Abstract Submitted
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**Photoexcitations of sexithiophene for use in all organic spin vlaves**[1] CAYLA NELSON, New Mexico State University, MEGAN HARBERTS, ATHUR EPSTEIN, The Ohio State University, CENTER FOR EMERGENT MATERIALS TEAM — Spintronics is an emerging field in solid state devices that takes advantage of the angular spin momentum of the electron to transport and store information. Current spintronic technology is used in magnetic memory and sensor devices. Replacing metals with semiconductors in spintronic devices could provide new methods for electronic logic. Further, organic semiconductor materials are attractive due to their lightweight, long spin lifetime, mechanical flexibility, and low cost. Presently, we are reaching the limit of capabilities for modern electronics; spintronics shows the possibility for faster and smaller devices. One device used to detect spin injection is a spin valve, which sandwiches a non-magnetic conducting material between two different ferromagnetic conductors. The organic semiconductor, sexithiophene, is a candidate for the non-magnetic layer in a spin valve. Polaron and bipolaron defects, in the molecular chain of sexithiophene allow for conduction in the material. These defects sit at energies located within the bandgap, and can be created through photoexcitation. For this work sexithiophene thin films were measured using a spectrophotometer to obtain a linear absorption spectra. The project will continue by measuring the photoinduced absorption spectra of sexithiophene to locate the energy of the defects. Photoexcitation of the nonmagnetic conducting organic layer in a spin valve will allow for a multifunctional device.

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