

Supporting information

Tuning of Scleroglucan Adsorption on Carbonate Surfaces via Grafting Alkyl Side Chains of Different Lengths: A Theoretical and Experimental Study

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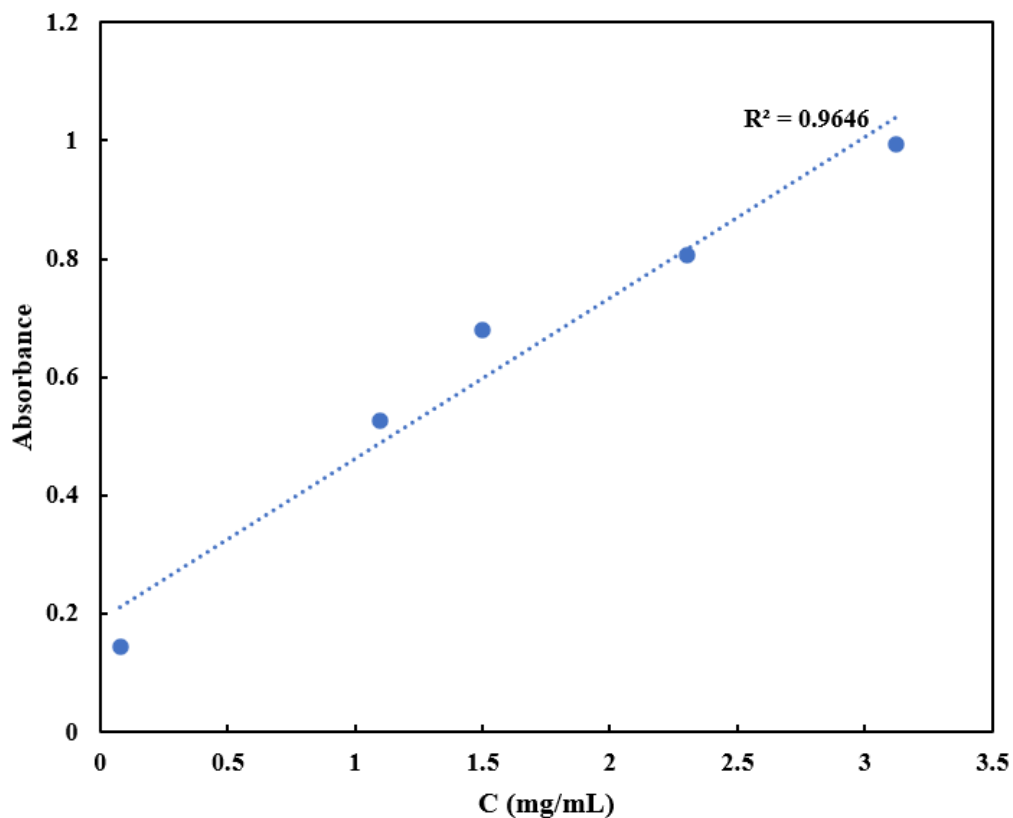


Fig S1. Calibration curve for UV-vis spectrophotometric determination of ScIlg concentration in aqueous solution.

Table S1. The Hansen solubility parameters for the components in the solutions [1]

Component	δ_D (MPa) ^{1/2}	δ_P (MPa) ^{1/2}	δ_H (MPa) ^{1/2}
Water	15.0	16.0	42.3
ScIlg main chain segment	18.2	12.4	10.8
Side chain segment	16.0	0.8	2.8
Carbonate solid surface	19.4	7.5	6.7
NaCl salt (Na ⁺ , Cl ⁻)	17.3	10.0	-

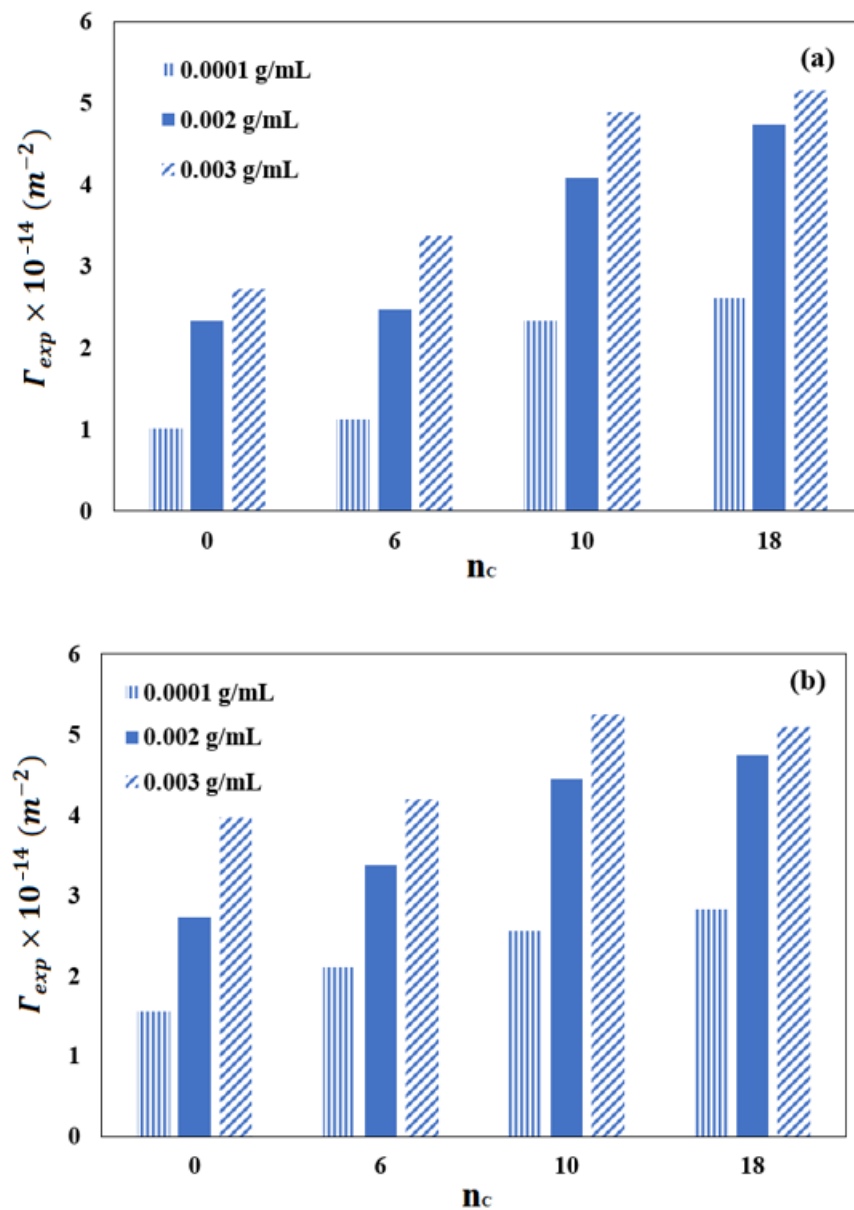


Fig S2. The experimental surface excess of Sclg and modified Sclgs, in terms of number of polymer chains per unit area (m^{-2}), at different initial polymer concentrations in brine solutions on the carbonate surface (0.04% w/v) at (a) 25 °C and (b) 90 °C.

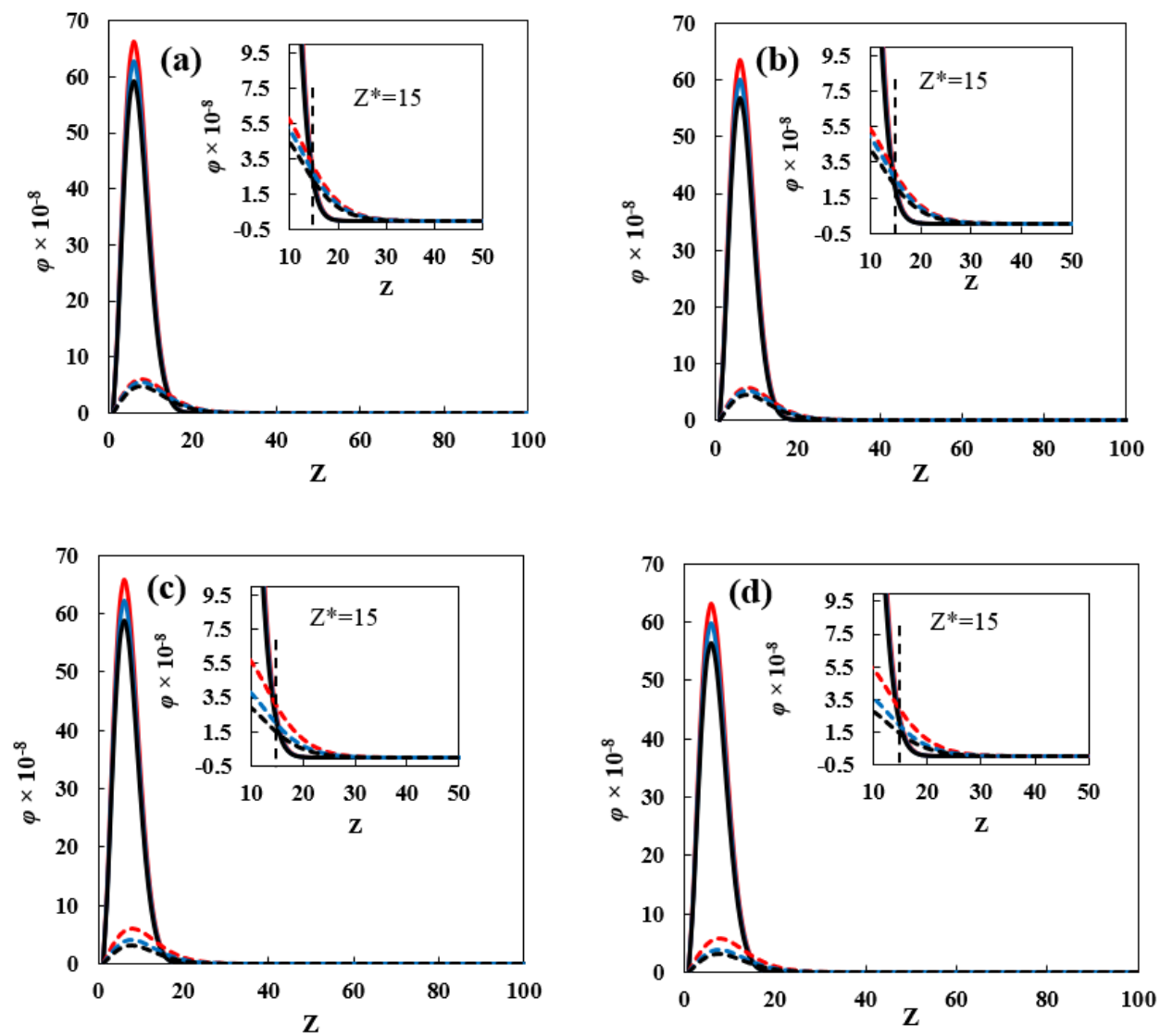


Fig S3. The volume fraction profiles of main chain segments in loop (solid lines) and tail (dashed lines) conformations, with length $t = 1000$, for Hex-ScIlg (red), Dec-ScIlg (blue)

and St-ScIlg (black) in aqueous solutions (a, b) and brine solutions (c, d), at 25 °C (a, c) and 90 °C (b, d). All the parameters for calculations are given in Tables 1 and 2.

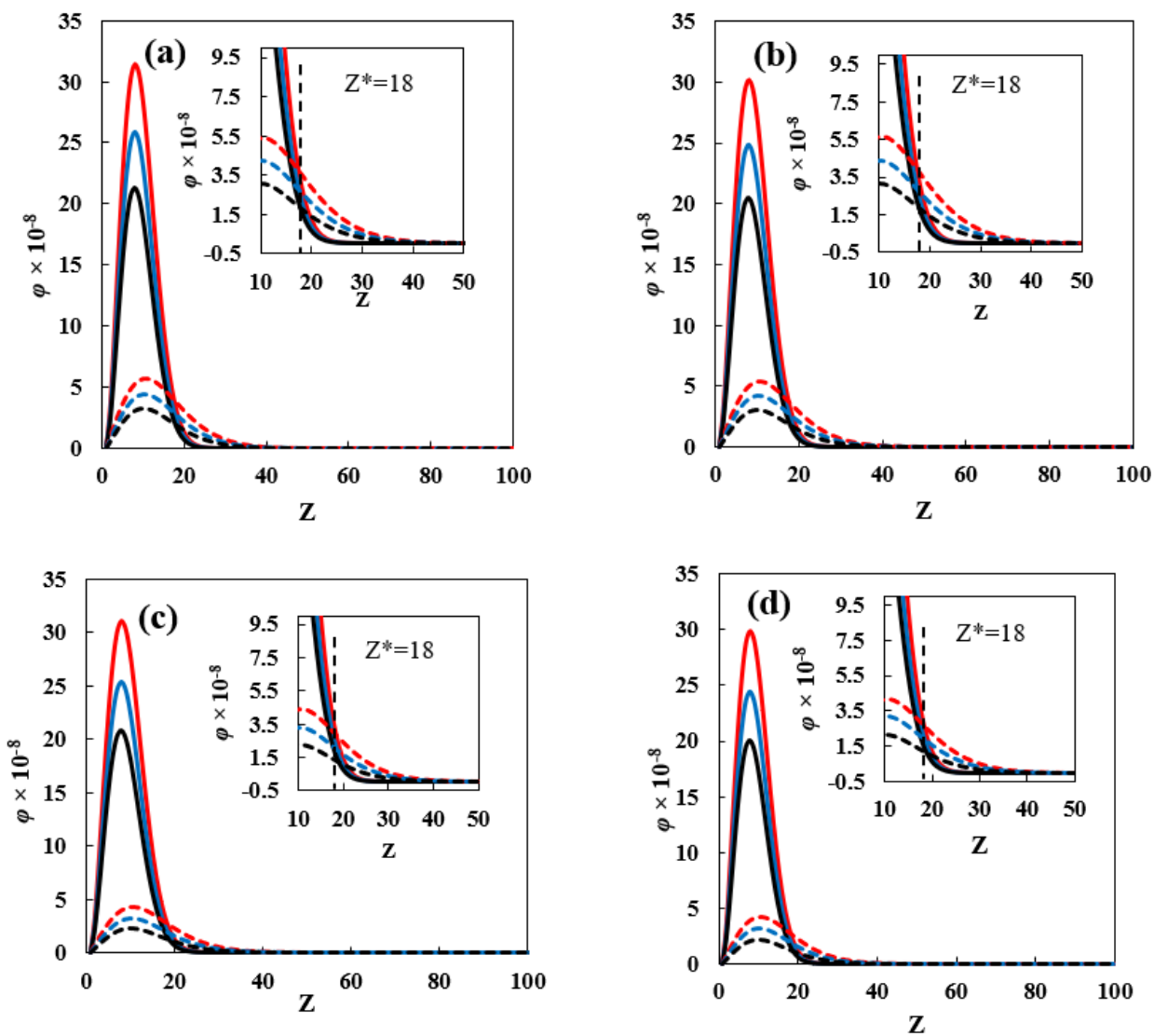


Fig S4. The volume fraction profiles of main chain segments in loop (solid lines) and tail (dashed lines) conformations, with length $t = 2000$, for Hex-ScIlg (red), Dec-ScIlg (blue)

and St-ScIlg (black) in aqueous solutions (a, b) and brine solutions (c, d), at 25 °C (a, c) and 90 °C (b, d). All the parameters for calculations are given in Tables 1 and 2.

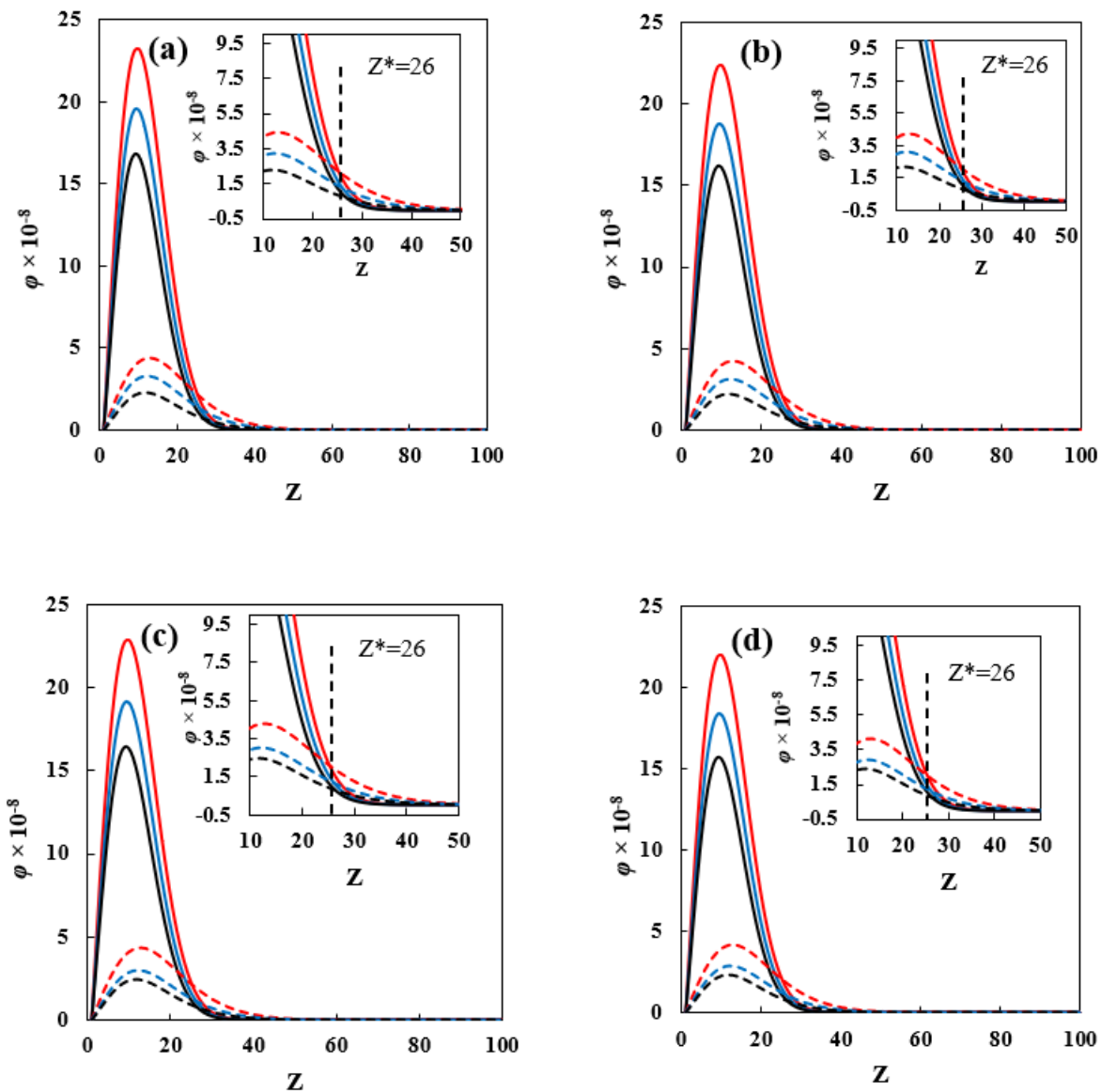


Fig S5. The volume fraction profiles of main chain segments in loop (solid lines) and tail (dashed lines) conformations, with length $t = 3000$, for Hex-ScIlg (red), Dec-ScIlg (blue) and St-ScIlg (black) in aqueous solutions (a, b) and brine solutions (c, d), at 25 °C (a, c) and 90 °C (b, d). All the parameters for calculations are given in Tables 1 and 2.

