

Supplementary Information

Salinity and alkalinity impacts on the interfacial activity of crude oil–water system using individual and mixtures of surface-active ionic liquid and conventional surfactant

Simin Asadabadi,* Mona Kharazi, Javad Saien

Department of Applied Chemistry, Faculty of Chemistry and Petroleum Sciences, Bu–Ali Sina University, Hamedan 6517838695, Iran

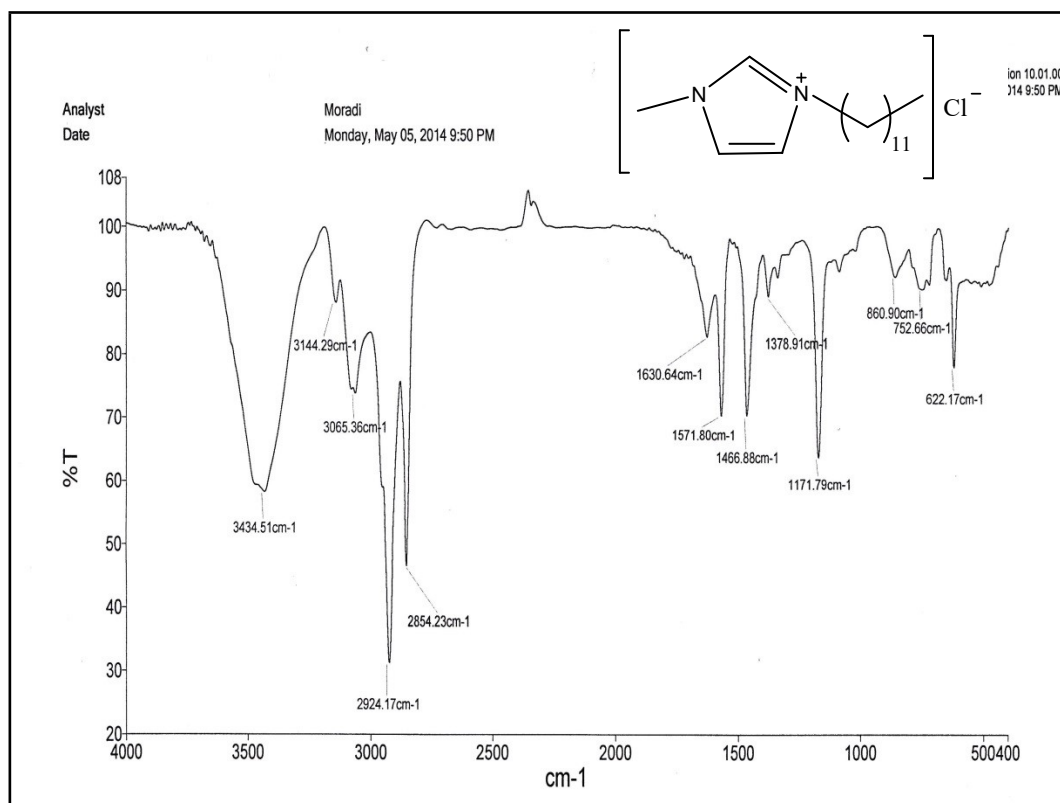
*Corresponding author: (Dr. Simin Asadabadi), E-mail address: s.asadabadi@basu.ac.ir

Corresponding author's ORCID ID: 0000-0001-8992-6894

Table S1

Characterization details of the synthesized ionic liquid.

[C ₁₂ mim][Cl]	
FTIR (KBr)	ν (cm ⁻¹): 1172, 1379, 1467, 1572, 1631, 2854, 2924, 3065, 3144
¹ H NMR (400 MHz, CDCl ₃)	δ (ppm): 0.865 (3H, m), 1.230 (16H, m), 1.305 (2H, m), 1.887 (2H, m), 4.115 (3H, s), 4.298 (2H, m), 7.441 (H, m), 7.544 (H, m), 10.591 (H, m)
¹³ C NMR (400 MHz, CDCl ₃)	δ (ppm): 14.92, 23.44, 27.04, 29.83, 30.10, 30.19, 30.30, 30.37, 31.16, 32.66, 37.36, 50.78, 122.97, 124.85, 138.18
Mass Spectroscopy	m/z: 287 (M ⁺) MW (g·mol ⁻¹): 286.88

