

Supplementary Materials: Antifungal Activity and Stability of Fluconazole Emulsion Containing Ionic Liquids Explained by Intermolecular Interactions

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1. Instability Index.

Table S1. Instability Index of emulsions at 25 °C.

	1.5 mM	2.4 mM	3.6 mM	1.3 mM	2.06 mM	3.1 mM
	C ₁₂ MIM[Br]	C ₁₂ MIM[Br]	C ₁₂ MIM[Br]	C ₁₆ MIM[Br]	C ₁₆ MIM[Br]	C ₁₆ MIM[Br]
MS	0.089	0.095	0.396	0.856	0.865	0.886
US 20%	0.329	0.64	0.666	0.83	0.834	0.865
US 40%	0.613	0.637	0.664	0.799	0.751	0.763

Table S2. Instability Index of emulsions at 37 °C.

	1.5 mM	2.4 mM	3.6 mM	1.3 mM	2.06 mM	3.1 mM
	C ₁₂ MIM[Br]	C ₁₂ MIM[Br]	C ₁₂ MIM[Br]	C ₁₆ MIM[Br]	C ₁₆ MIM[Br]	C ₁₆ MIM[Br]
MS	0.158	0.104	0.248	0.88	0.876	0.886
US 20%	0.32	0.582	0.663	0.845	0.818	0.858
US 40%	0.552	0.608	0.599	0.699	0.676	0.741

2. Transmission Profiles.

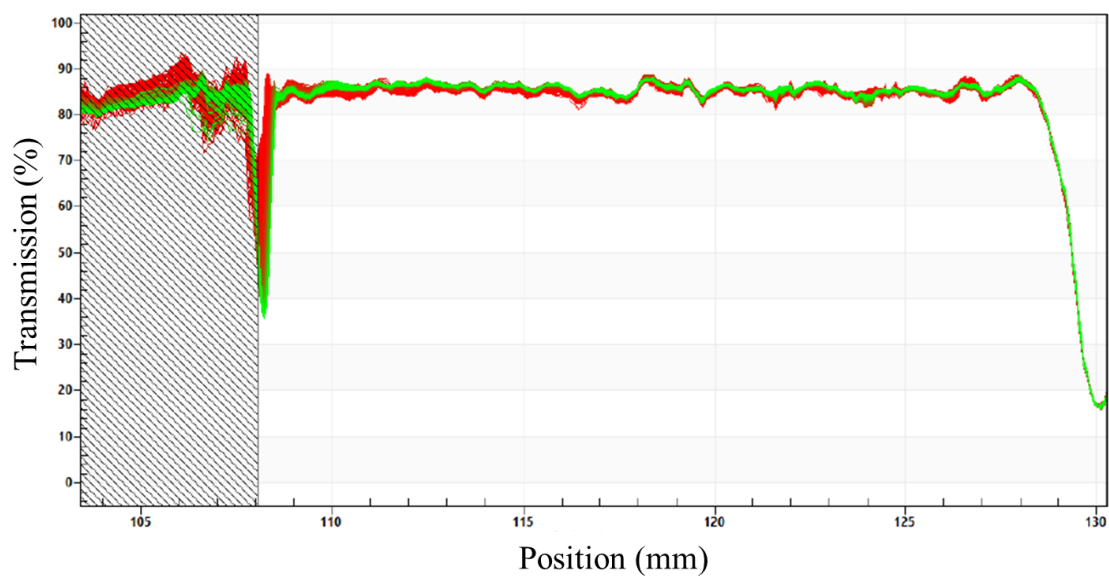


Figure S1. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 1.5 mM LI C₁₂MIM[Br] prepared by MS.

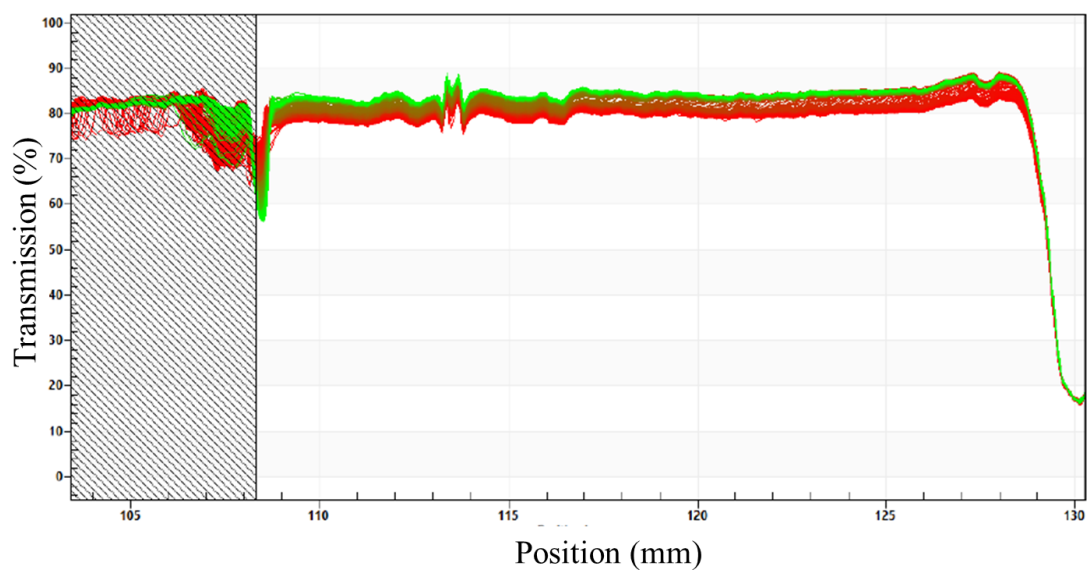


Figure S2. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 1.5 mM LI C₁₂MIM[Br] prepared by US 20%.

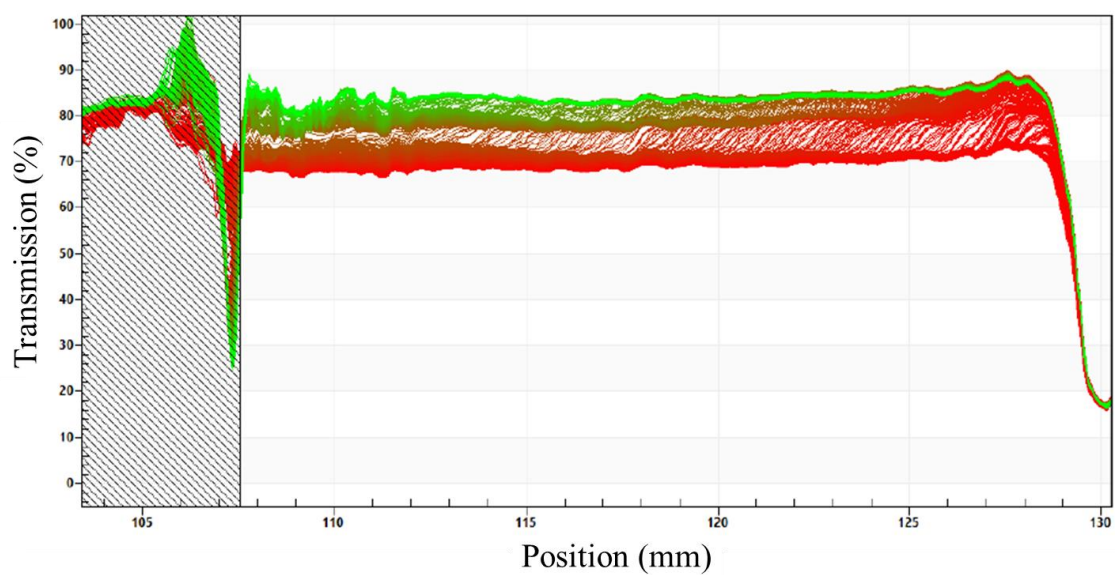


Figure S3. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 1.5 mM LI C₁₂MIM[Br] prepared by US 40%.

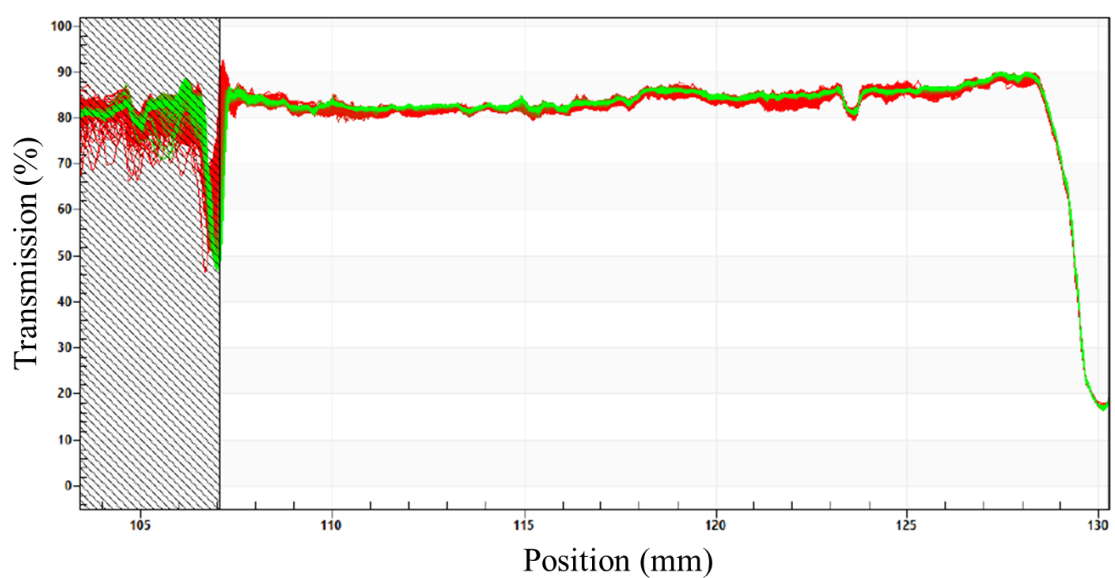


Figure S4. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 2.4 mM LI C₁₂MIM[Br] prepared by MS.

