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Optical Investigation of Novel Liquid Crystals JOSEPH VIRGILIO, ARIELLE ADAMS, LOGAN TATE, CHRISTOPHER WECKERLY, CHANDRA PRAYAGA, AARON WADE, University of West Florida, Physics Department — We present our research on the optical investigation of the phase transitions of novel, optically active liquid crystals (LC's) fabricated at the UWF Chemistry Department. As liquid crystals transition from the isotropic to the nematic to the smectic phases, they have different levels of alignment. This results in a change in the fluorescence spectra and transmitted optical properties as a function of temperature. Sample preparation consists of spin coating the LC, forming an optical cell. The sample is then placed in a temperature-controlled environment. Fluorescence is induced by pumping the sample at 355 nm from a frequency-tripled, pulsed ND:YAG laser. The fluorescence is measured with a spectrograph. Simultaneously, the transmission is measured with a photodiode. The results show significant changes in spectra and transmitted light near the phase transitions, allowing for precise measurements of the phase transitions.

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