**Fig. S1.** FTIR spectrum of 1-dodecyl-3-methylimidazolium chloride in KBr.

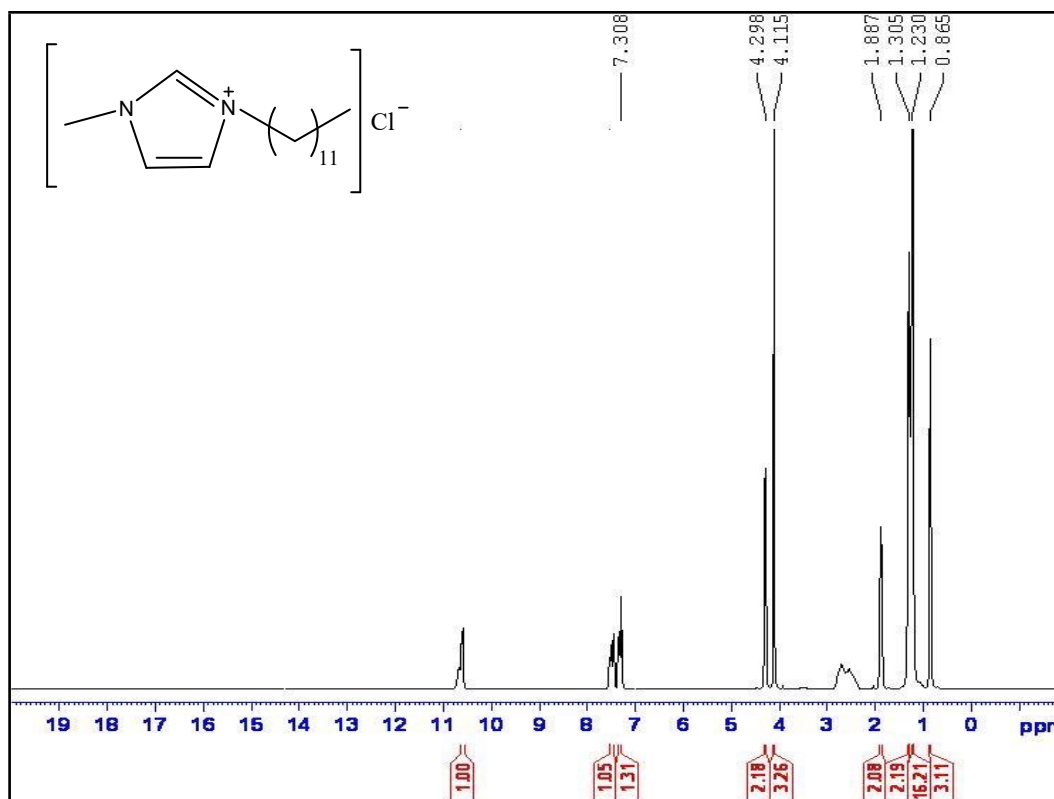


Fig. S2. ^1H NMR spectrum of 1-dodecyl-3-methylimidazolium chloride in CDCl_3 .