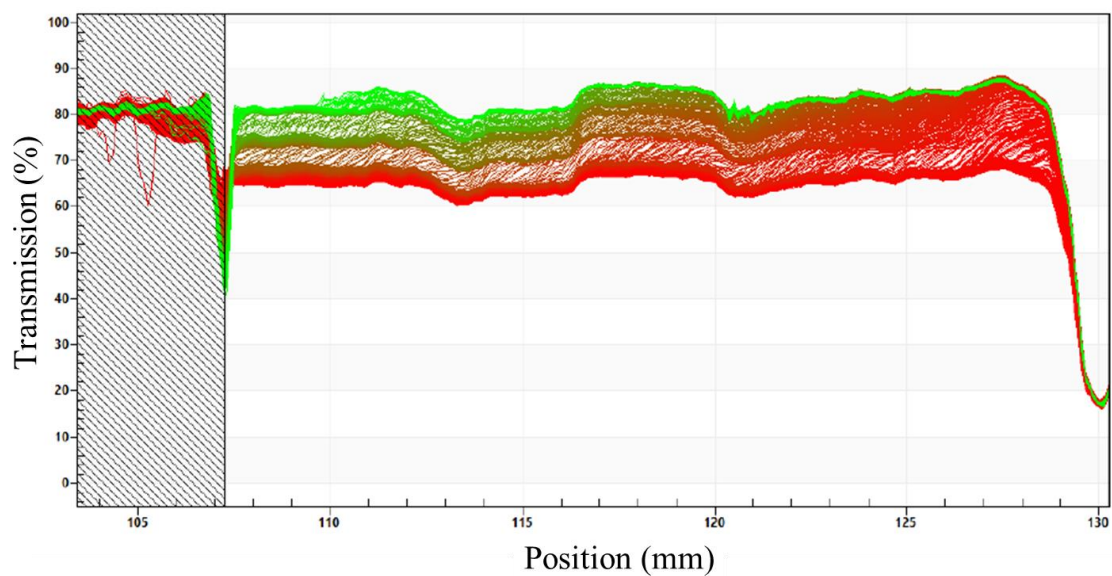


Figure S5. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 2.4 mM LI C₁₂MIM[Br] prepared by US 20%.

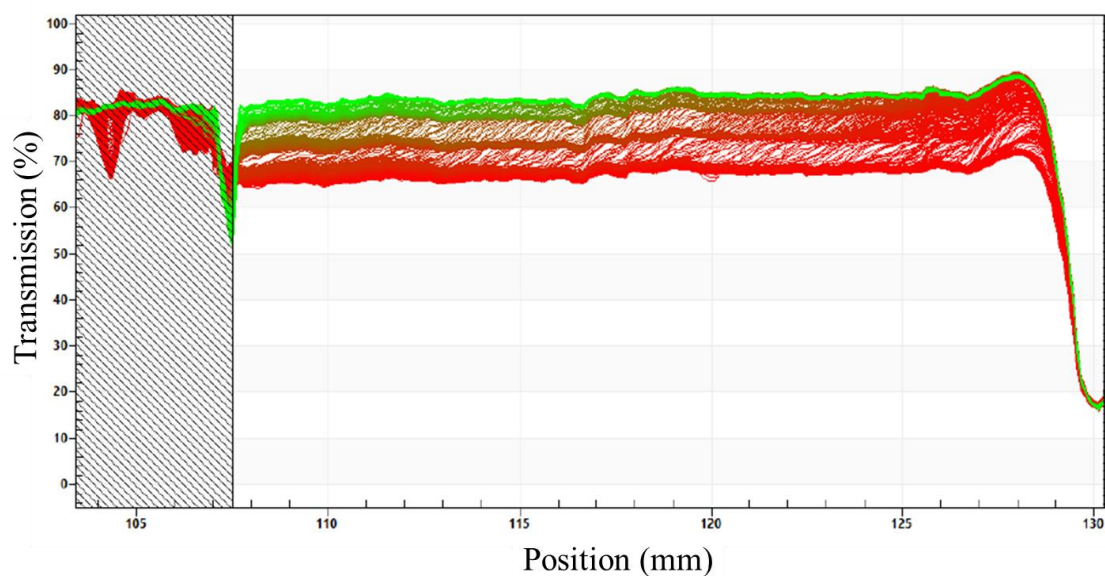


Figure S6. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 2.4 mM LI C₁₂MIM[Br] prepared by US 40%.

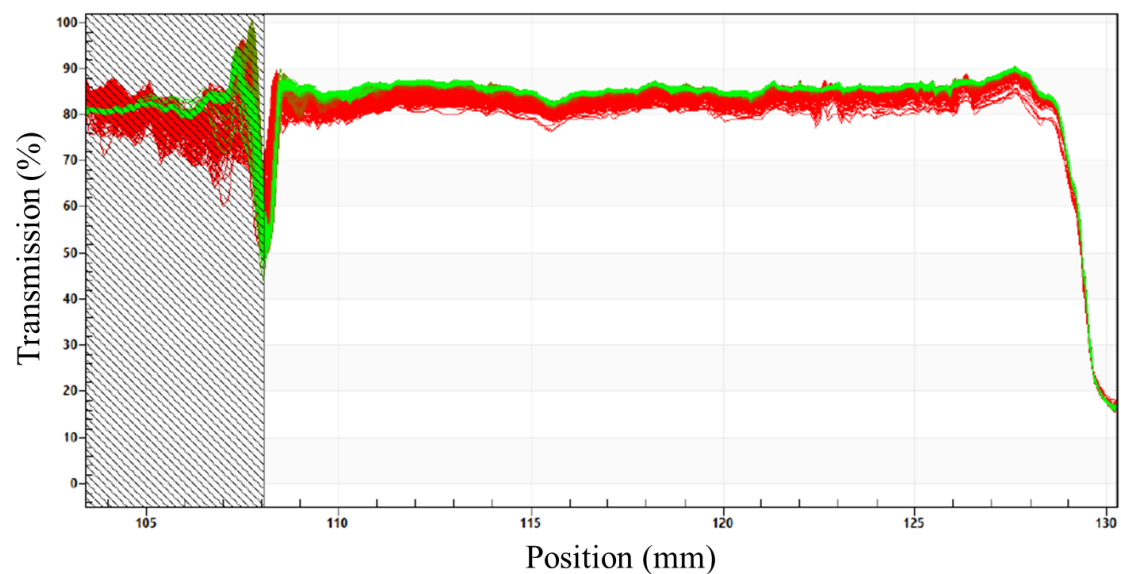


Figure S7. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 3.6 mM LI C₁₂MIM[Br] prepared by MS.

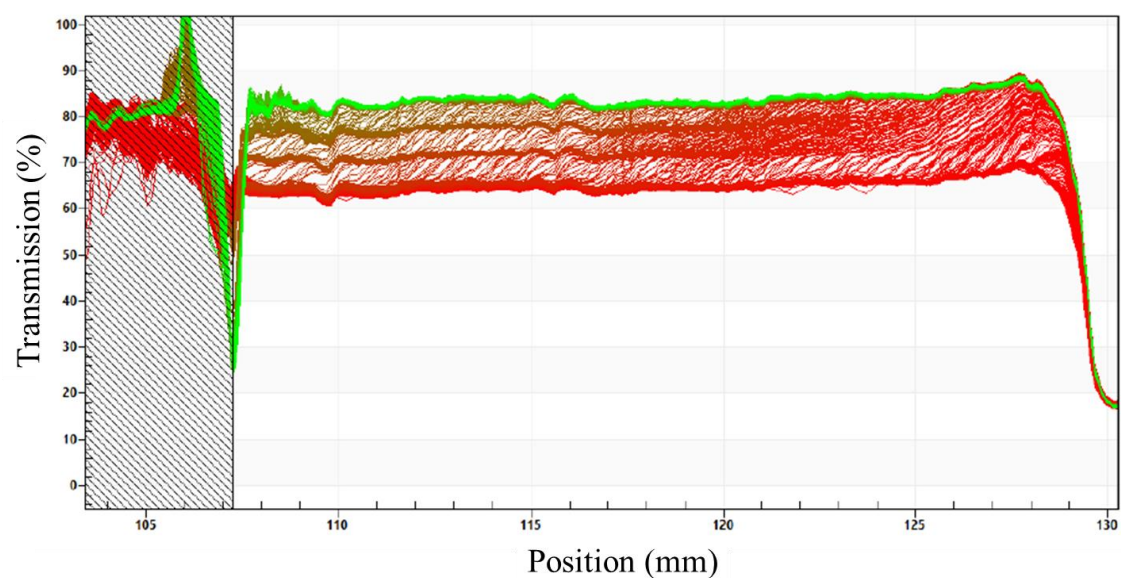


Figure S8. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 3.6 mM LI C₁₂MIM[Br] prepared by US 20%.

