

Supporting Information for “Interfacial Behavior of
the Decane+Brine+Surfactant System in the
Presence of Carbon Dioxide, Methane, and Their
Mixture”

Nilesh Choudhary, Arun Kumar Narayanan Nair*, and Shuyu Sun†

Physical Science and Engineering Division (PSE),

Computational Transport Phenomena Laboratory,

King Abdullah University of Science and Technology (KAUST),

Thuwal, 23955-6900, Saudi Arabia.

September 2, 2021

*To whom correspondence should be addressed, email: arun.narayanannair@kaust.edu.sa

†To whom correspondence should be addressed, email: shuyu.sun@kaust.edu.sa

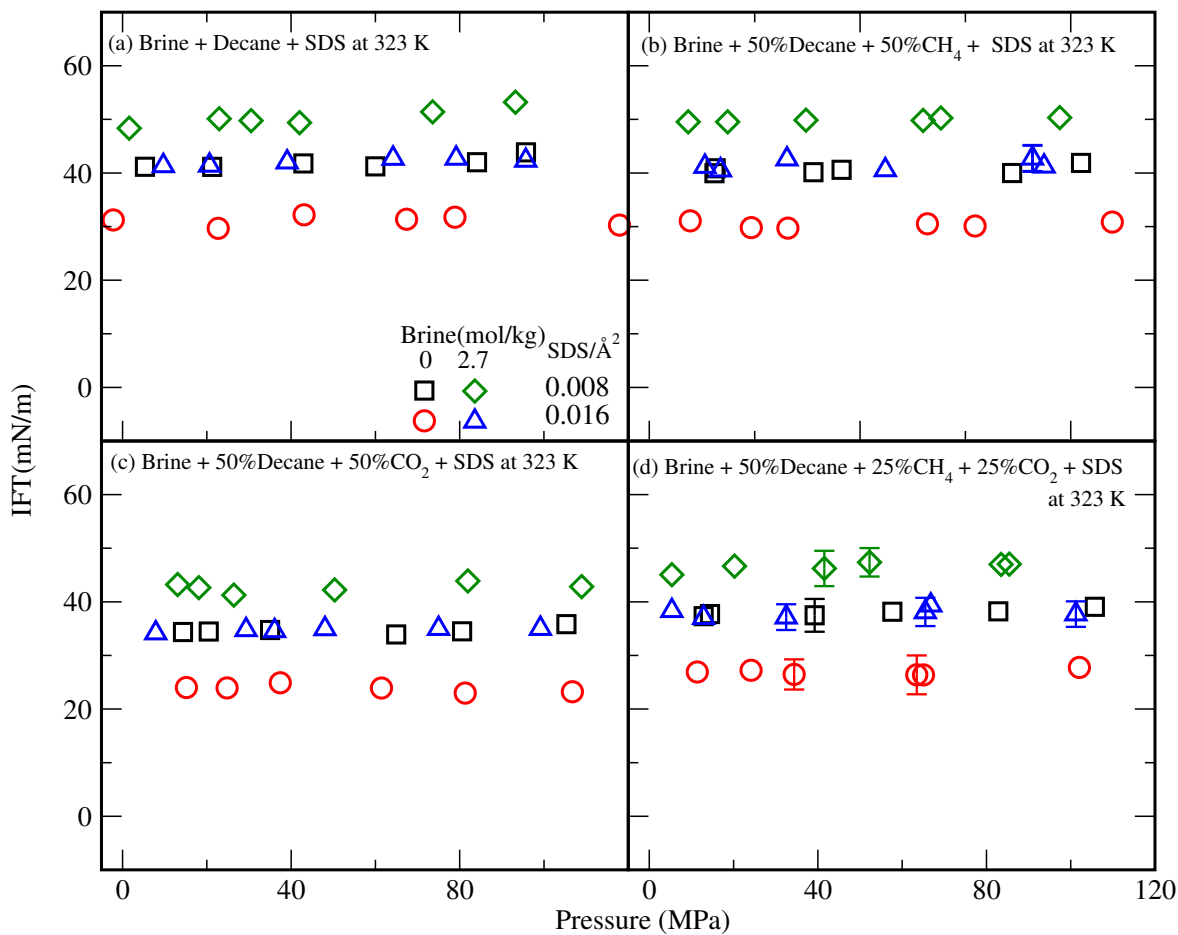


Figure S1: Same as in Fig. 3, but at 323 K.

