

**STUDIES TOWARD THE TOTAL SYNTHESIS OF A CROSS-MEMBRANE FLUOROMETRIC PROBE.** Tim Liwosz [tliwosz25@gmail.com](mailto:tliwosz25@gmail.com), Christina Collison\* [cgcsch@rit.edu](mailto:cgcsch@rit.edu), Andreas Langner\* [axlsch@rit.edu](mailto:axlsch@rit.edu).  
Department of Chemistry, Rochester Institute of Technology, Rochester, NY 14623

Surfactants are molecules that accumulate at the interface between two phases. Micelles are a collection of surfactants that enable organic solvents to dissolve in aqueous media. The surfactant of interest consists of a hydrophobic tail and a hydrophilic head that can straddle an organic/aqueous interface. Langner and co-workers previously utilized a dansyl derivative fluorometric probe to monitor the aggregation of reverse micelle structures formed in a system of decane/water/AOT/butyl alcohol. A limitation to that study was that it was difficult to determine the location of the probe and its interaction with the aqueous media. The synthesis of a probe that has a hydrophobic and a hydrophilic component that have fluorescent activity will offer new advances in the research. The kinetics of the formation of micelles and reverse micelles can be analyzed using this new probe. Our work focuses on the synthesis of a difluorometric probe that straddles a micelle layer. The probe will consist of a hydrophobic dansyl component and a hydrophilic coumarin component connected by a hydrocarbon chain. Once constructed, the fluorescent activity of both ends of the molecule will allow the Langner group to track the probe throughout the formation of the micelles.