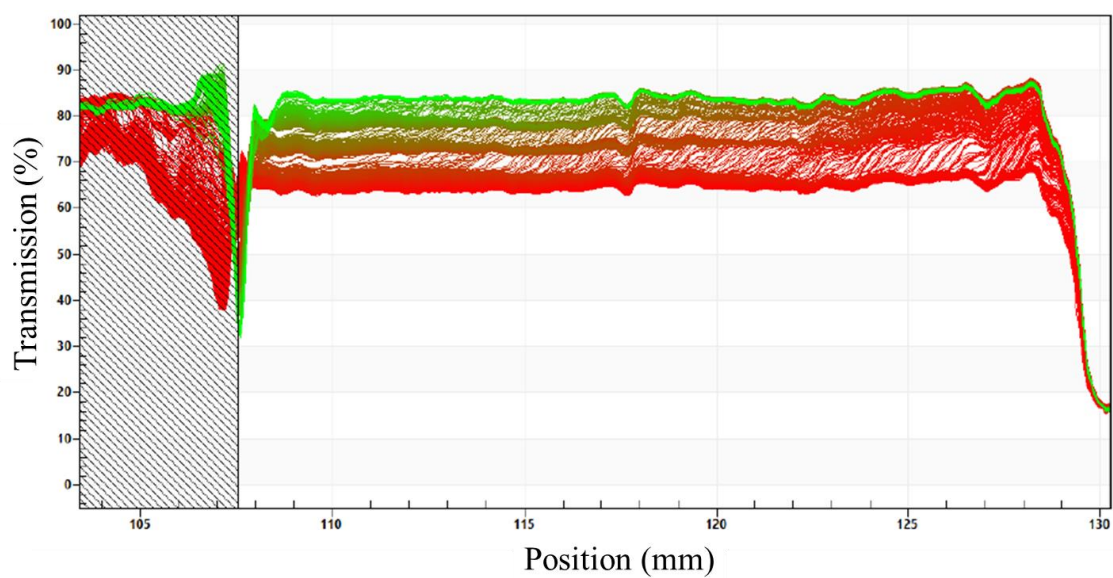


Figure S9. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 3.6 mM LI C₁₂MIM[Br] prepared by US 40%.

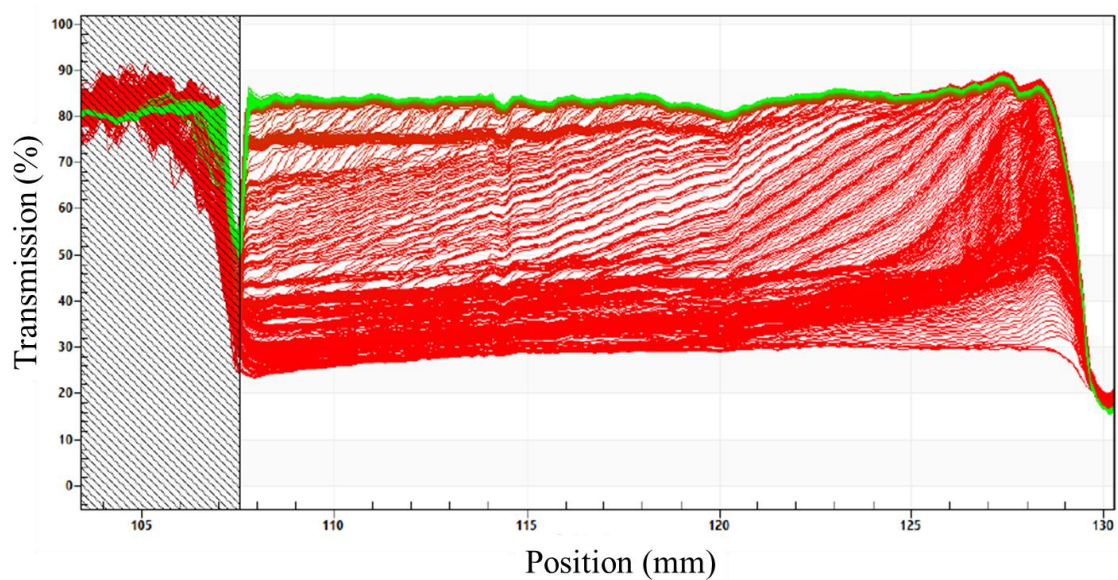


Figure S10. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 1.3 mM LI C₁₆MIM[Br] prepared by MS.

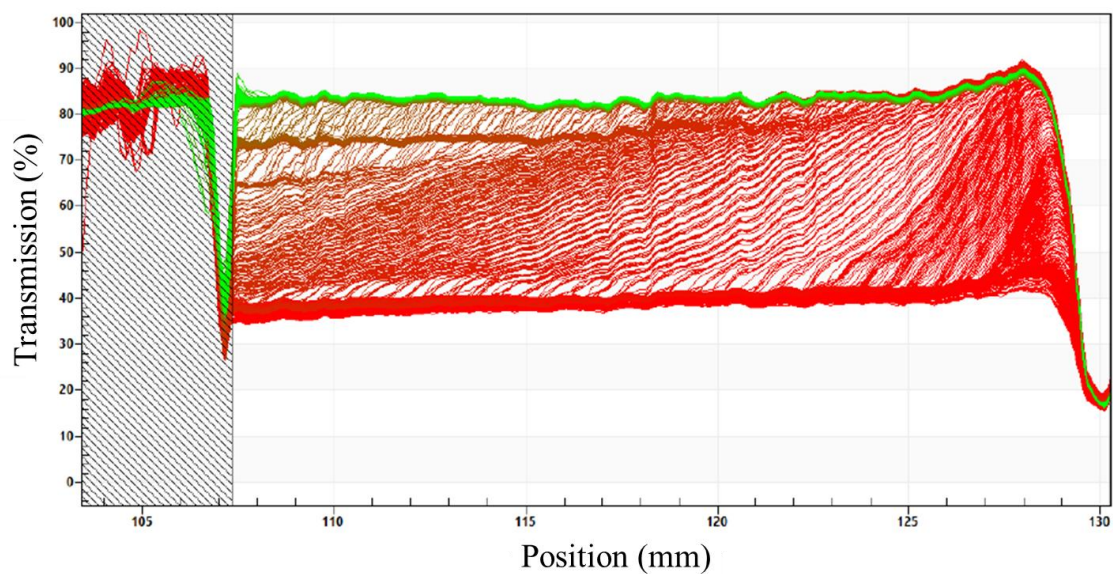


Figure S11. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 1.3 mM LI C₁₆MIM[Br] prepared by US 20%.

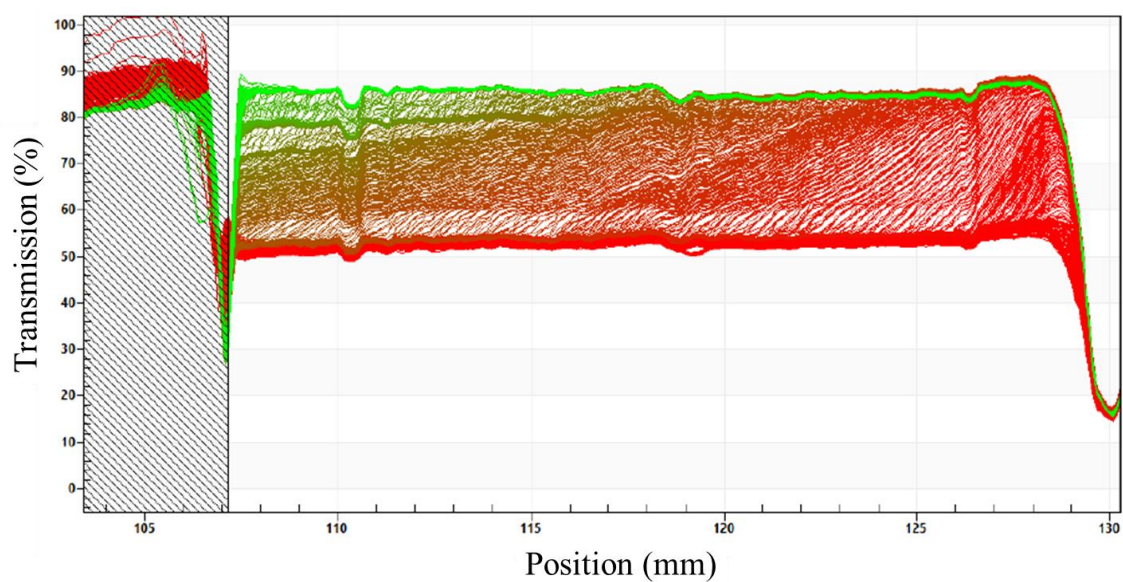


Figure S12. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 1.3 mM LI C₁₆MIM[Br] prepared by US 40%.

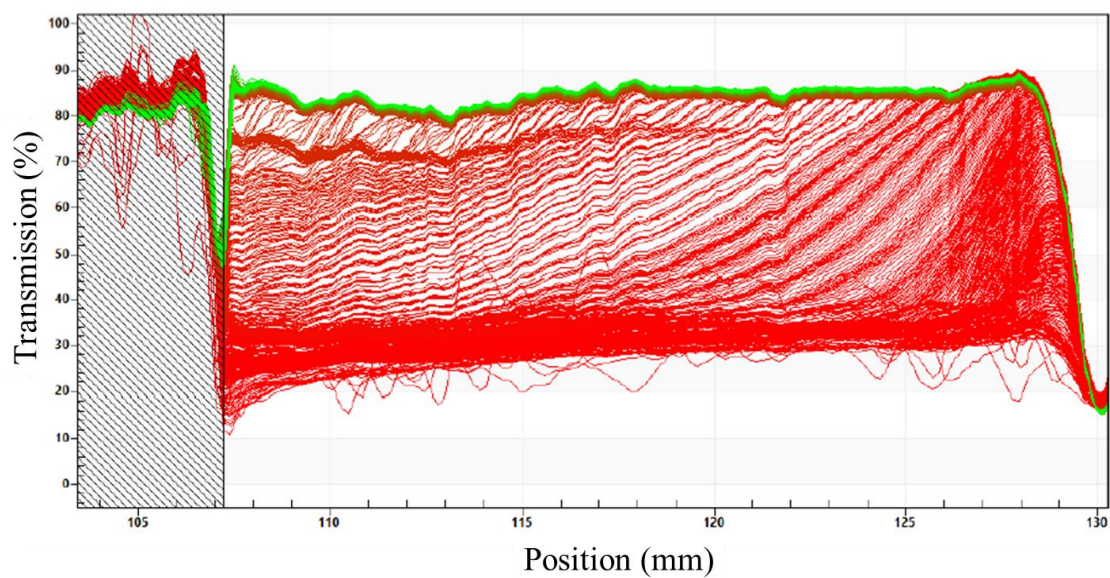


Figure S13. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 2.06 mM LI C₁₆MIM[Br] prepared by MS.