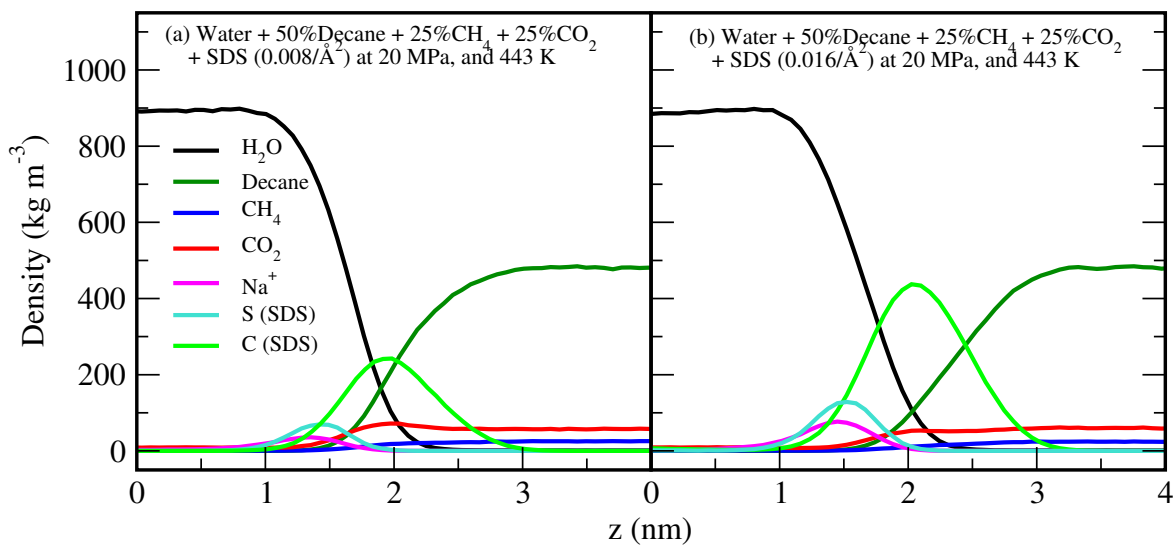


Figure S2: Same as in Fig. 4, but with no added salt.

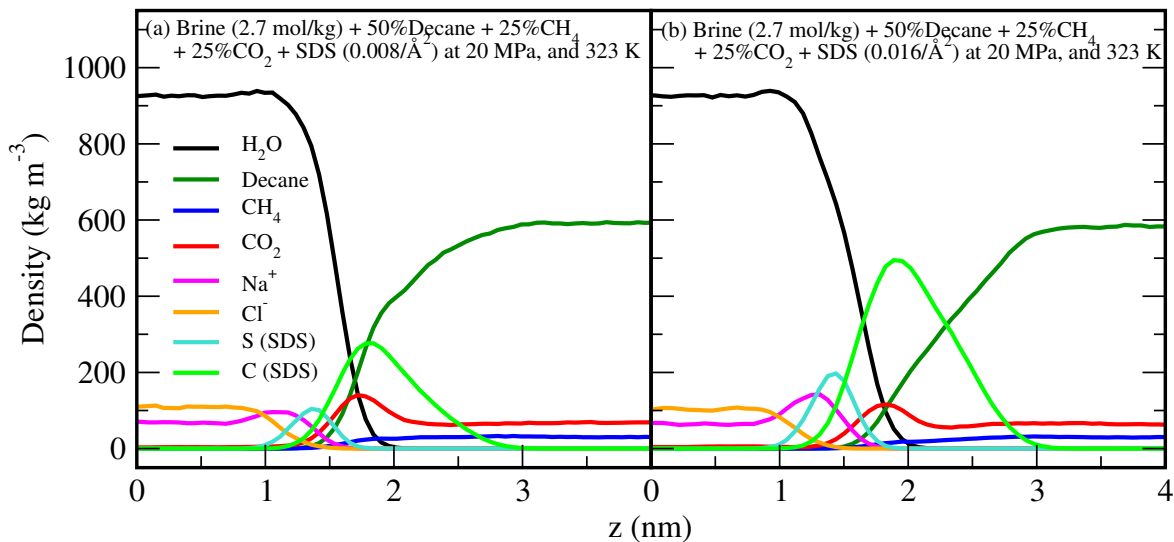


Figure S3: Same as in Fig. 4, but at 323 K and 20 MPa.

