SUPPORTING INFORMATION

THE EFFECT OF CHANGING THE MICROSTRUCTURE OF A MICROEMULSION ON CHEMICAL REACTIVITY

C. Cabaleiro-Lago, L. García-Río, P. Hervella

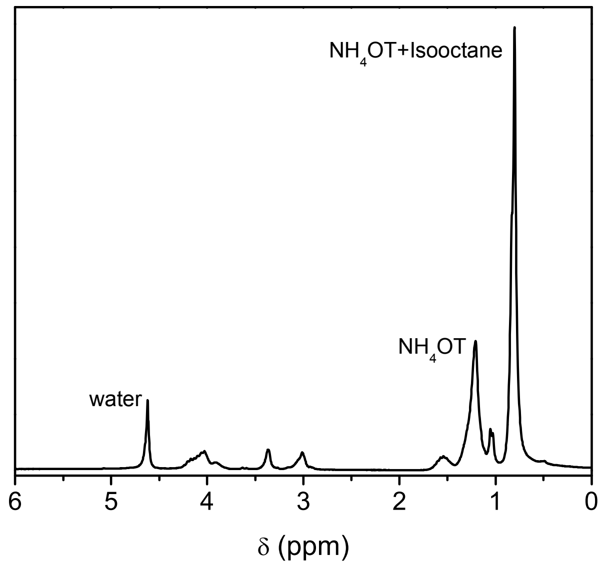


Figure S-1: ^{1}H-NMR spectrum of a NH_4OT/isooctane/water microemulsion (46% water). Spectral width 2003.1 Hz, number of points 1024. Labels show peaks for different components.

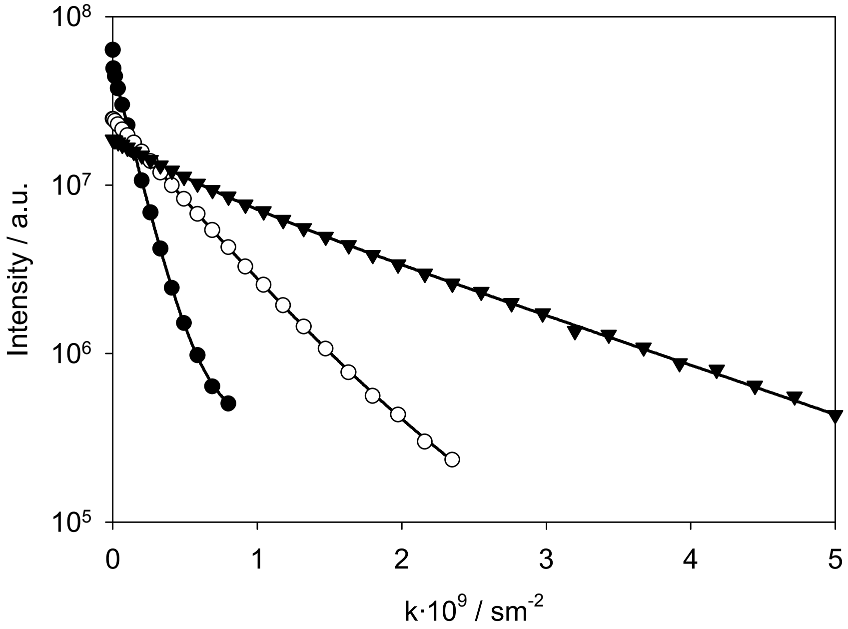


Figure S-2. Representative echo decays of (●) Water (○) isooctane and (▼) NH_4OT in microemulsion. The data have been fitted to a biexponential function (the solid lines). *k* is defined as $k = \gamma^2 G^2 \delta^2 \left(\Delta - \delta/3\right)$.

