

Abstract Submitted
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Optical Optimization for Pump-Probe Spectroscopy JESSICA

JENICK, University of Dayton — One important technique for materials characterization is that of pump-probe spectroscopy, which allows us to understand the interactions and characteristics of excited materials under light illumination. The goal of this project was to design and build a pump-probe optical setup for single shot spectroscopy of phase change materials. This setup requires that a sample be pumped by a blue laser to instigate thermal processes, and then probed by a white lamp to look for the spectral shifts as a function of time and optical power. Through the careful use of lenses and mirrors, we were able to refine our optical setup to get acceptable power levels and useful spot sizes to match a white light probe beam with a blue light pump. We have been able to overcome difficulties regarding the use of a white lamp with poor spatial coherence. Building on what has been learned through building this initial setup, we will be able to improve it over time. This setup can later be used with the spectrometer built by the physics department for the further experimentation.

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