Jordan Dood: Chemistry & Biochemistry
Mentor: Bern Kohler -- Chemistry & Biochemistry
Infrared Study of Exciton Migration in Single and Double Stranded DNA

It has long been one of the goals of science to predict material properties from atomic or molecular structure. No where is the need for these types of predictions more important than in the solar energy industry. Although some predictions about the photochemical properties of a material can be made, it is still difficult to determine the movement of excited states and electron transfer dynamics in complex materials. In order to gain a better understanding of how excited states interact with their environment, model systems must be developed that can be tuned to test hypotheses. By studying the excited state dynamics of both single and double stranded DNA systems with infrared spectroscopy, we are investigating how excited states in DNA are influenced by base paring, phosphate backbone modifications, and sequence substitutions. These studies are furthering understanding of how excited states evolve in time in complex nanoscale systems of potential interest for solar energy conversion.