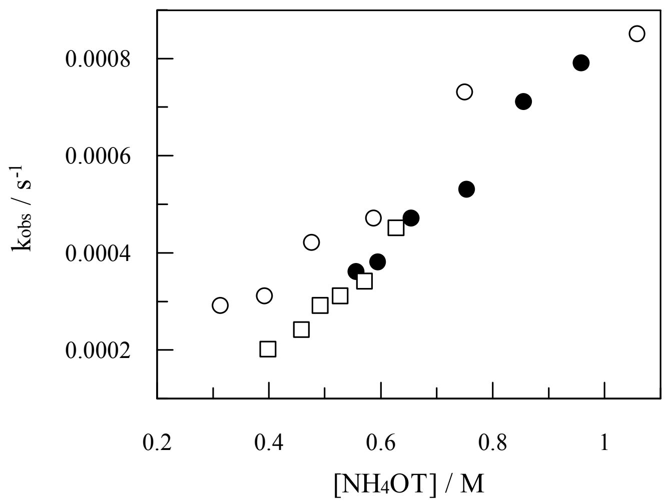


Figure S-3. Influence of the surfactant concentration on the solvolysis rate constant of PhOCOCl in microemulsions of water/NH_4OT/isooctane at 25.0ºC. (○) W=5.53; (●) W=25.9 and (□) W=42.9.

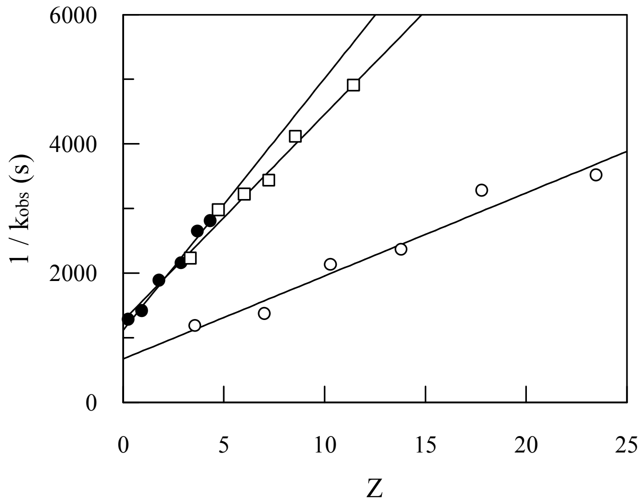


Figure S-4. Linealization of data from figure S-3 according to equation 3 (see manuscript). (○) W=5.53; (●) W=25.9 and (□) W=42.9.

Table S-1. Values of the distribution constant for different substrates of the microemulsion, K_{oi}, for different W values.

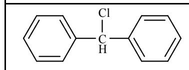
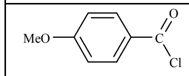
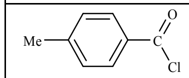
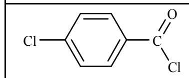
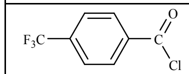
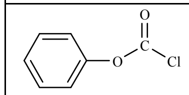
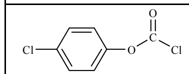
	W												
	2.6	4.0	5.5	5.8	9.7	15.0	20.8	25.9	40.0	41.8	54.1	87.2	**Mean**
 DPhMeCl			3.8±0.4					3.6±0.4			2.5±0.3	3.2±0.4	**3.3±0.4**
 4-MeO		4.8±0.5		5.2±0.6		5.0±0.6	5.2±0.6		5.1±0.6				**5.1±0.6**
 4-Me	3.2±0.3				2.1±0.3			2.5±0.3					**2.6±0.3**
 4-Cl	2.3±0.3				2.5±0.4			2.3±0.3					**2.6±0.3**
 4-CF_3			6.3±0.6					4.1±0.5		5.5±0.6			**5.3±0.6**
 PhOCOCl			5.2±0.5					2.8±0.6		3.9±0.5			**4.0±0.5**
 4-Cl-PhOCOCl	3.2±0.3				2.1±0.4			3.6±0.4	3.0±0.4				**3.0±0.4**

Table S-2. Influence of W on the solvolysis rate constant at the interphase of NH_4OT-based microemulsions, k_i, for processes that take place via a dissociative mechanism. The uncertainty in the k_i values is smaller than 10%.

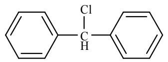
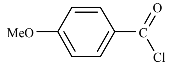
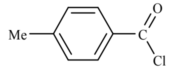
					
W	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**
1.5	4.55×10^{-5}	1.5	1.34×10^{-3}	1.4	2.51×10^{-4}
2.6	5.95×10^{-3}	3.1	3.62×10^{-3}	2.6	3.16×10^{-4}
3.1	6.97×10^{-5}	4	7.30×10^{-3}	2.9	3.58×10^{-4}
4.8	1.55×10^{-4}	4.8	8.39×10^{-3}	3.5	4.36×10^{-4}
5.5	4.40×10^{-4}	5.8	1.36×10^{-2}	4.5	5.21×10^{-4}
6.5	4.92×10^{-4}	6.5	1.75×10^{-2}	5.3	6.65×10^{-4}
10.4	8.93×10^{-4}	10.4	3.71×10^{-2}	6.1	7.83×10^{-4}
14.7	1.75×10^{-3}	14.7	5.57×10^{-2}	7.9	1.12×10^{-3}
19.6	2.55×10^{-3}	15	5.94×10^{-2}	9.3	1.09×10^{-3}
25.2	3.00×10^{-3}	19.6	7.92×10^{-2}	9.7	1.46×10^{-3}
25.9	3.07×10^{-3}	20.8	9.85×10^{-2}	11.7	1.69×10^{-3}
31.7	3.90×10^{-3}	25.2	1.04×10^{-1}	17.6	3.41×10^{-3}
39.2	4.55×10^{-3}	31.6	1.21×10^{-1}	25	5.38×10^{-3}
48.2	6.19×10^{-3}	39.1	1.41×10^{-1}	28.4	6.10×10^{-3}
48.2	5.96×10^{-3}	40	1.79×10^{-1}	36.7	7.97×10^{-3}
54.1	1.08×10^{-2}	48	1.68×10^{-1}	45	1.02×10^{-2}
62.9	1.01×10^{-2}	58.7	2.11×10^{-1}	52.7	9.68×10^{-3}

Table S-2. Continuation.

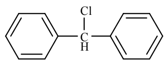
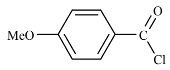
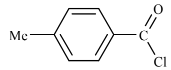
					
W	k_i / **s^{-1}**	**W**	k_i / **s^{-1}**	**W**	k_i / **s^{-1}**
71.7	1.09×10^{-2}	67.3	2.40×10^{-1}	76.4	1.95×10^{-2}
80.5	1.21×10^{-2}	79.4	2.75×10^{-1}	99.4	1.95×10^{-2}
87.2	1.26×10^{-2}	104.8	2.99×10^{-1}	120.1	3.62×10^{-2}
89.3	1.57×10^{-2}	131.8	2.92×10^{-1}	148.9	4.25×10^{-2}
98.1	1.59×10^{-2}	134.5	3.05×10^{-1}	194.7	6.26×10^{-2}
108	1.51×10^{-2}	149.4	3.18×10^{-1}	235.7	8.03×10^{-2}
172	2.04×10^{-2}	202.5	3.38×10^{-1}	288.1	9.12×10^{-2}
204	2.58×10^{-2}	356.5	3.49×10^{-1}		
209	2.48×10^{-2}				

Table S-3. Influence of W on the solvolysis rate constant at the interphase of NH_4OT-based microemulsions, k_i, for processes that take place via a dissociative mechanism. The uncertainty in the k_i values is smaller than 10%.

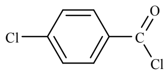
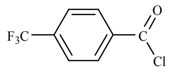
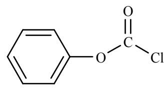
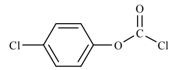
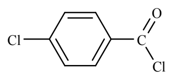
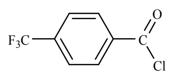
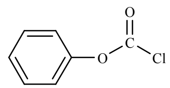
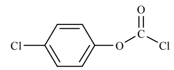
							
W	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**
1.1	$2.39x10^{-3}$	2	$1.04x10^{-2}$	1.5	$2.37x10^{-3}$	1.4	$7.48x10^{-3}$
2.6	$2.92x10^{-3}$	4	$7.53x10^{-3}$	3.1	$1.86x10^{-3}$	2.6	$5.95x10^{-3}$
6.2	$1.19x10^{-3}$	5.5	$1.18x10^{-2}$	4.8	$1.58x10^{-3}$	2.9	$5.81x10^{-3}$
9.2	$9.93x10^{-4}$	8	$4.61x10^{-3}$	5.5	$1.49x10^{-3}$	4.5	$4.26x10^{-3}$
9.7	$9.89x10^{-4}$	16	$3.51x10^{-3}$	6.5	$1.45x10^{-3}$	6.1	$3.92x10^{-3}$
12.4	$8.87x10^{-4}$	20	$3.86x10^{-3}$	10.3	$1.18x10^{-3}$	7.9	$3.64x10^{-3}$
19.8	$8.16x10^{-4}$	25	$3.39x10^{-3}$	14.6	$1.07x10^{-3}$	9.7	$3.41x10^{-3}$
24.3	$8.03x10^{-4}$	25.9	$3.46x10^{-3}$	19.5	$9.95x10^{-4}$	11.7	$3.14x10^{-3}$
25.9	$1.16x10^{-3}$	30	$3.07x10^{-3}$	25.1	$9.28x10^{-4}$	17.6	$2.54x10^{-3}$
29.2	$7.98x10^{-4}$	35	$2.80x10^{-3}$	25.9	$9.00x10^{-4}$	25.9	$2.46x10^{-3}$
34.8	$8.09x10^{-4}$	40	$2.62x10^{-3}$	31.5	$8.68x10^{-4}$	28.4	$2.24x10^{-3}$
48.6	$8.54x10^{-4}$	45	$2.73x10^{-3}$	39.1	$8.19x10^{-4}$	36.7	$2.06x10^{-3}$
57.3	$1.51x10^{-3}$	50	$2.90x10^{-3}$	47.9	$7.80x10^{-4}$	40	$1.95x10^{-3}$
63	$1.28x10^{-3}$	60	$3.33x10^{-3}$	58.6	$7.43x10^{-4}$	45	$1.89x10^{-3}$
72	$1.32x10^{-3}$	70	$3.60x10^{-3}$	62.7	$7.94x10^{-4}$	55.1	$2.02x10^{-3}$
81	$1.38x10^{-3}$	80	$2.72x10^{-3}$	71.5	$7.83x10^{-4}$	86	$2.29x10^{-3}$

Table S-3. Influence of W

							
W	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**	**W**	k_i **/ s^{-1}**
132	$1.49\text{x}10^{-3}$	90	$2.66\text{x}10^{-3}$	80.7	$7.93\text{x}10^{-4}$	276.9	$1.45\text{x}10^{-3}$
173	$2.11\text{x}10^{-3}$	100	$2.38\text{x}10^{-3}$	89.3	$7.56\text{x}10^{-4}$		
185	$2.23\text{x}10^{-3}$	120	$3.21\text{x}10^{-3}$	98.8	$7.08\text{x}10^{-4}$		
193	$1.93\text{x}10^{-3}$	130	$3.45\text{x}10^{-3}$	107.1	$7.80\text{x}10^{-4}$		
285	$2.69\text{x}10^{-3}$	140	$2.71\text{x}10^{-3}$	171.4	$8.72\text{x}10^{-4}$		
324	$3.85\text{x}10^{-3}$	150	$2.82\text{x}10^{-3}$	268.1	$1.02\text{x}10^{-3}$		
		160	$2.77\text{x}10^{-3}$	308.9	$1.07\text{x}10^{-3}$		
		170	$2.64\text{x}10^{-3}$	342.8	$1.13\text{x}10^{-3}$		
		190	$2.83\text{x}10^{-3}$	344.3	$1.36\text{x}10^{-3}$		
		200	$2.87\text{x}10^{-3}$				