TOTAL SYNTHESIS OF A CROSS-MEMBRANE FLUOROMETRIC PROBE.

R. Walvoord, *G. Wright, A. Langner, and C. G. Collison*, Department of Chemistry,* *rrw6253@rit.edu*, *cgcsch@rit.edu*

Previous research conducted by Dr. Langner has employed a piperadine-derivatized dansyl fluorometric probe to monitor the aggregation dynamics in the decane/AOT/water/butyl alcohol microemulsion. The emission spectrum of the dansyl probe exhibited a significant spectrochromic shift in nonpolar to moderately polar solvents. Application of the probe to the quaternary microemulsion revealed that the hydrocarbon continuum is essentially pure decane (i.e. the alcohol partitions to the particles). However, it is difficult to determine the location of bound probe and its partitioning between the surfactant membrane and the aqueous core. To affect this analysis, a collaboration has been established with Dr. Christina Collison to synthesize a tethered cross-membrane probe that will show both nonpolar and polar spectrochromic sensitivity. The tethered fluorescence probe is comprised of 9-aminoacridine and dansylamide, separated by an octyne spacer. The spectrochromic sensitivity of secondary dansylamides in nonpolar environments is matched by the sensitivity of 9-aminoacridine in polar and aqueous systems. By tethering these two probes with a hydrocarbon spacer, the resulting probe system can be anchored across a surfactant-based membrane. Subtle physiochemical changes on either side of the membrane can thus be monitored simultaneously by ratioing the dansyl and acridine signals.