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| **Student** | **Advisor** | **Poster Title, Abstract & Student Bio** |
| Renee Roeder | Dr. Erik Sapper | Title: Predicting the Optical Properties of Polymers for Coatings ApplicationsAbstract: In addition to pigments, the color and appearance of organic coatings is controlled by the optical properties of the polymer resin, which include the dielectric constant, the molar refractivity, and the index of refraction. When formulating products, many paint chemists focus on pigments and surface roughness or smoothness, neglecting the role of the resin in the overall color and appearance of the final product. In this study, a group contribution theory method was used to predict the refractive indices and gloss values of various polymers and polymer films. A range of homopolymers including PS, PMMA, and PBA were used, as well as various copolymers having a wide range of compositions and molecular architectures. Experimental data collected by refractometer and handheld gloss meter was compared to the model predictions. The coupled experimental and theoretical approach described here will help target specific homopolymers, copolymers, polymer blends, and latex dispersions best suited for certain end-use applications requiring specific optical performance. The addition of a predictive methodology into the traditional material synthesis scheme ensures maximum knowledge generation while simultaneously minimizing the use of human, material, and scheduling resources.Bio: Renee Roeder is a Materials Engineering sophomore. She graduated from Woodbridge High School, Irvine CA with the Class of 2016. Getting accepted into Materials Engineering at Cal Poly is a great accomplishment for Renee. As a hobby, she loves to cook. |