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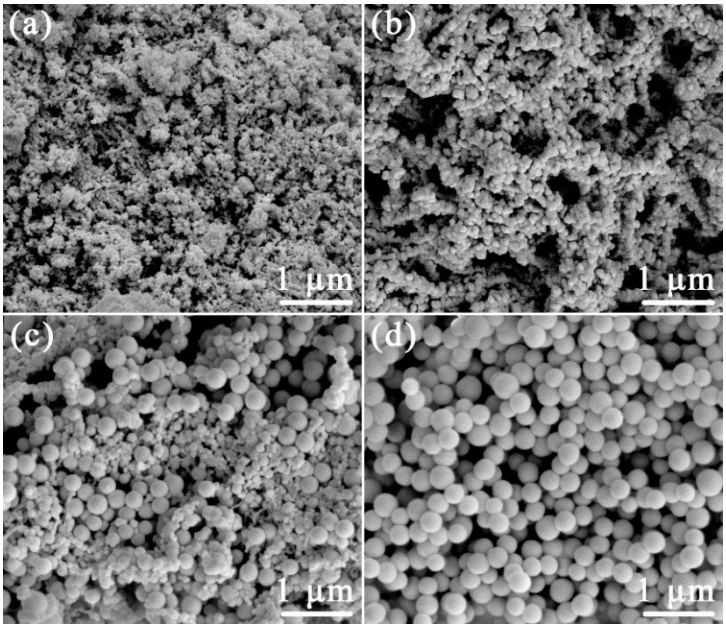

Fig. S1 SEM images of COGA prepared with (a) 0.75 mL, (b) 1.5 mL and (c) 2 mL of TEOS. (d) Silanized SiO_2 nanoparticles.

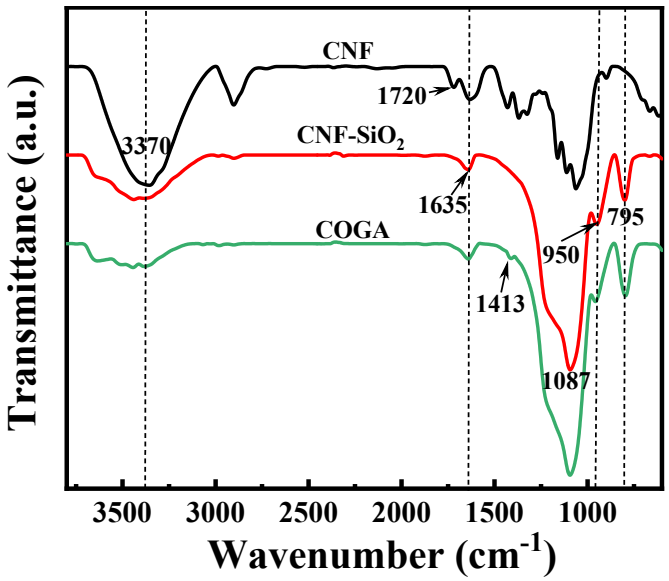

Fig. S2 FT-IR spectra of CNF, CNF-SiO_2 and COGA.

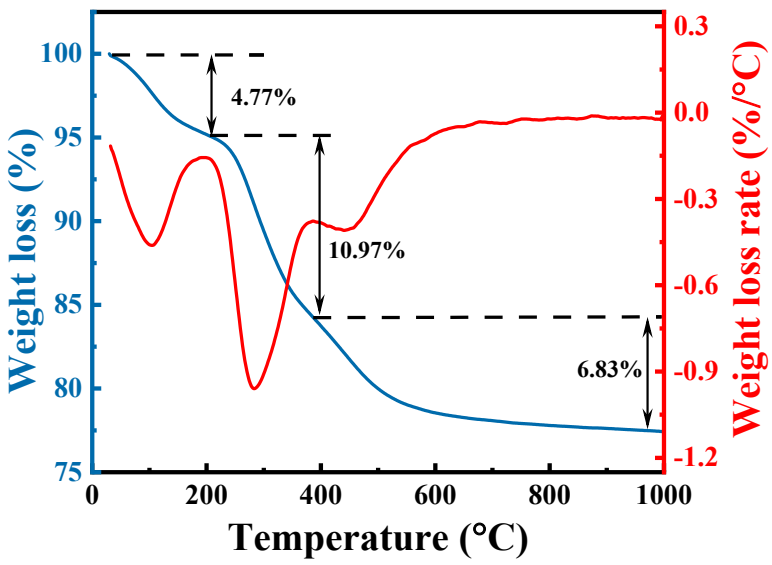

Fig. S3 TG (Weight loss) and DTG (Weight loss rate) curves of COGA.

