

Table S1. List of used chemicals.

	Name	Chemical formula
1	Citric acid	C ₆ H ₈ O ₇
2	Ethanolamine	C ₂ H ₇ NO
3	Alpha olefin sulfonate (AOS)	C _n H _{2n-1} SO ₃ Na (n= 14 - 16)
4	Sodium dodecyl sulfate	NaC ₁₂ H ₂₅ SO ₄
5	Hexadecyl trimethyl ammonium bromide (CTAB)	C ₁₉ H ₄₂ NBr
6	3-(n n-dimethyl myristyl ammonio)propane sulfonate (Betaine)	C ₁₉ H ₄₁ NSO ₃
7	Triton-X 100	C ₁₄ H ₂₂ O(C ₂ H ₄ O)n(n=9-10)
8	FS-31	F(CF ₂) _n C ₂ H ₅ O
9	Carbon dioxide	CO ₂
10	Nitrogen	N ₂
11	Sodium chloride	NaCl
12	Calcium Chloride	CaCl ₂ .2H ₂ O
13	Magnesium Chloride	MgCl ₂ .6H ₂ O
14	Sodium sulfate	Na ₂ SO ₄
15	Sodium bicarbonate	NaHCO ₃

Table S2. Physical properties of the three different nanodots solutions in DI water at 298.15 K.

Nanoparticles	pH	Conductivity (mS)	Zeta potential (mv)
0.01 wt% CND	7.721	78.50	-7.55
0.01 wt% Na_CND	7.981	85.69	-70.9
0.01 wt% NH4_CND	8.021	85.80	-52.2

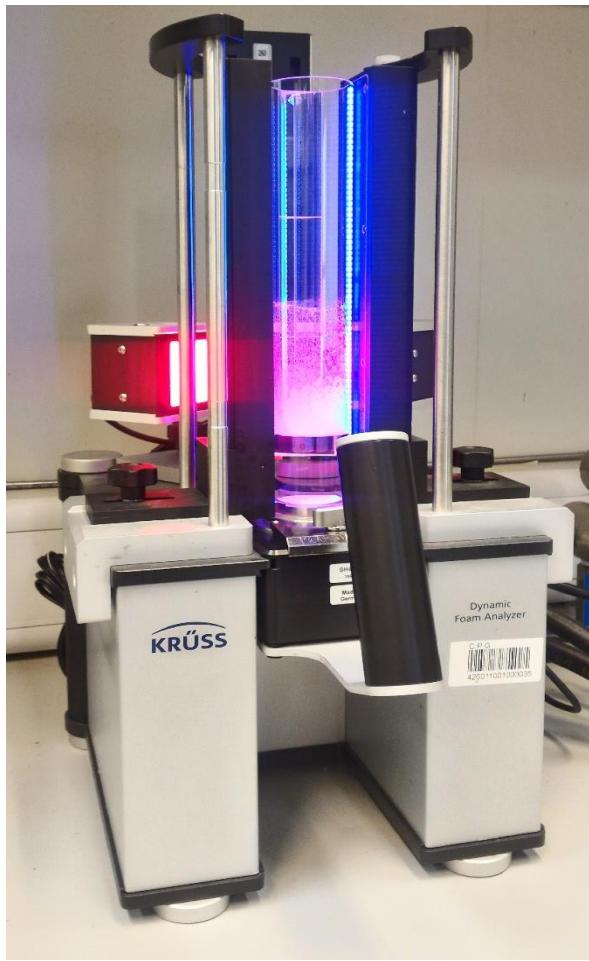


Figure S1. Experimental set-up used for the bulk foaming analysis.