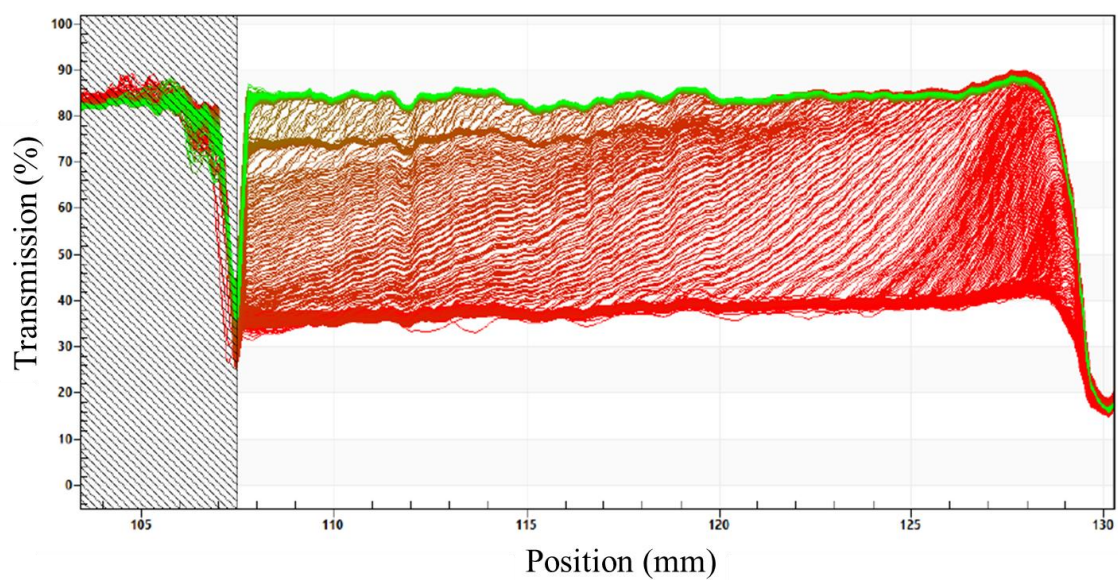


Figure S14. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 2.06 mM LI C₁₆MIM[Br] prepared by US 20%.

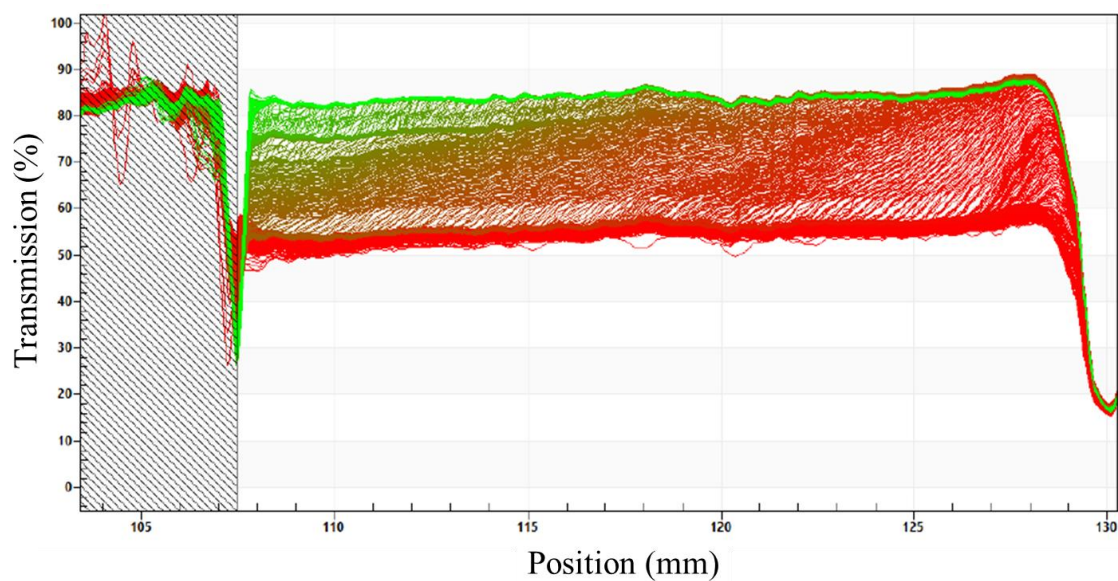


Figure S15. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 2.06 mM LI C₁₆MIM[Br] prepared by US 40%.

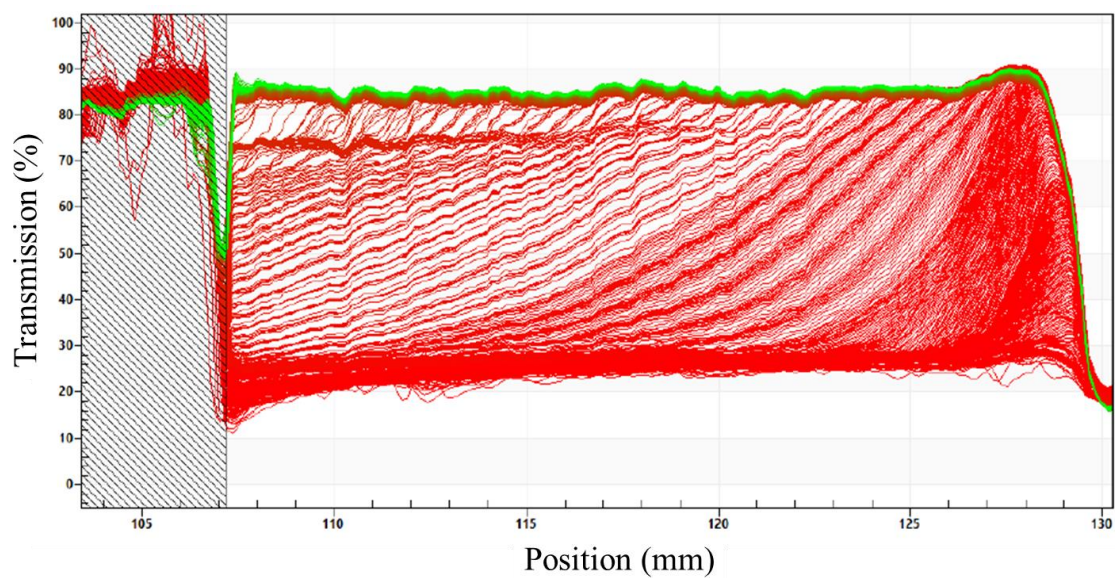


Figure S16. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 3.1 mM LI C₁₆MIM[Br] prepared by MS.

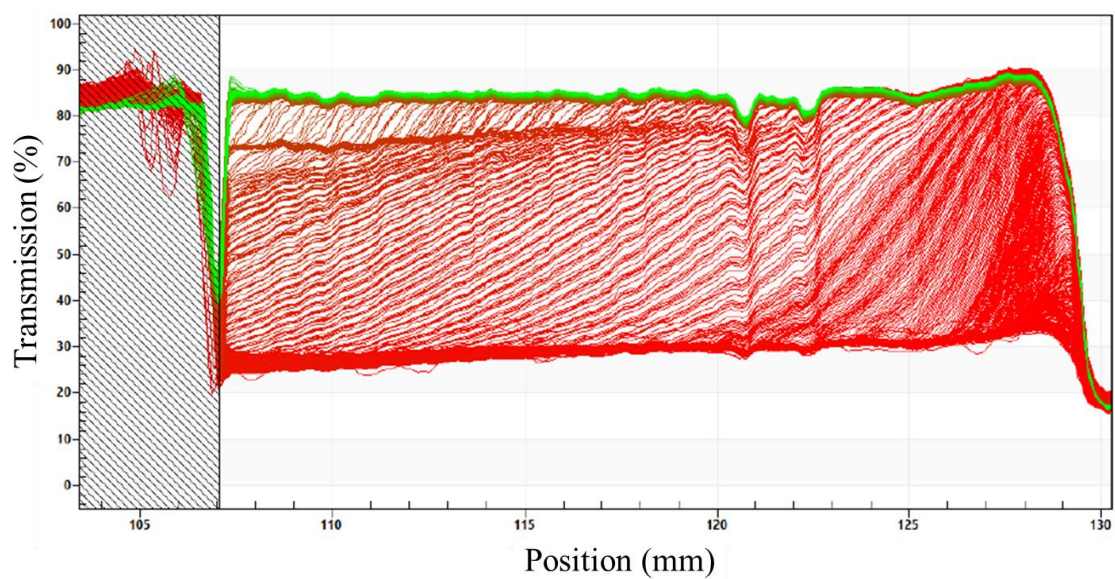


Figure S17. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 3.1 mM LI C₁₆MIM[Br] prepared by US 20%.

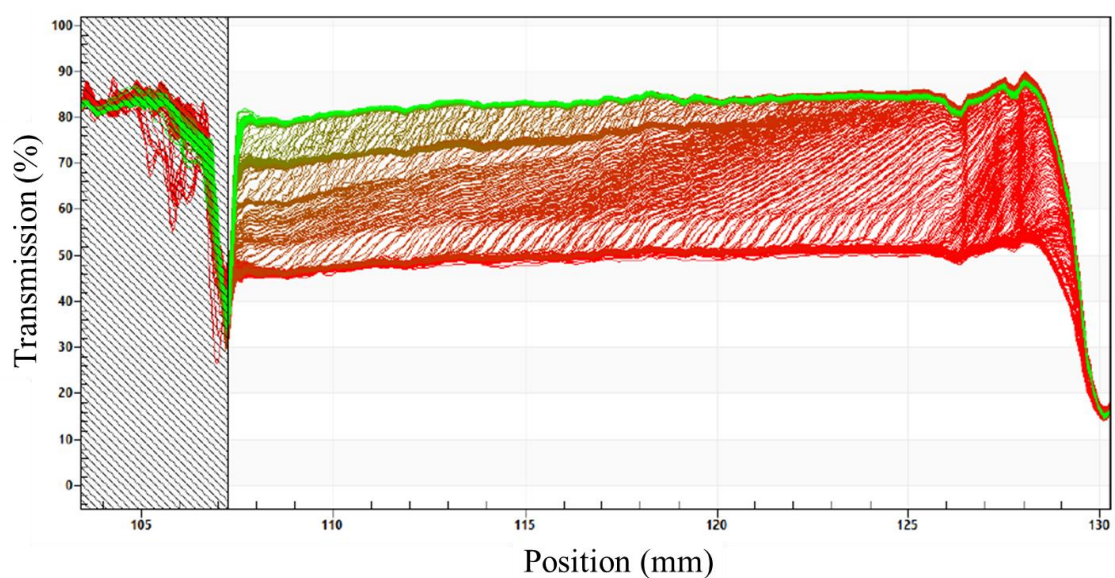


Figure S18. Transmission profile as a function of position in the cuvette at 25 °C of the emulsion with 3.1 mM LI C₁₆MIM[Br] prepared by US 40%.

