DREXEL UNIVERSITY
Materials Science and Engineering
College of Engineering

Department of Materials Science and Engineering,

Candidacy Exam

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Unimolecular Micelles as Vehicles for Drug Delivery

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Abstract

Unimolecular micelles are covalently bonded macromolecules composed of an internal hydrophobic core surrounded by a hydrophilic corona. In recent years, these structures have been investigated as potential vehicles for targeted drug delivery, particularly for chemotherapy. Advantages over traditional drug delivery vehicles include precise control of the nanoparticle's dimensions, and facile tailoring of the terminal group chemistries. This presentation will explore common unimolecular micelle structures and their synthesis', state-of-the-art features in these novel drug vehicles, and the thermodynamic and chemical principles underlying stimuli-responsive drug release from unimolecular micelles.