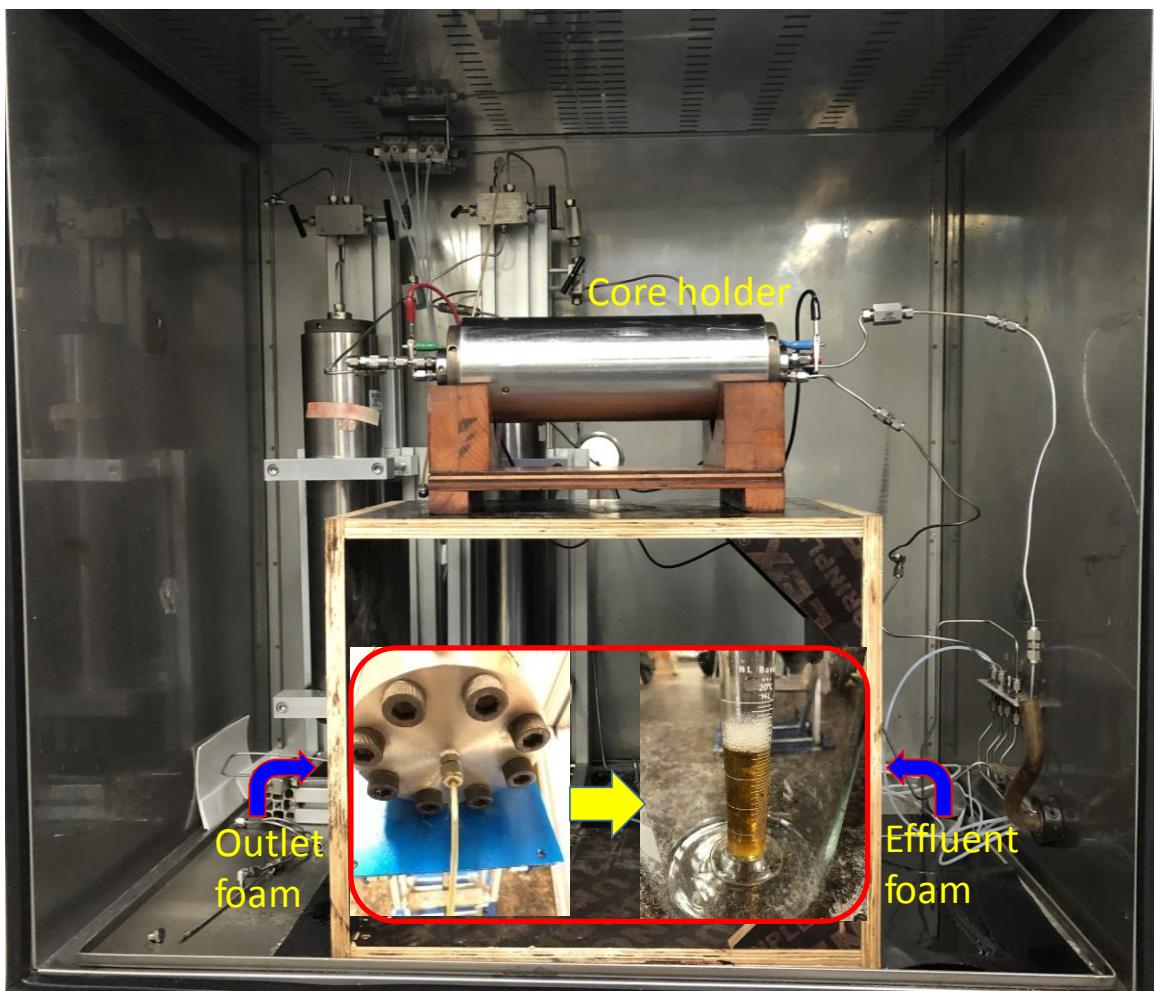


Figure S2. Core-flood experimental set-up used for the dynamic foam studies.

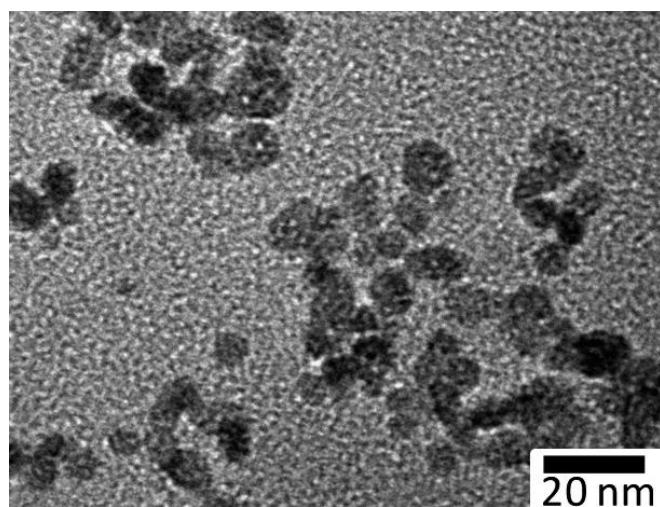


Figure S3. TEM image of the carbon nanodot. (Krysman et al., 2012).

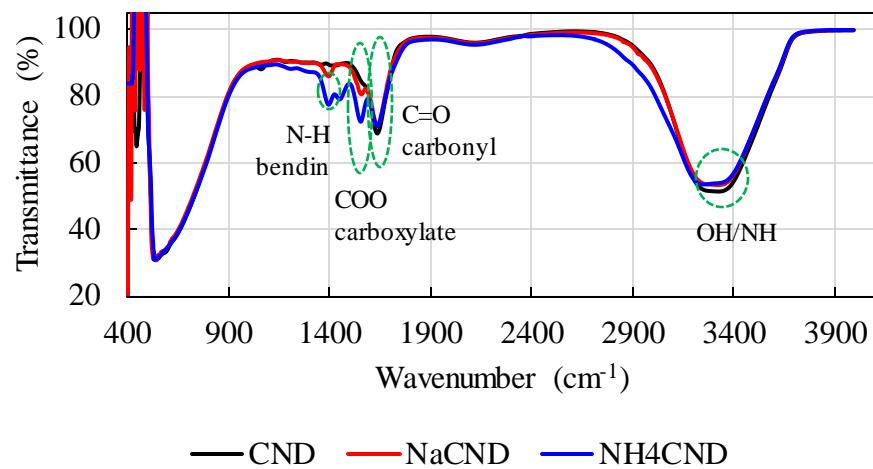


Figure S4. Infrared spectra of the synthesized carbon nanodots.

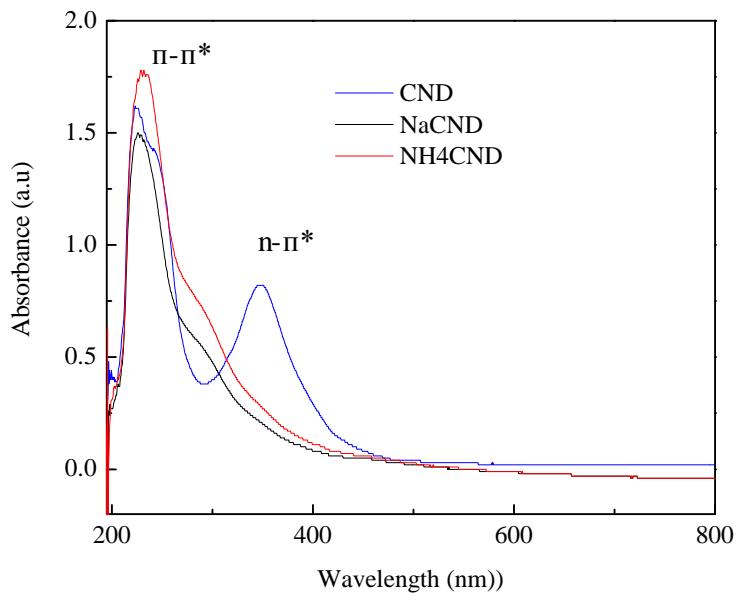


Figure S5. UV-Vis absorption spectra of the 0.02 wt% of CND, NaCND and NH₄CND solutions in seawater at 298.15 K.

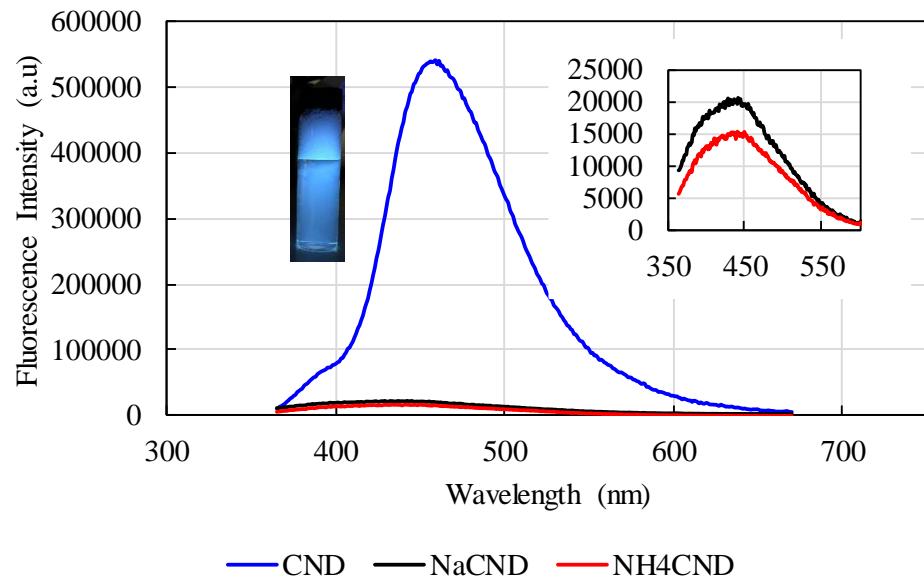


Figure S6. Fluorescence emission spectra of the 0.02 wt% of CND, NaCND and NH₄CND solutions in seawater at 298.15 K.

