Materials Research Science and Engineering Centers DMR-1720415

2018 Seed Intellectual Merit

Seed: Synthetic soft matter created and inspired by communal behaviors of bacteria

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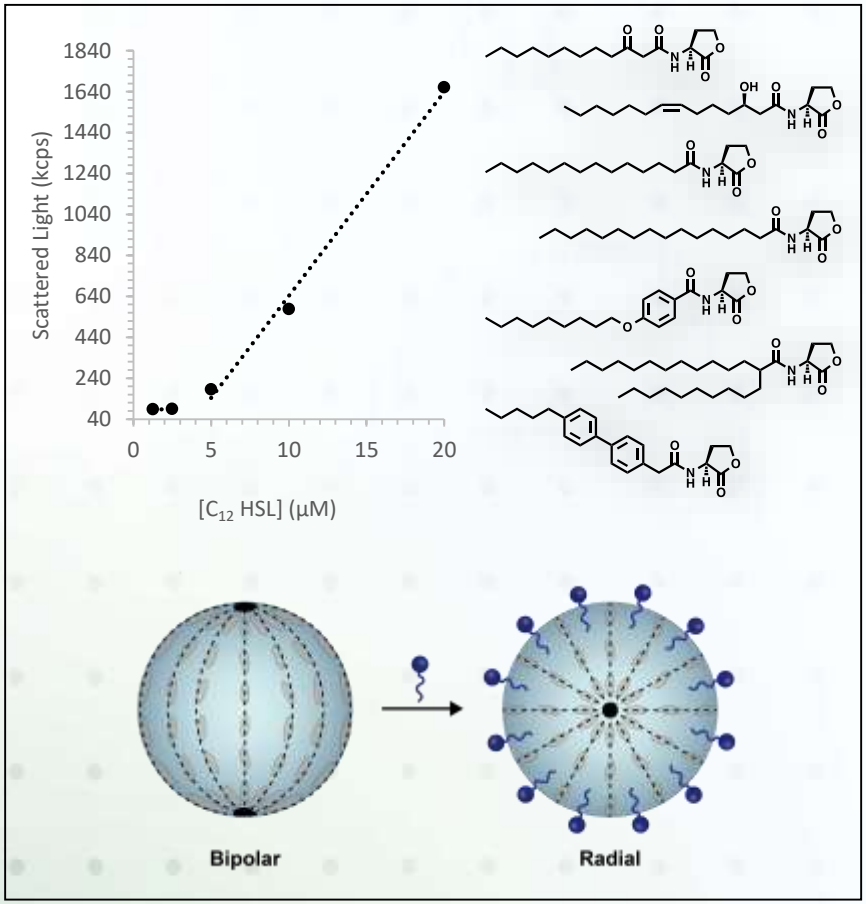
Many bacteria have evolved dynamic networks of amphiphilic molecules that form a chemical 'language' that they use to communicate and regulate group behaviors. This communication, in turn, governs the synthesis of bacterial biofilms and the production of other chemical goods, including other amphiphilic or redox-active species, that are unique to large groups or communities of bacteria typically associated with bacterial infections. Researchers at the Wisconsin MRSEC are investigating the self-assembly of this chemical alphabet, and the properties of the nanostructures that form in solution and at interfaces, to design new types of synthetic and responsive soft materials that can respond to or "communicate" selectively with bacterial communities in ways that are distinct from those of existing materials, which are generally designed to interact with or kill individual bacterial cells.



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