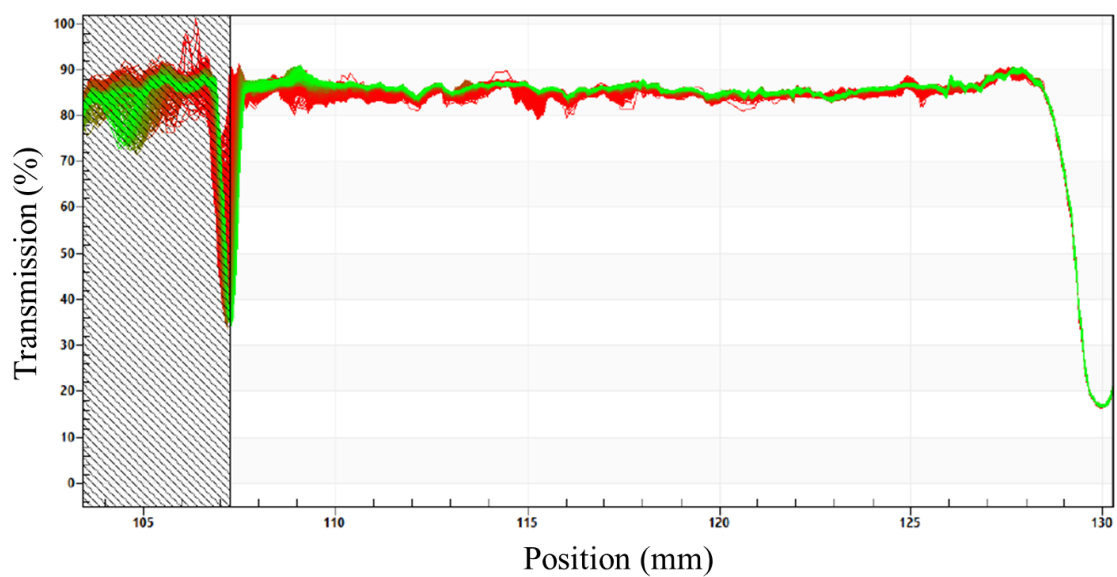


Figure S19. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 1.5 mM LI C₁₂MIM[Br] prepared by MS.

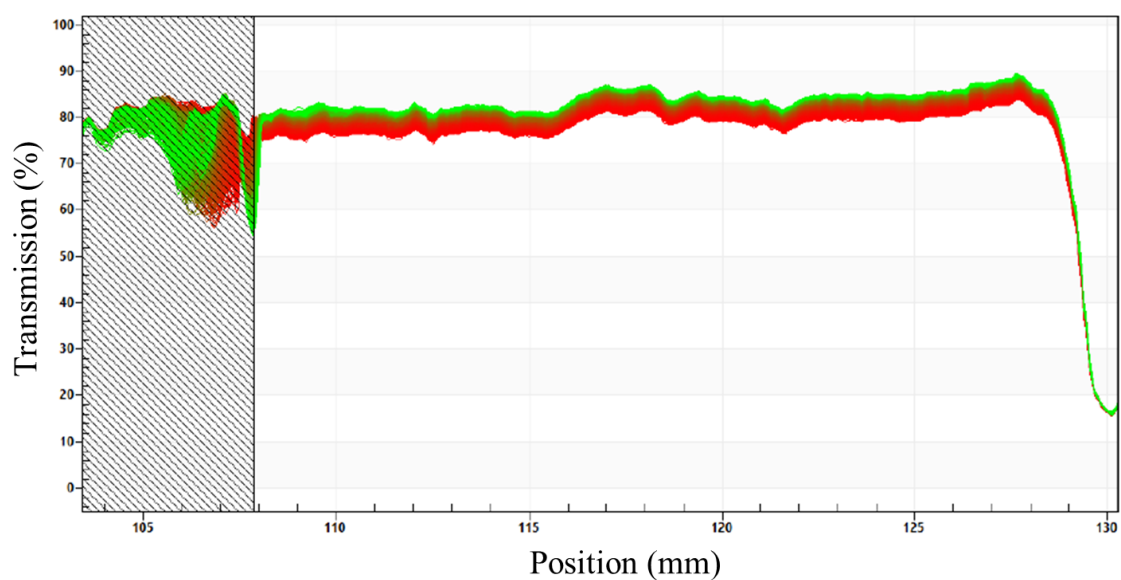


Figure S20. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 1.5 mM LI C₁₂MIM[Br] prepared by US 20%.

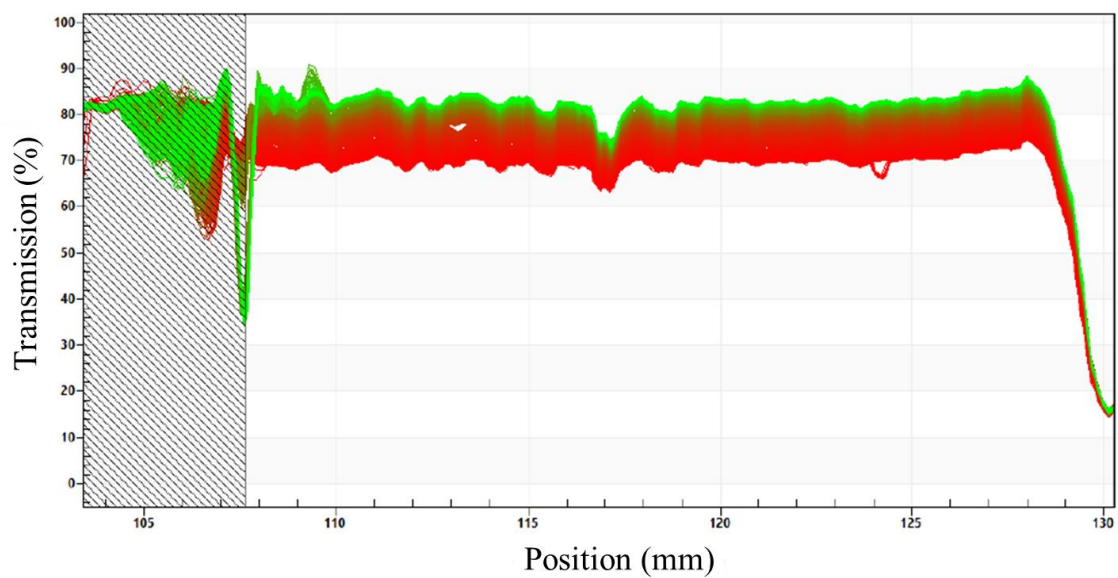


Figure S21. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 1.5 mM LI C₁₂MIM[Br] prepared by US 40%.

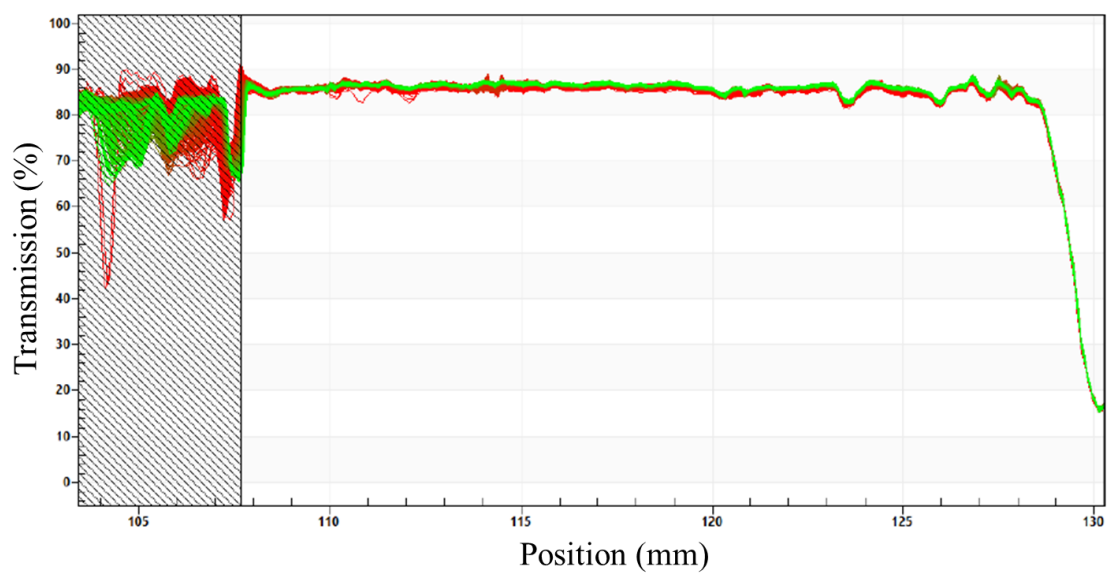


Figure S22. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 2.4 mM LI C₁₂MIM[Br] prepared by MS.