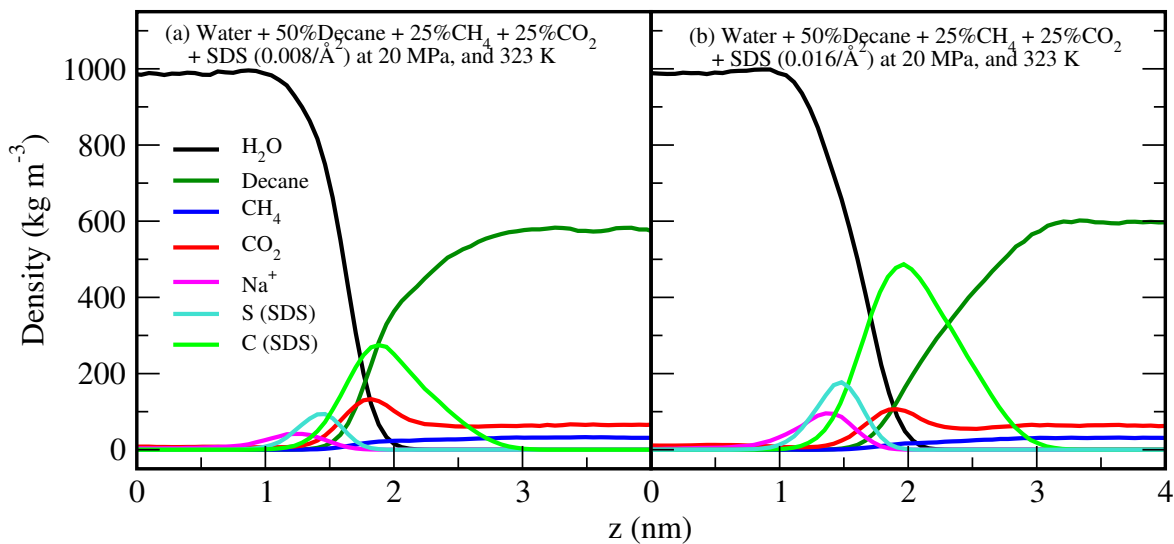


Figure S4: Same as in Fig. S3, but with no added salt.

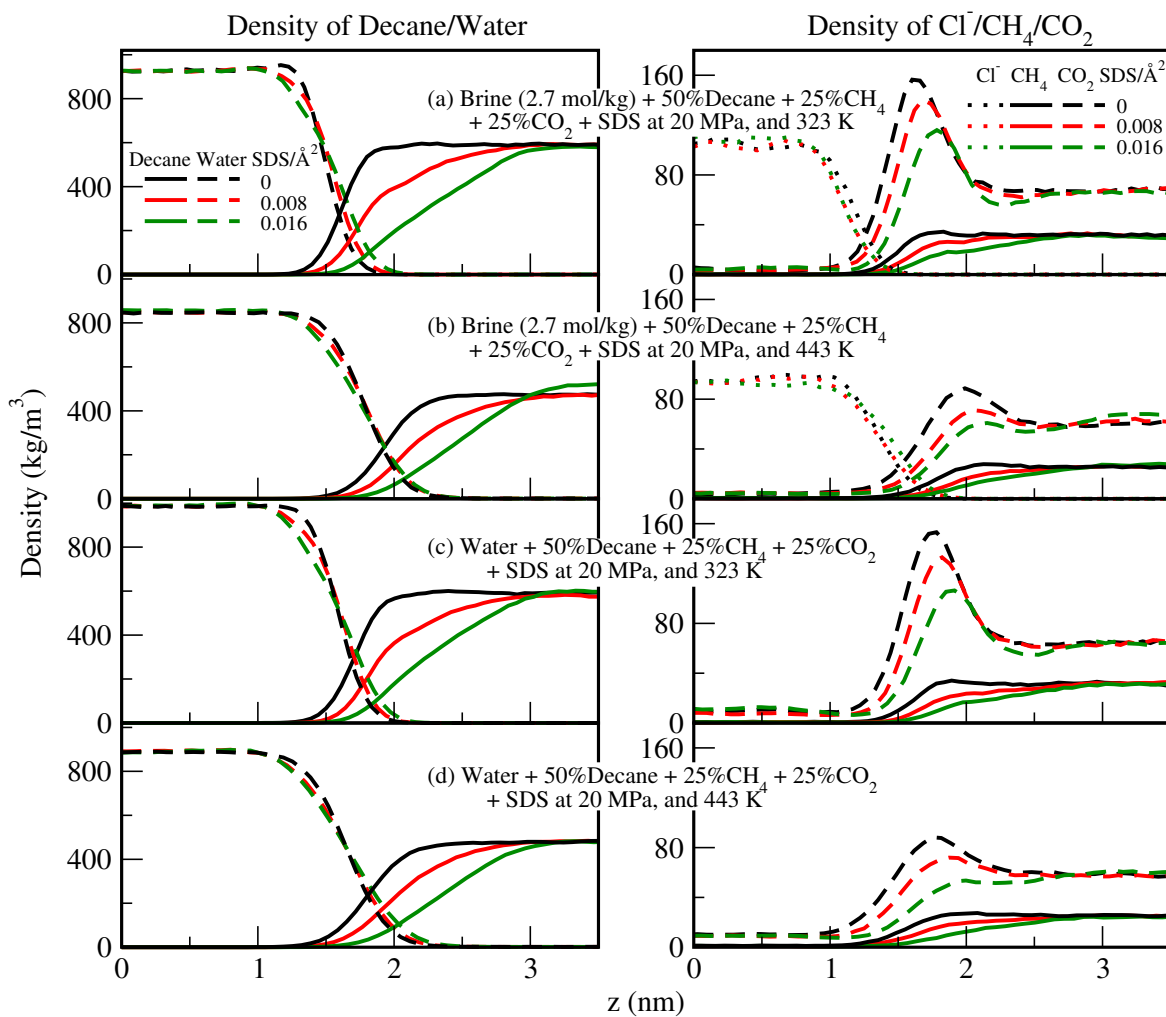


Figure S5: Replotted data of Figures 4 and S2-S4.

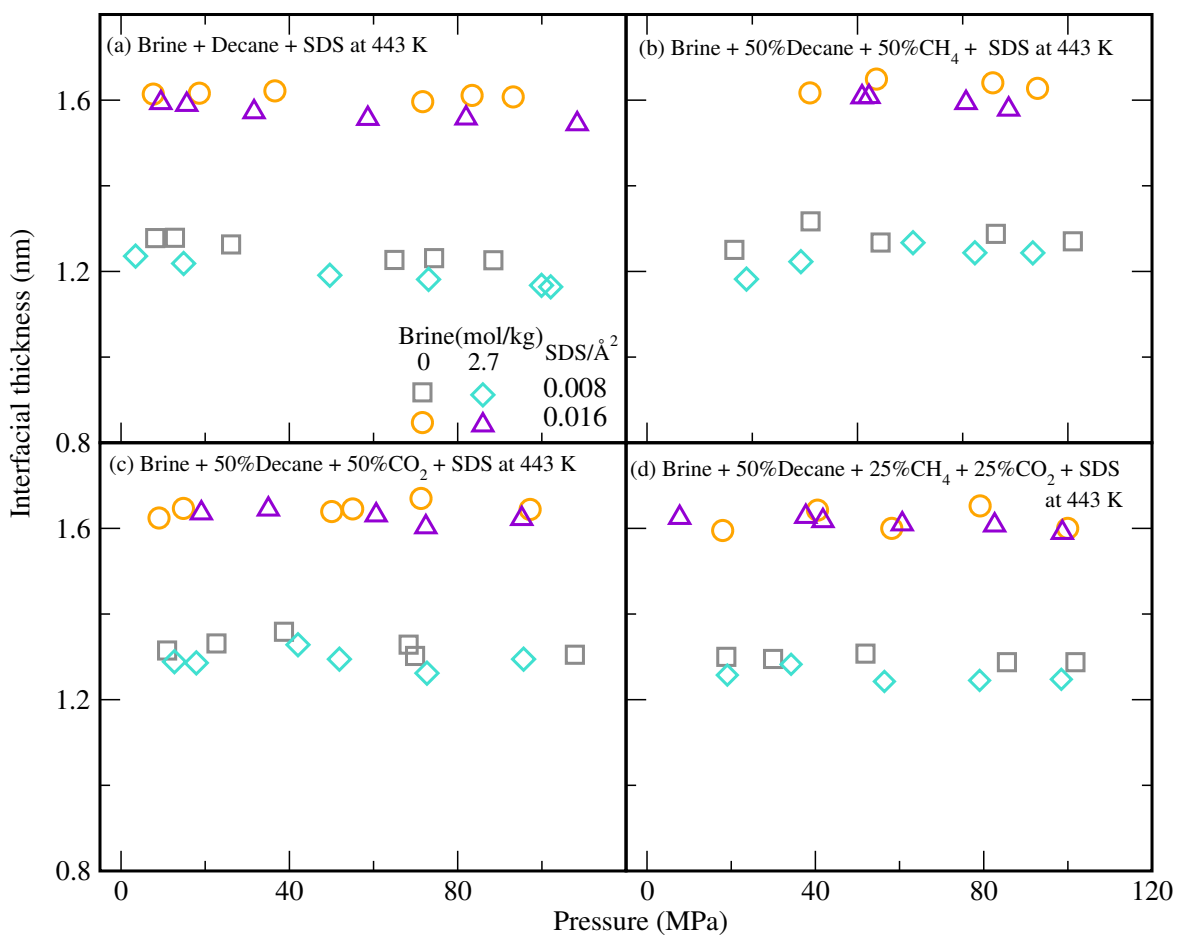


Figure S6: Same as in Fig. 3, but for the interfacial thickness between water and decane.

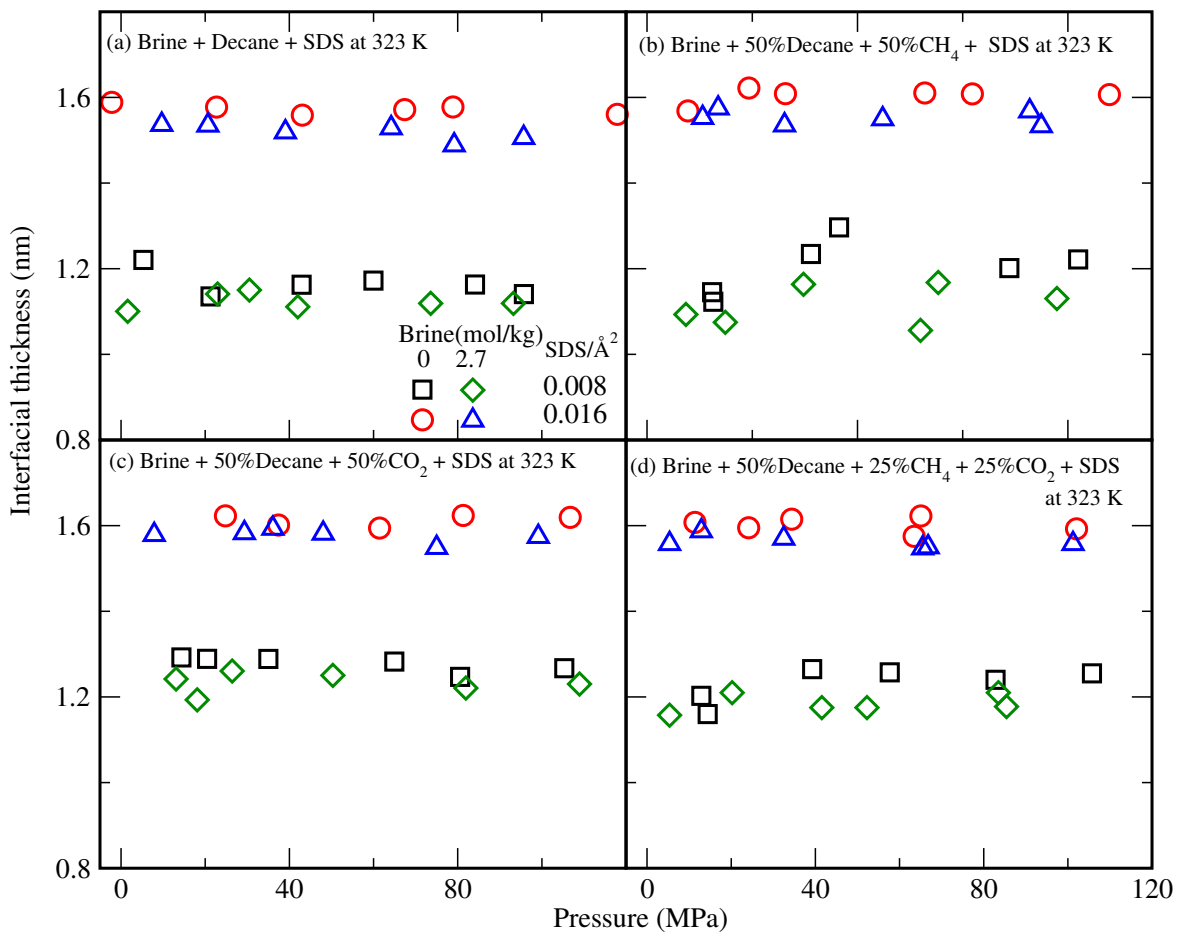


Figure S7: Same as in Fig. S6, but at 323 K.

