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Chemical Engineering, IT, 2010
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Excitation Migration in Conjugated Polymers

Much of the research in the Blank Group investigates the conducting properties of conjugated polymers in hopes to discover a substitute material for silicon, the present material used in solar cells. Up to this point, my particular project has involved searching for methods to create the solid phase samples needed in order to study certain conducting properties of polythiophene (P3HT), a conducting polymer which has already displayed energy yields of approximately 4.4%. It would be ideal to analyze several different samples of polythiophene, with each sample slightly varying in its degree of molecular interaction among its neighboring polymer chains. A few methods which have proven to unsuccessfully create these samples include, suspending the polymers in a clear colorless plastic, as well as exposing them to intense heat. However, currently we are using a method which varies the molecular organization of these polymers, and this has already yielded promising results. Using a randomly oriented polymer of P3HT, we have produced a sample containing non-interacting chains, which has proved to be the most difficult challenge in the past.

Poster Number: Session: