

Abstract Submitted
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^{19}F NMR Study of Molecular Aggregation of Lithium Perfluorooctylsulfonate in Water at Temperatures from 30 to 250 °C DOBRIN BOSSEV, Indiana University, MUTSUO MATSUMOTO, MASARU NAKAHARA, Kyoto University — ^{19}F NMR chemical shifts have been measured to determine the critical micelle concentration (cmc) and aggregation number (m) of lithium perfluorooctylsulfonate (LiFOS) in water at temperatures ranging from 30 to 250 °C under the saturation pressure. The cmc slightly increases in the temperature range from 30 to 100 °C, whereas above 125 °C the increase is much steeper; cmc is 6.5, 13.2, and 161 mmol kg $^{-1}$ at 30, 100, and 250 °C, respectively. The aggregation number, estimated on the basis of a mass action model exhibits a rapid decrease in the temperature range of 30 - 125 °C and becomes almost constant at higher temperatures; m is 36, 6.8, and 2.4 at 30, 100, and 250 °C, respectively. Thermodynamic parameters indicate similar values for the free energy at all temperatures, and constant values for the enthalpy and entropy of aggregation at high temperatures.

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