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Triply Periodic Multiply Continuous Lyotropic Liquid Crystals Derived from Gemini Dicarboxylate Surfactants GREGORY SORENSON, MAHESH MAHANTHAPPA, University of Wisconsin - Madison — A delicate balance of non-covalent interactions drives the supramolecular assembly of hydrated small molecule amphiphiles into aqueous lyotropic liquid crystals (LLCs). High symmetry multiply continuous phases, exemplified by the gyroid phase, are particularly desirable for many applications due to their interpenetrating hydrophilic and hydrophobic domains with well-defined chemical functionality decorating the interface between the two domains. However, these high symmetry assemblies are often difficult to obtain due to limited levels of hydration and temperature ranges over which they are accessible. Recent work suggests that small molecule amphiphiles known as "gemini" surfactants readily form these lyotropic network phases. Herein we report the lyotropic phase behaviors of a new class of dicarboxylate gemini surfactants that form stable, multiply continuous, high symmetry network structures over broad hydration and temperature ranges.

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