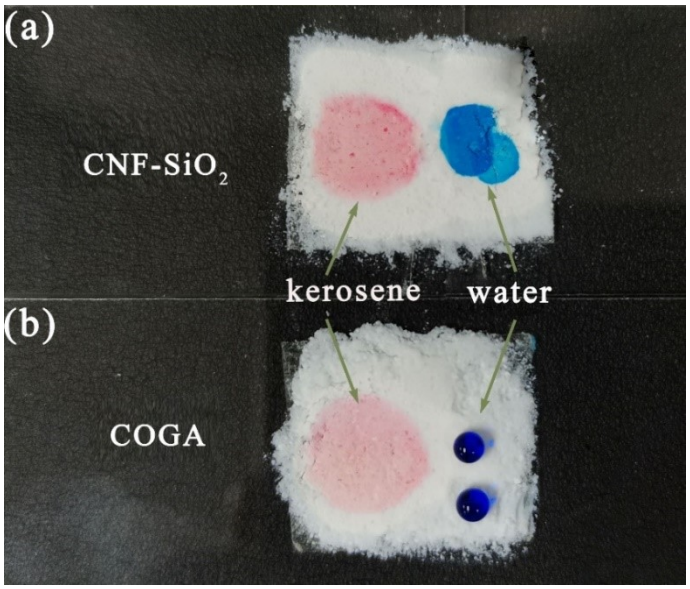

Fig. S4 Photographs of (a) CNF-SiO_2 and (b) COGA in contact with kerosene (dyed with Sudan III) and water (dyed with Methylene Blue), respectively.

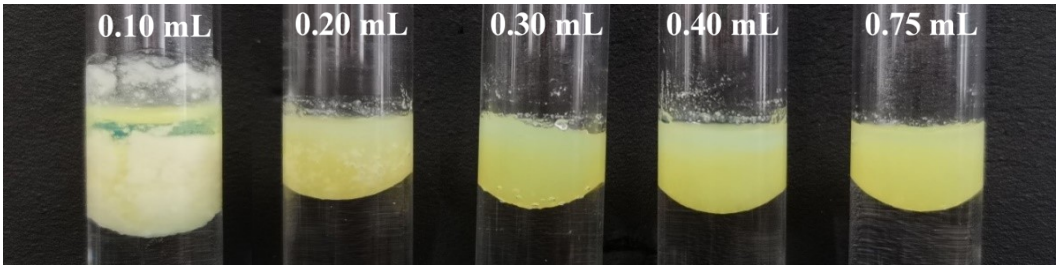

Fig. S5 Photographs of diesel solidified by COGA prepared with different amounts of VTES.

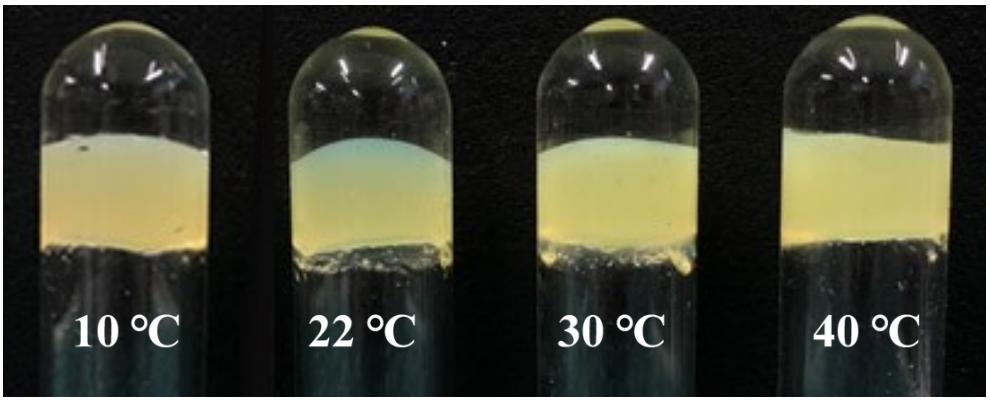

Fig. S6 Solidifying experiments on 1 mL of diesel at different temperatures (RT was about 22 ºC).

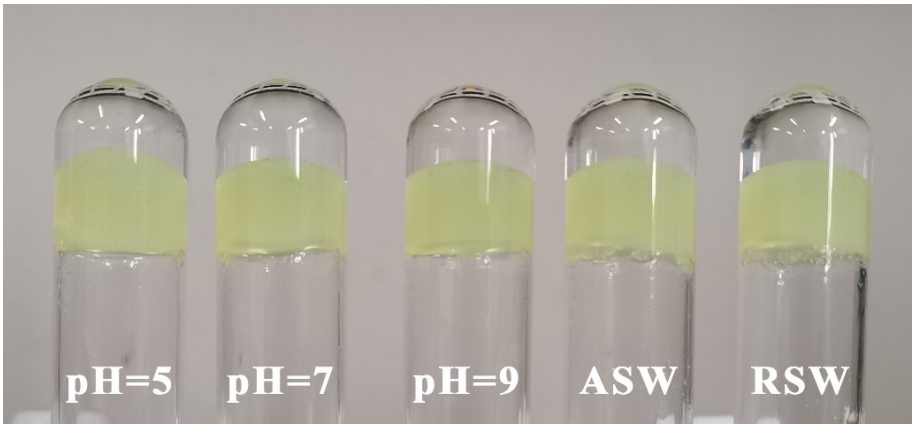

Fig. S7 Solidifying experiments on 1 mL of diesel in different water quality (deionized water with different pH values, artificial sea water and real sea water).