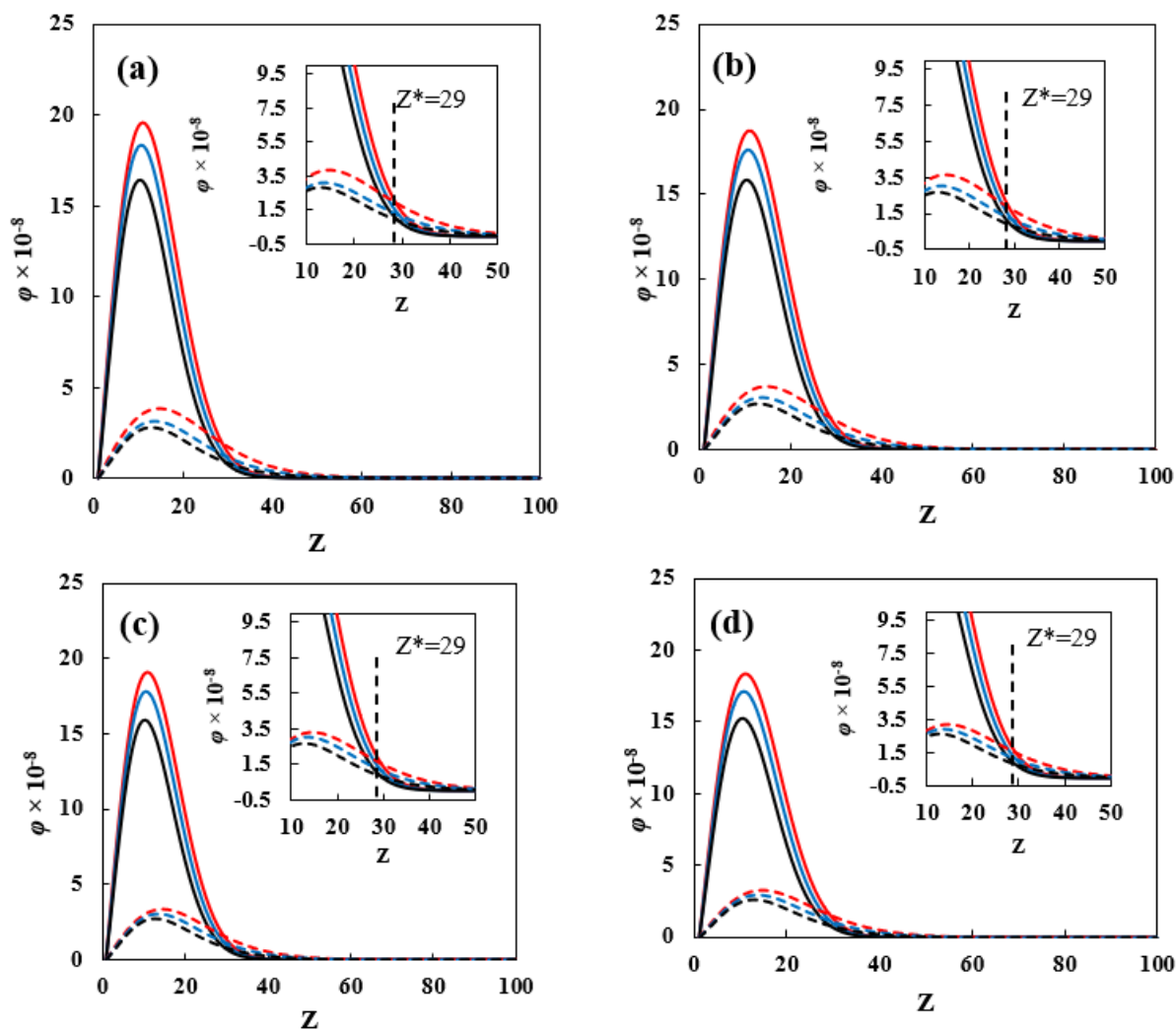


Fig S6. The volume fraction profiles of main chain segments in loop (solid lines) and tail (dashed lines) conformations, with length $t = 4000$, for Hex-ScIlg (red), Dec-ScIlg (blue) and St-ScIlg (black) in aqueous solutions (a, b) and brine solutions (c, d), at 25 °C (a, c) and 90 °C (b, d). All the parameters for calculations are given in Tables 1 and 2.

Reference

- (1) C. M. Hansen, *Hansen Solubility Parameters A User's Handbook*; CRC Press, 2007.