Systems	Time (s)					
	0	300	900	1800	2700	3600
NH4CND+AOS						
NH4CND+SDS						
NH4CND+CTAB						
NH4CND+Betaine						
NH4CND+Triton 100						
NH4CND+FS-31						

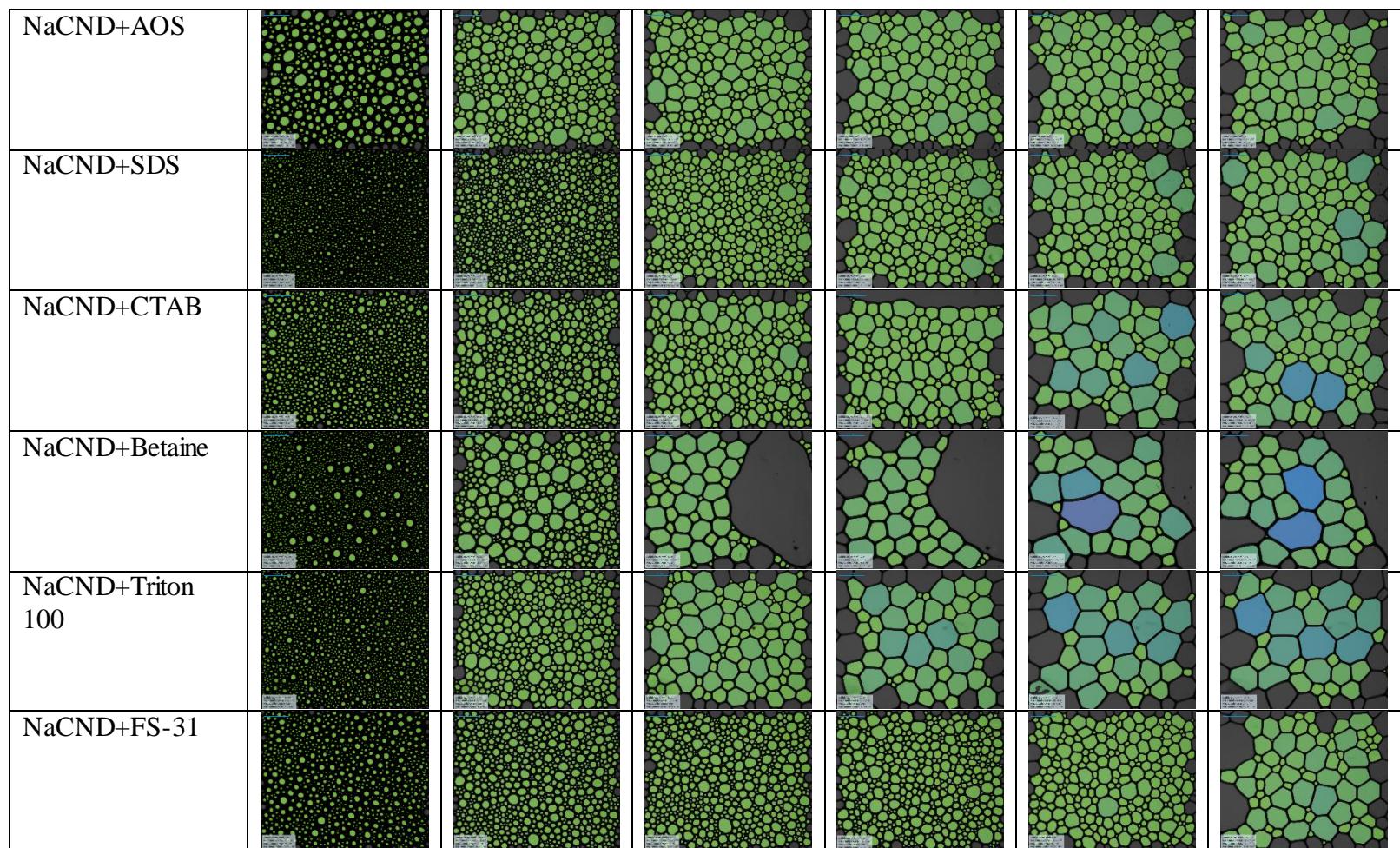


Figure S7. Microscopic images of the different foaming systems of 0.01 wt% NH₄CND nanoparticle+0.02 wt% surfactants and 0.01 wt% NaCND nanoparticle+0.02 wt% surfactants in seawater under N₂ at 298 K. (scale bar is 2 mm).