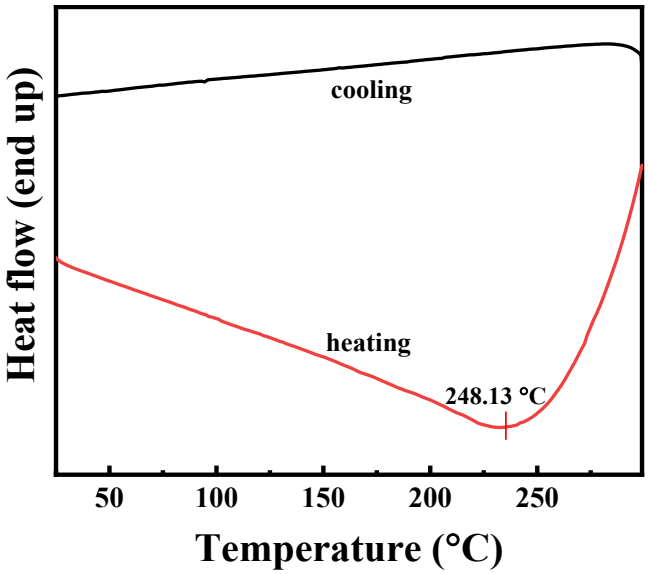

Fig. S8 DSC thermograms of solidified diesel by COGA (1 mL of diesel solidified by 0.14 g of COGA).

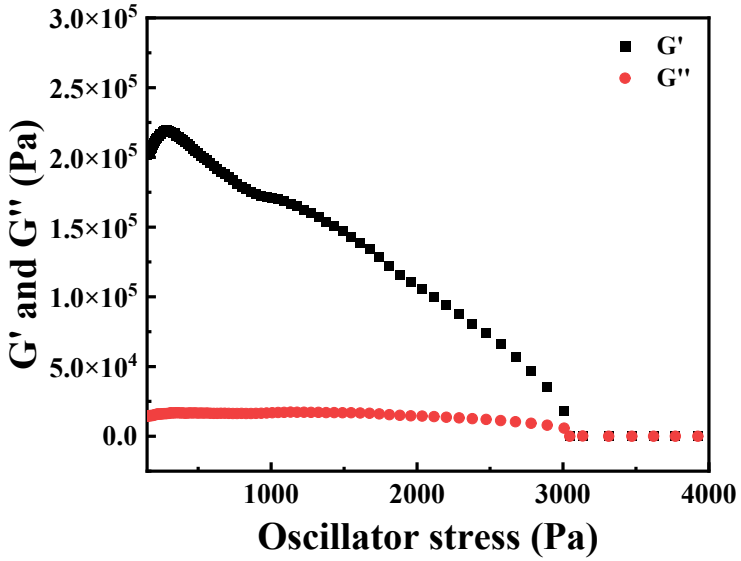

Fig. S9 Stress sweep experiment of solidified crude oil (1 mL of crude oil by 0.13 g of COGA) at a constant frequency (1 Hz).

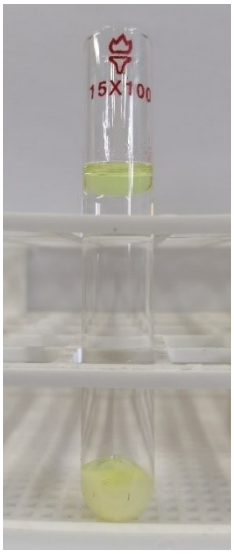

Fig. S10 Solidifying experiment using silanized SiO_2 nanoparticles: 8 mL of water and 1 mL of diesel were added to the tube, and the solidified diesel sank to the bottom of the tube due to gravity.

Table S1. The exploration of the dosage of each reagent in the preparation of COGA (The minimum COGA dosage used for solidifying 1 mL diesel at room temperature was taken as the measurement standard).

CNF (1 wt%) (mL)	TEOS (mL)	VTES (mL)	Dosage (g)
5	2.0	1.0	0.17
5	1.5	1.0	0.14
5	1.0	1.0	0.16
5	0.75	1.0	0.23
5	1.5	0.75	0.14
5	1.5	0.40	0.14
5	1.5	0.30	0.14
5	1.5	0.20	0.16
5	1.5	0.10	cannot form solid

Table S2. The minimum COGA dosage of solidifying 1 mL oil phase.

Oil (1 mL)	Dosage (g)
Soybean oil	0.144
Cyclohexane	0.154
Tetradecane	0.168
Paraffin oil	0.172
Kerosene	0.166
Diesel	0.138
Benzene	0.126
Toluene	0.154
Crude oil	0.129