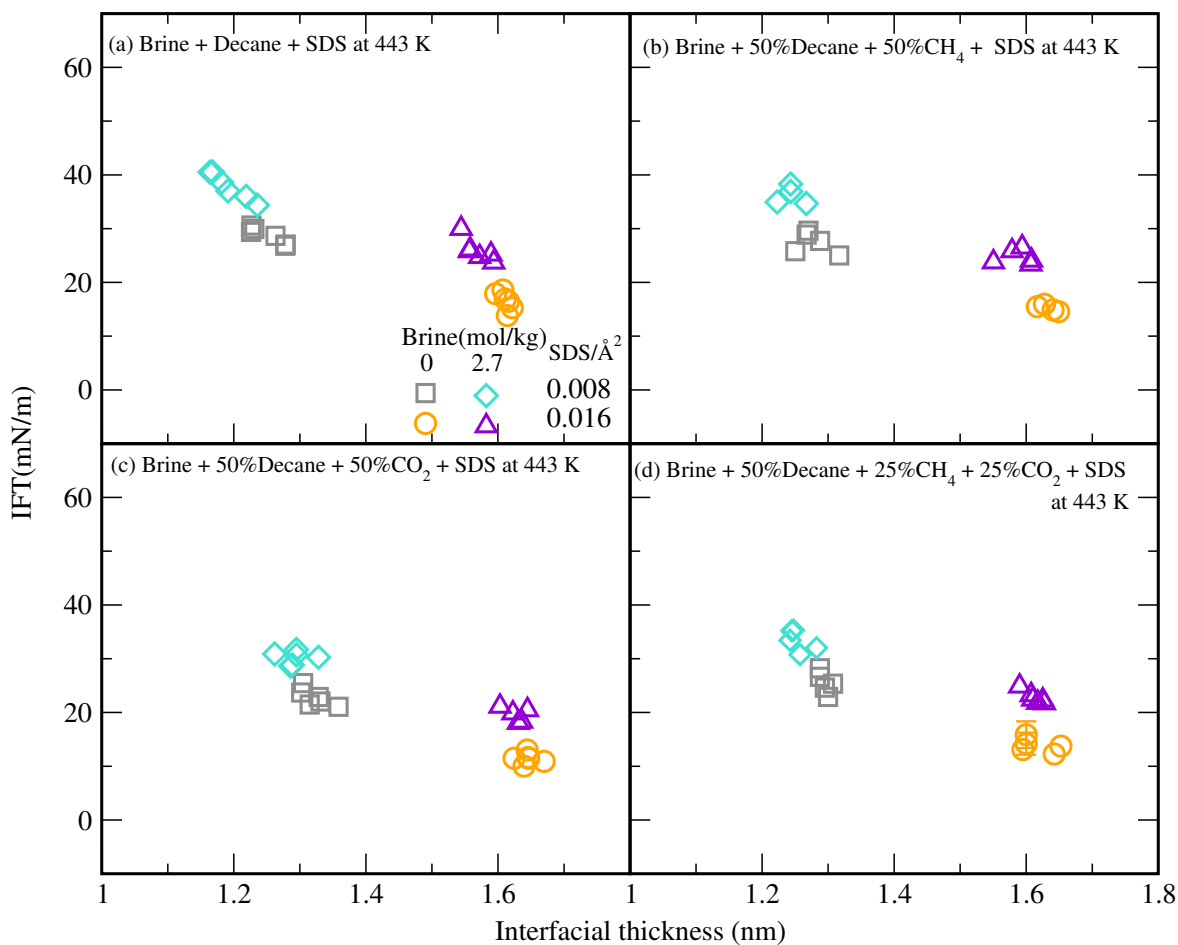


Figure S8: IFT versus the interfacial thickness between water and decane for (a) decane+brine+surfactant, (b) decane+brine+surfactant+CH₄ ($x_{\text{CH}_4} = 0.5$), (c) decane+brine+surfactant+CO₂ ($x_{\text{CO}_2} = 0.5$), and (d) decane+brine+surfactant+CH₄+CO₂ ($x_{\text{CH}_4} = x_{\text{CO}_2} = 0.25$) systems at 443 K.

