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Synthesis and Properties of Sulfonate Gemini Surfactants with Amide Groups

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Abstract : A sulfonate Gemini surfactant sodium N,N`-bis(tetradecanoyl) propanediamine dipropyl sulfonate (GNS-14) was synthesized from 1,3-propanediamine, tetradecanoyl chloride, and1,3-propanesulfonic lactone. GNS-14 was characterized by FT-IR, 1H NMR. The surface activity, interfacial activity, and emulsification properties of GNS-14 solution were systematically studied. The critical micelle concentration (CCMC) of GNS-14 surfactant was 0.056 mmol/L, and the surface tension (γCMC) was 18.2 mN/m; at 50℃, 0.5% GNS-14 solution can reduce the oil-water interfacial tension to 6.5×10−2 mN/m. GNS-14 has excellent surface activity, interfacial activity, and emulsifying properties.

Keywords : gemini surfactants, surface tension, low interfacial tension, emulsifying properties
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