Special Issue

Gemini Surfactants for Medical and Non-medical Applications

Message from the Guest Editor

Gemini surfactants consist of two cationic monomers of a surfactant linked together with a spacer. The high surface activity and unique structure of gemini surfactants result in outstanding properties, including antibacterial and antifungal activity, anticorrosion properties, unique aggregation behavior, the ability to form various structures reversibly in response to environmental conditions, and interactions with biomacromolecules such as DNA and proteins. These properties can be tailored by selecting the optimal structure of a gemini surfactant in terms of the nature and length of its alkyl substituents, spacer, and head group. Additionally, regarding their properties, comparison with their monomeric counterparts demonstrates that gemini surfactants have higher performance efficacy at lower concentrations. Hence, less material is needed, and the toxicity is lower. However, there are some limitations regarding their biocompatibility that have led researchers to develop amino-acid-based and sugar-based gemini surfactants. Owing to their remarkable properties, cationic gemini surfactants are promising candidates for both medical and nonmedical applications.

Guest Editor

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