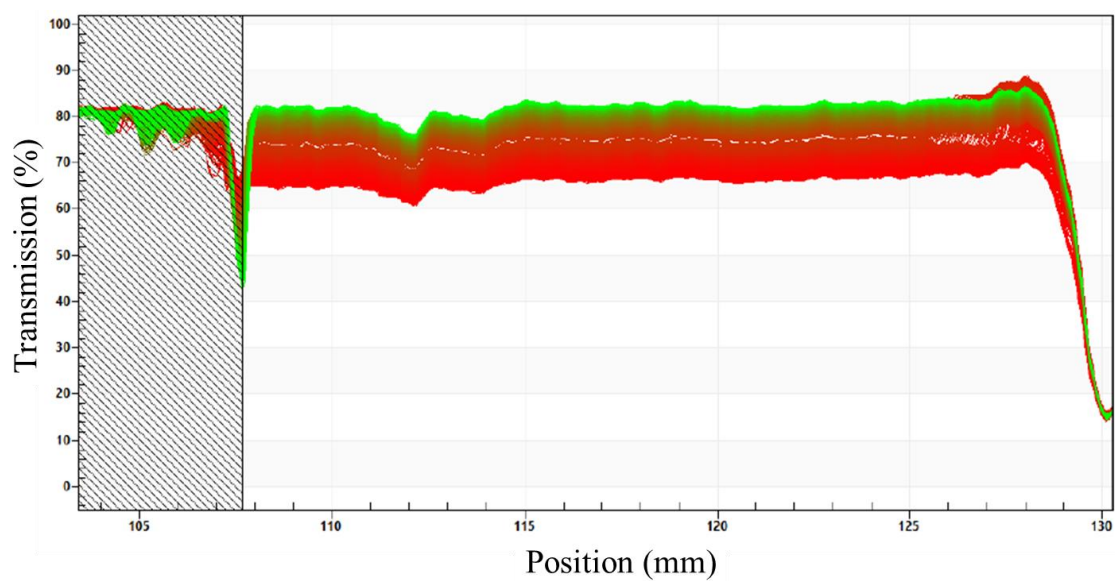


Figure S23. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 2.4 mM LI C₁₂MIM[Br] prepared by US 20%.

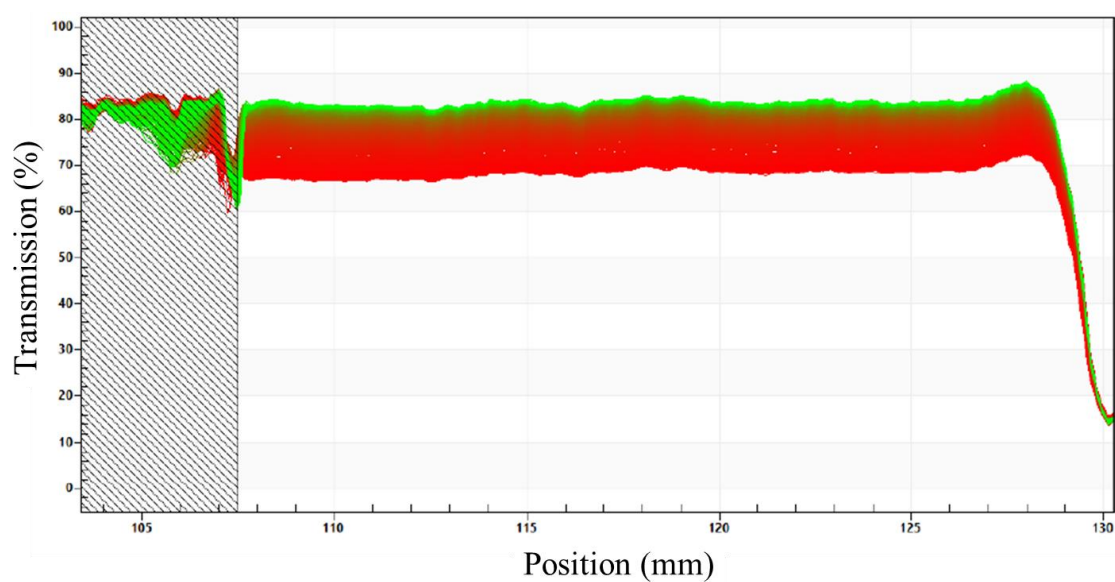


Figure S24. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 2.4 mM LI C₁₂MIM[Br] prepared by US 40%.

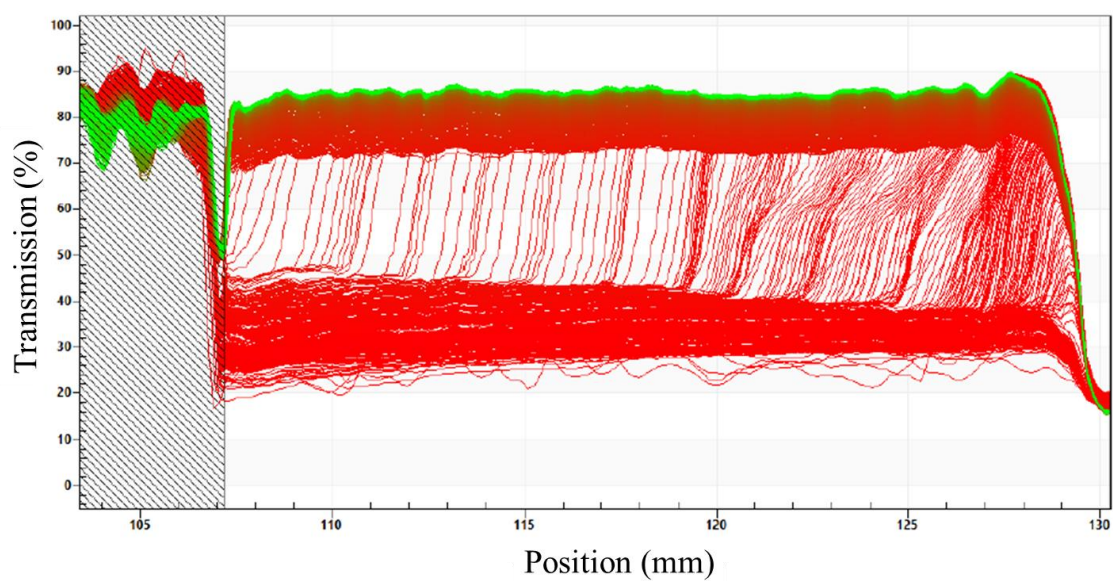


Figure S25. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 2.06 mM LI C₁₆MIM[Br] prepared by MS.

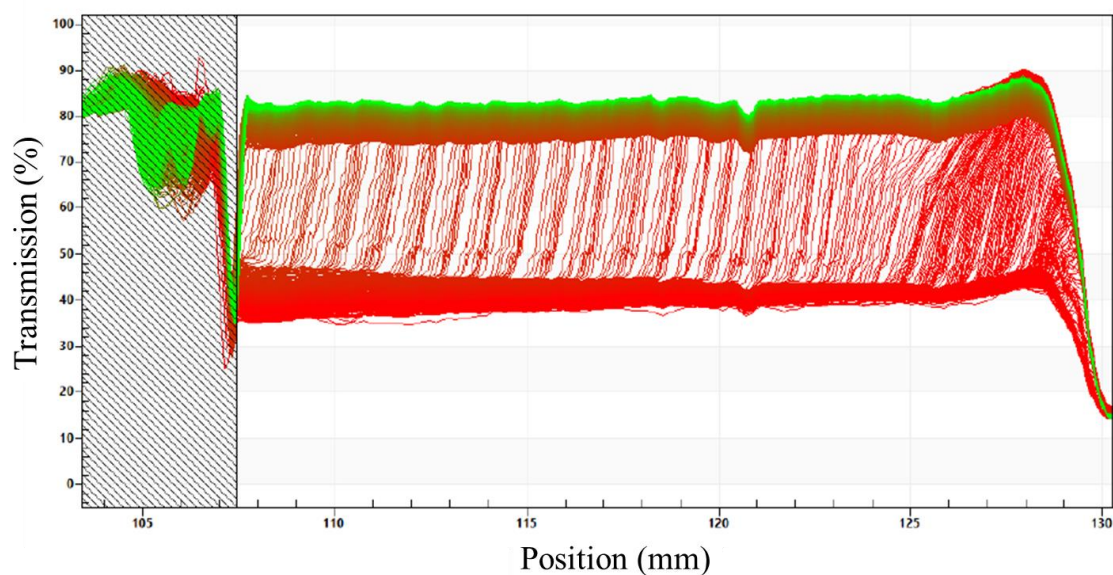


Figure S26. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 2.06 mM LI C₁₆MIM[Br] prepared by US 20%.

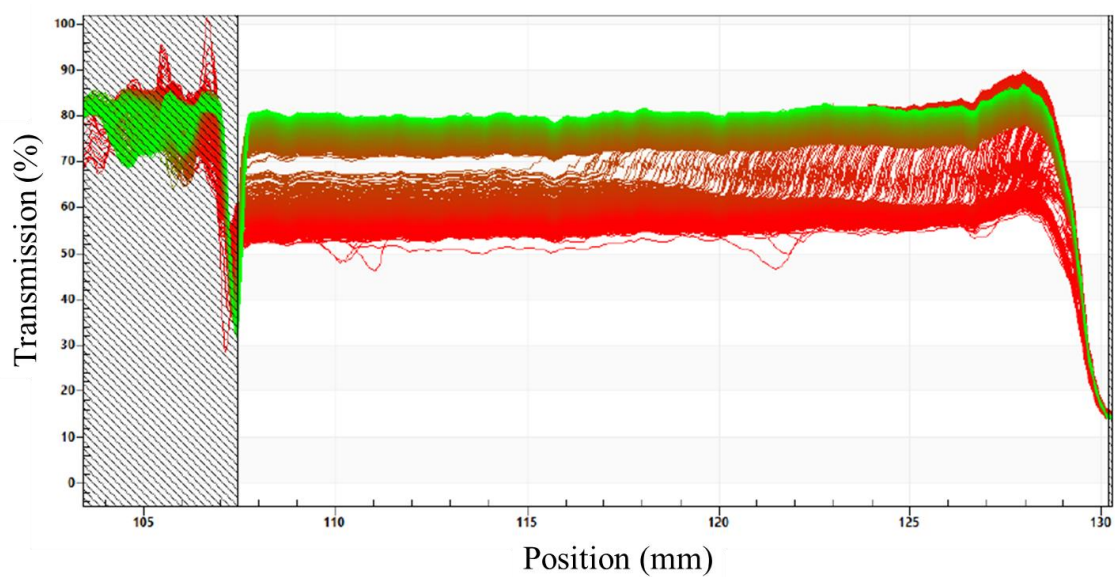


Figure S27. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 2.06 mM LI C₁₆MIM[Br] prepared by US 40%.