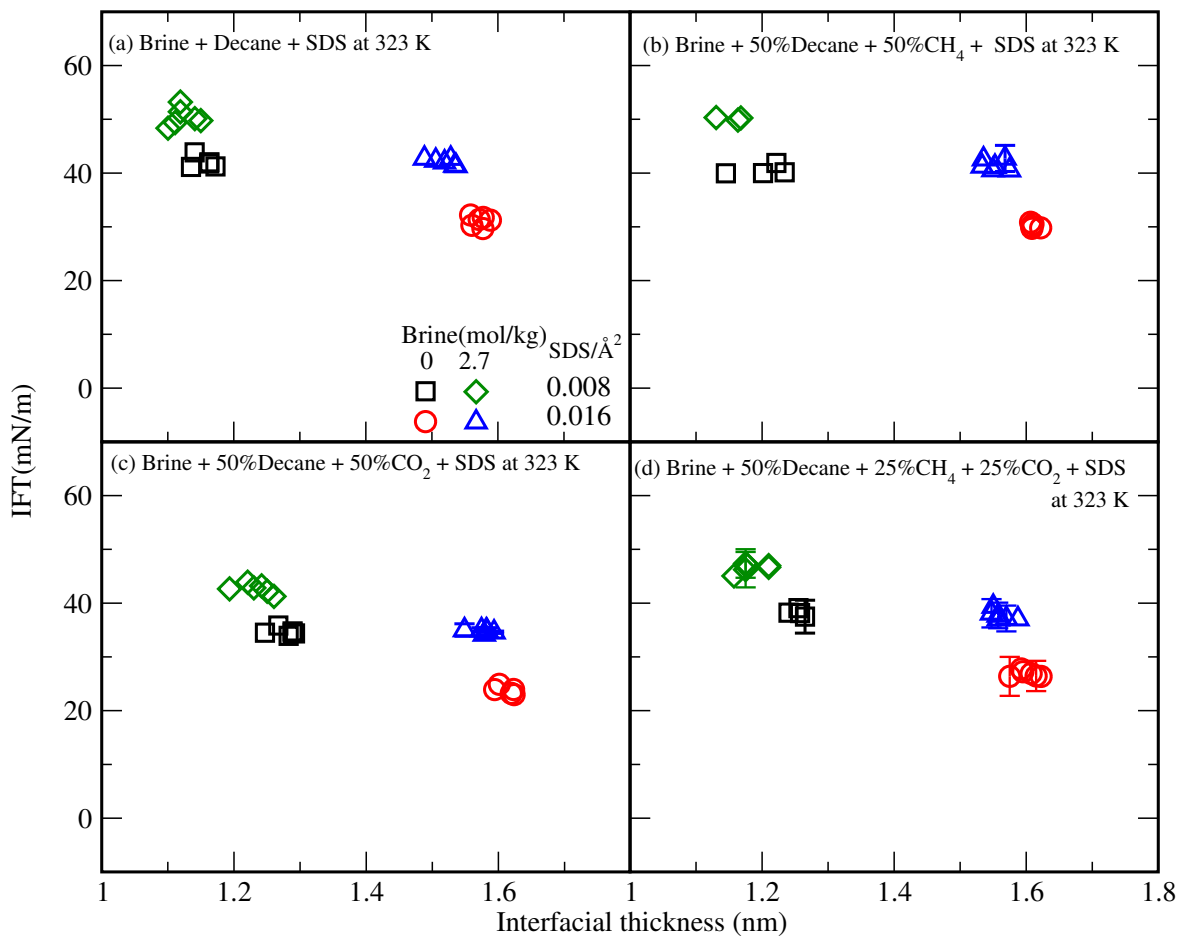


Figure S9: Same as in Fig. S8, but at 323 K.

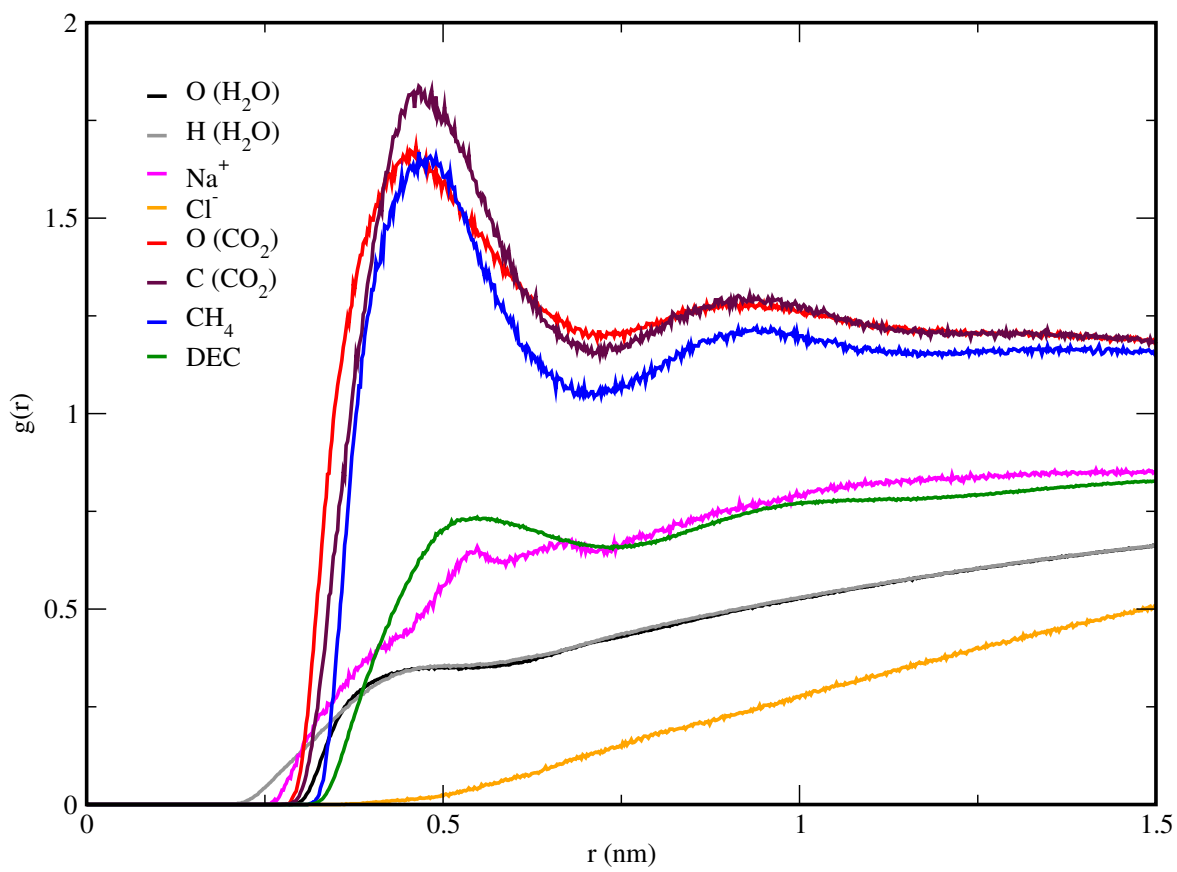


Figure S10: Same as in Fig. 6, but for the C sites in the alkyl tail of SDS.