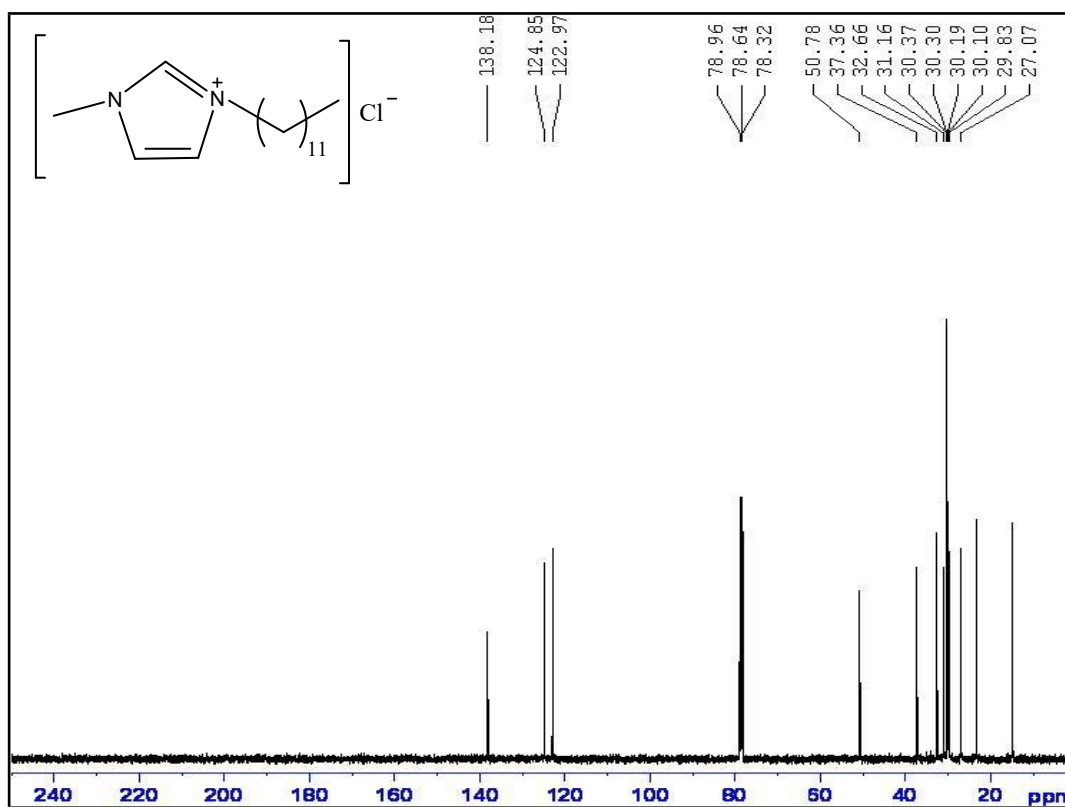


Fig. S3. ^{13}C NMR spectrum of 1-dodecyl-3-methylimidazolium chloride in CDCl_3 .

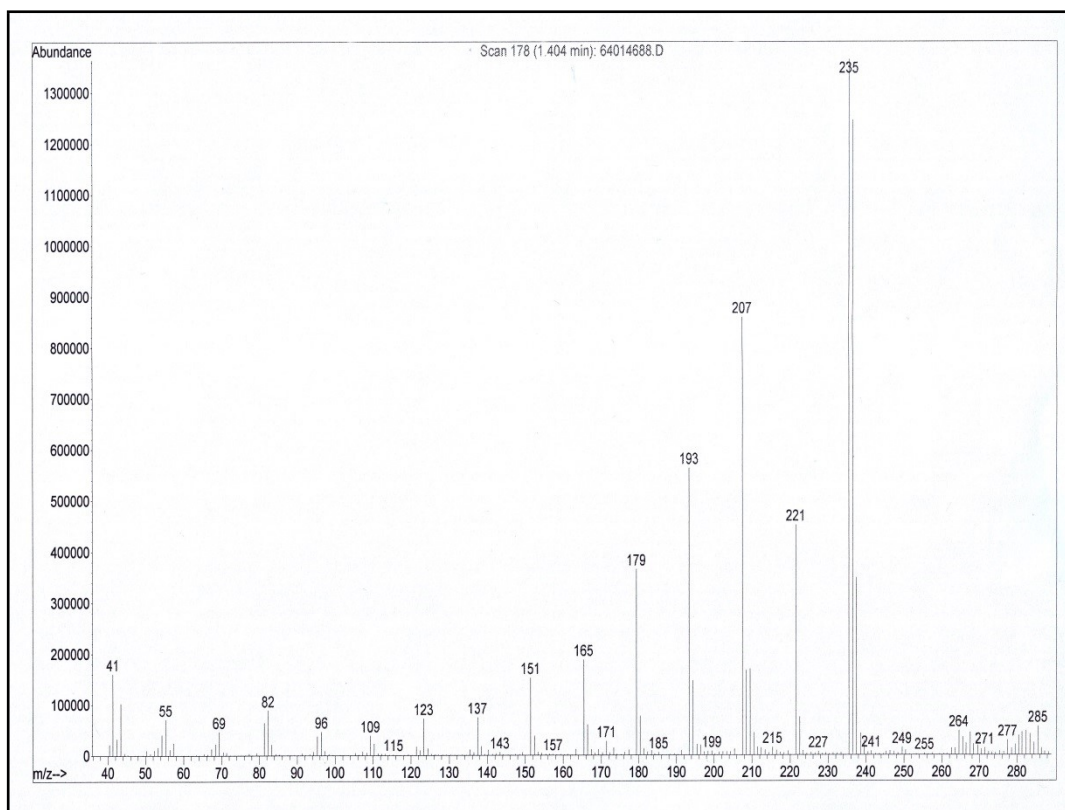


Fig. S4. Mass spectrum of 1-dodecyl-3-methylimidazolium chloride.