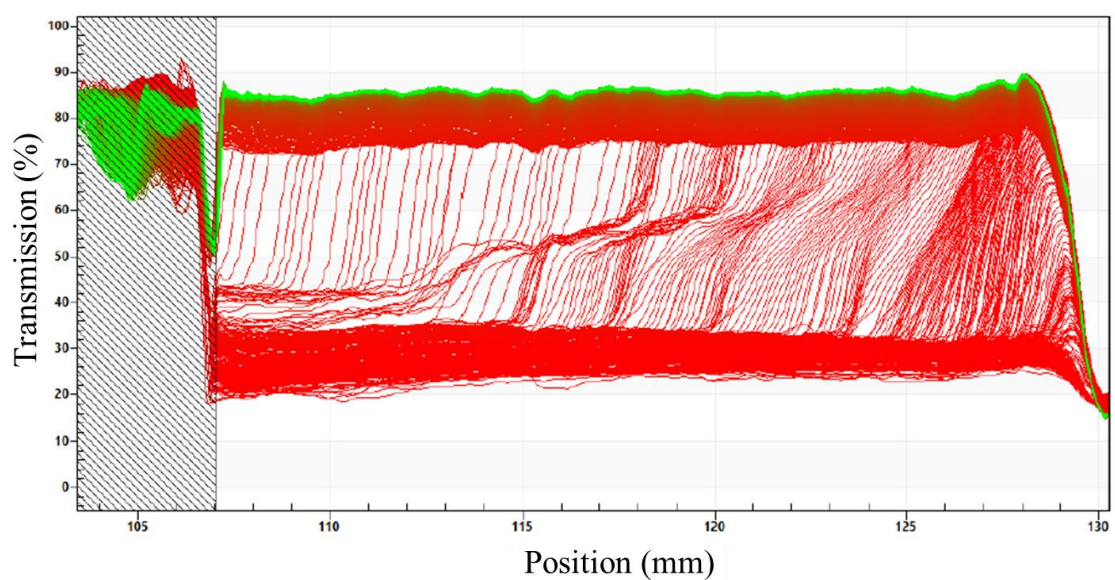


Figure S28. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 3.1 mM LI C₁₆MIM[Br] prepared by MS.

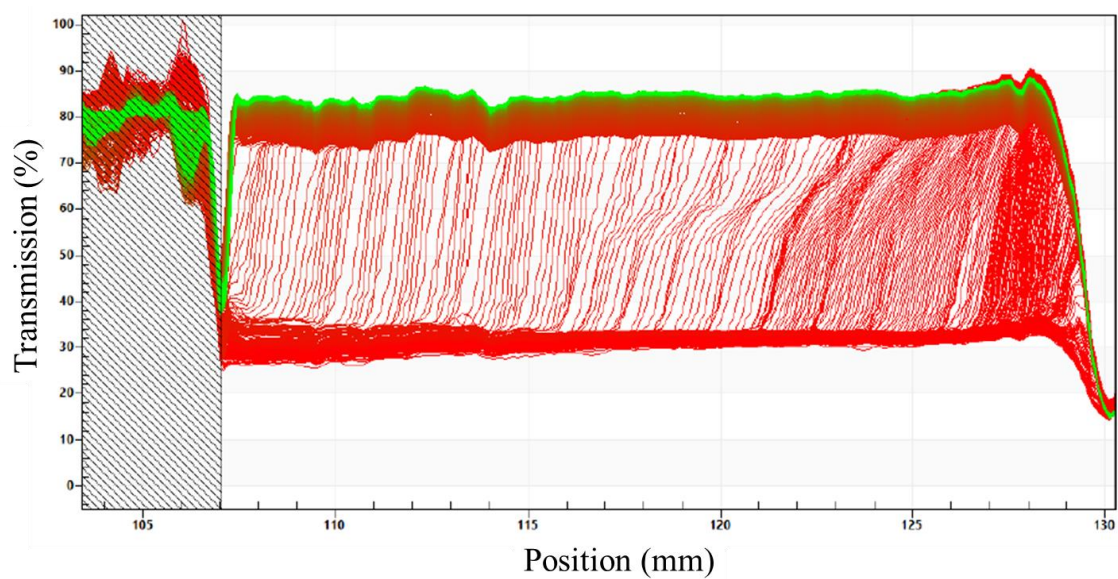


Figure S29. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 3.1 mM LI C₁₆MIM[Br] prepared by US 20%.

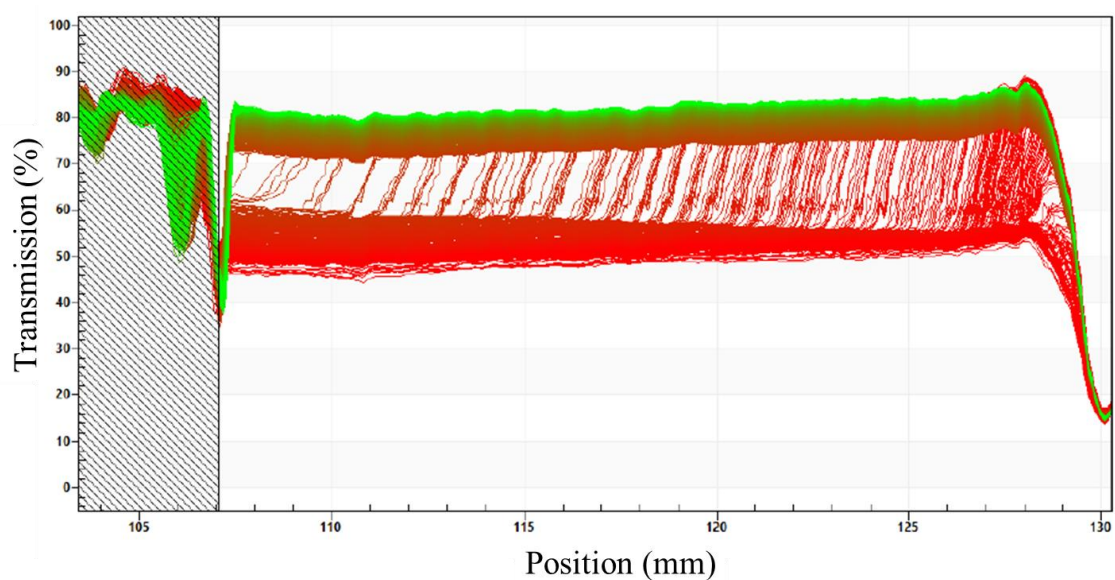


Figure S30. Transmission profile as a function of position in the cuvette at 37 °C of the emulsion with 3.1 mM LI C₁₆MIM[Br] prepared by US 40%.

3. ^1H NMR spectra of pure ILs.

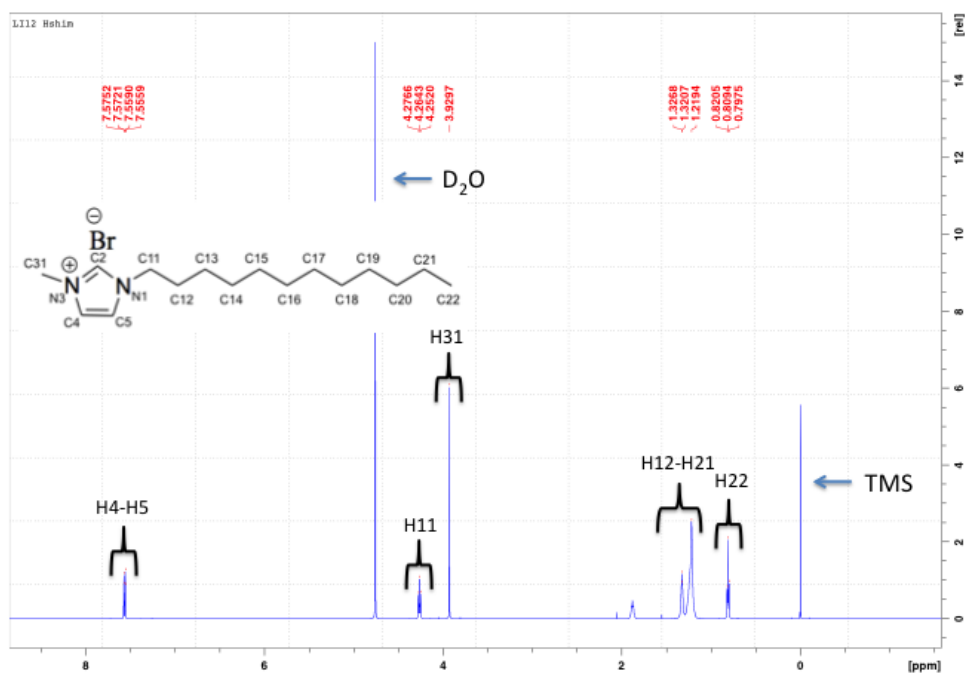


Figure S31. ^1H NMR for $\text{C}_{12}\text{MIM}[\text{Br}]$ in D_2O at 25°C .

