

Stimulus-Responsive Polymers for Drug Delivery

The goal of this project is to synthesize a stimulus-responsive, “smart,” polymer and demonstrate its ability to deliver drugs to various parts of the body. For drugs taken orally, the carrier needs to go through areas of the intestinal system with widely varying acidity, or pH (a measure of acidity). The viscosity and volume change of the polymer will be monitored as a function of pH. The stimulus response of the polymer will be tested in environments that mimic the acidity of two parts of the body: the lower stomach (pH= 1.5-4.0) and the small intestine (pH = 4.0-7.0). This project will teach students about process optimization by challenging them to find the optimal pH values for the polymer to perform as a drug delivery vehicle.