

Preparation of Polyether Modified Betaine Functional Siloxane Surfactant and Its Surface Properties

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Abstract: The alcohol amine modified polysiloxane was first prepared by polyether epoxy modified polysiloxanes and diethanolamine. The prepared product was then reacted with sodium chloroacetate to form polyether modified betaine functional siloxane surfactant via quaternary ammonium reaction. The structure of the polyether modified betaine functional siloxane was characterized by infrared transmission spectroscopy and ¹H of nuclear magnetic resonance spectra. The optimal synthesis conditions, including that n (sodium chloroacetate) : n (tertiary amine) = 1.1, reaction temperature was 80°C, and reaction time was 6 h, were obtained by orthogonal test. It was shown that the polyether modified betaine functional siloxane presented excellent surface activity properties, due to the fact that the critical micelle concentration and the surface tension were found to be 0.3 g/L and 25.93 mN/m, respectively.

Key words: polyether-modified; betaine functional siloxane surfactant; synthesis; surface properties