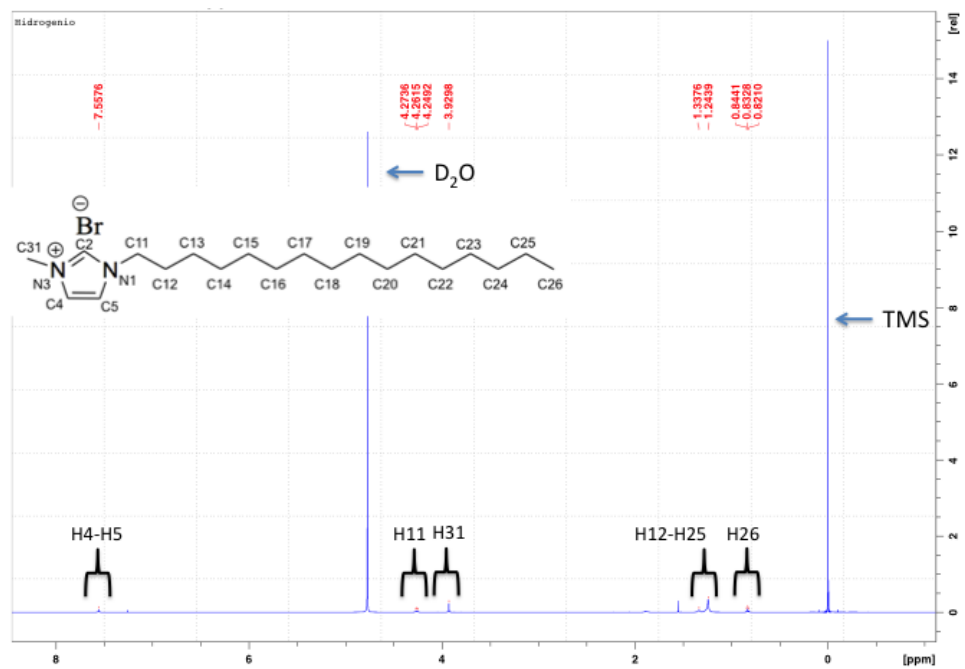


Figure S32. ^1H NMR for $\text{C}_{16}\text{MIM}[\text{Br}]$ in D_2O at 25°C .

4. DOSY graphics for the mixes.

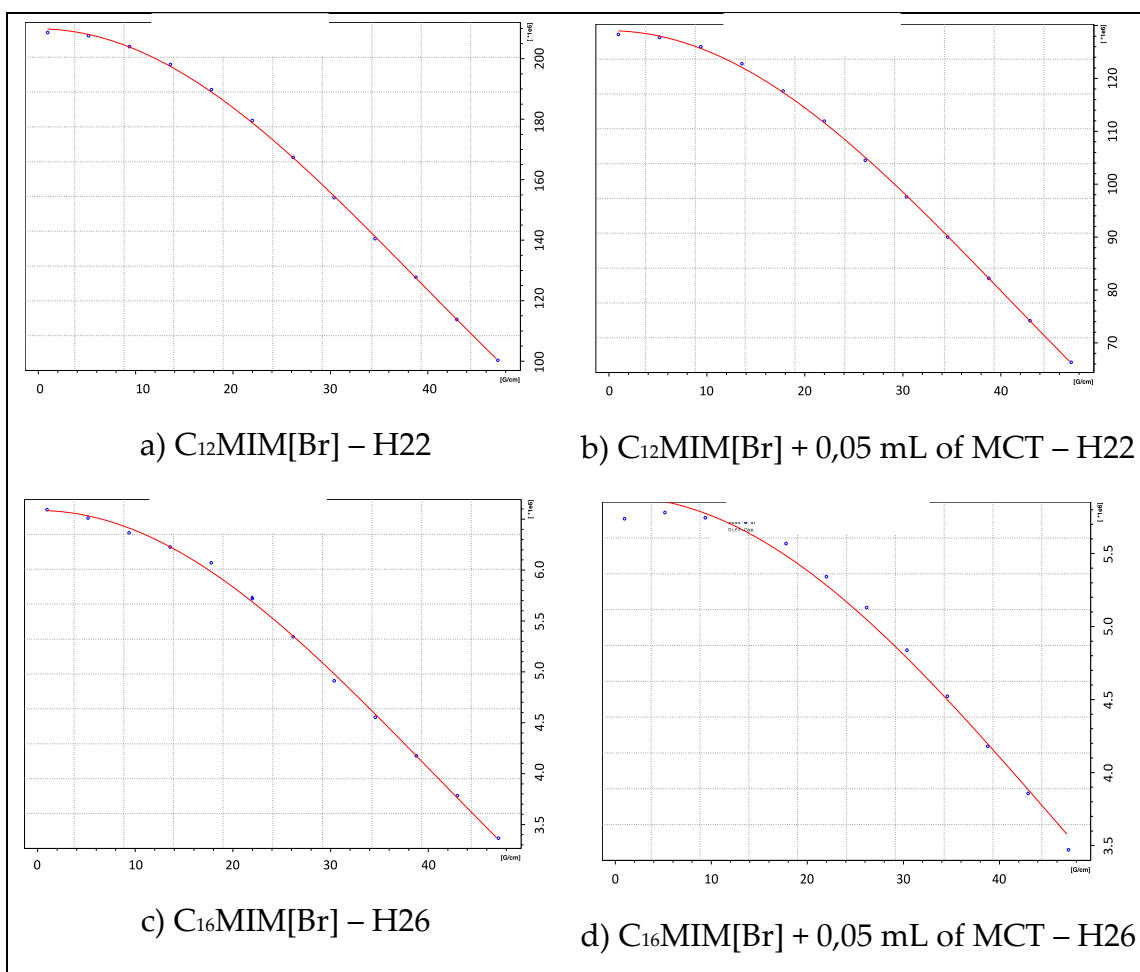


Figure S33. DOSY graph for (a) C₁₂MIM[Br] – H22; (b) C₁₂MIM[Br] + 0,05 mL of MCT – H22; c) C₁₆MIM[Br] – H26; (d) C₁₆MIM[Br] + 0,05 mL of MCT – H26.

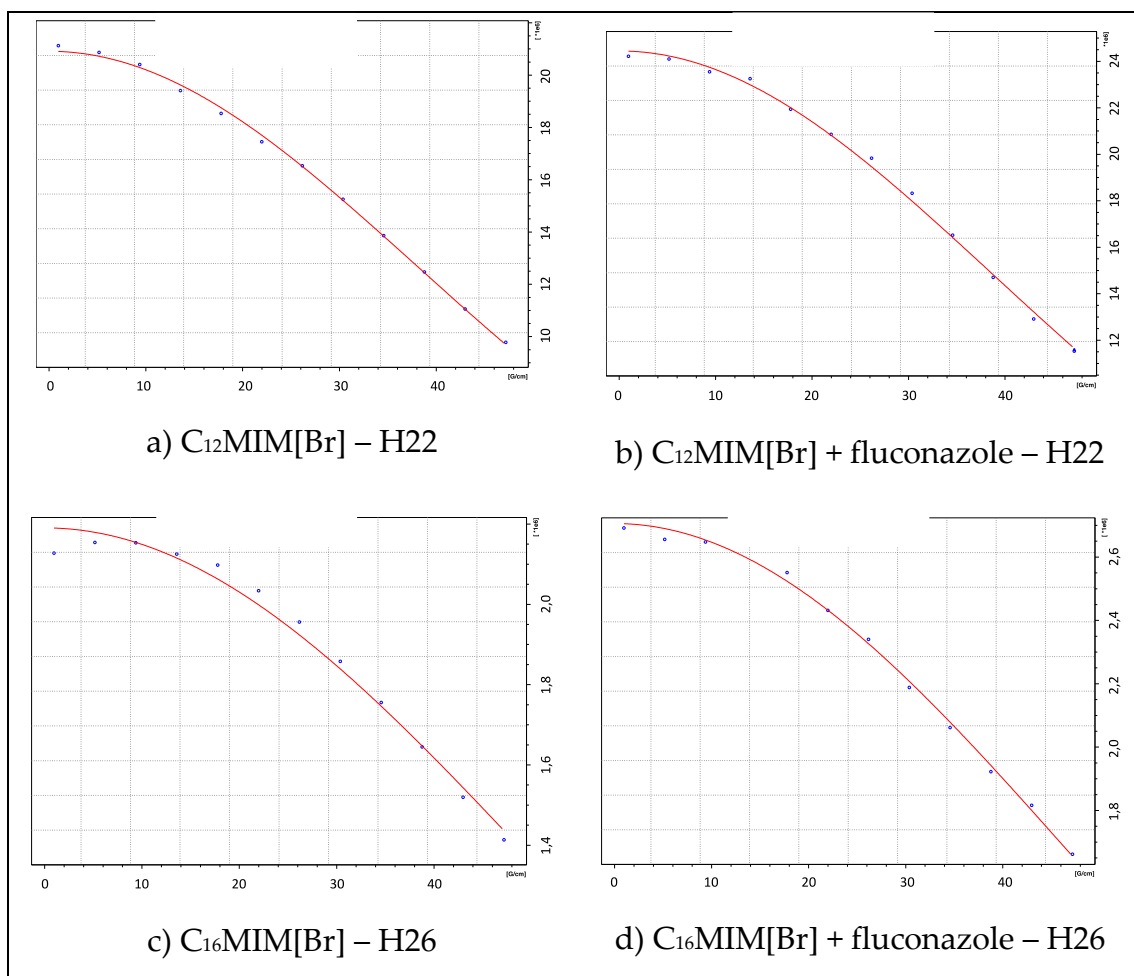


Figure S34. DOSY graph for (a) $C_{12}MIM[Br] - H22$; (b) $C_{12}MIM[Br] + fluconazole - H22$; (c) $C_{16}MIM[Br] - H26$; (d) $C_{16}MIM[Br] + fluconazole - H26$.

5. Images of emulsions with ILs.



(a)



(b)

Figure S35. Images of emulsions (a) $C_{12}MIM[Br]$ + 0,15 mL of MCT; and (b) $C_{16}MIM[Br]$ + 0,15 mL of MCT; in D_2O .