

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Automation of Dielectric Characterization of Liquid Crystals

SHANE DRYE¹, JOSAPHAT UVAH², CHANDRA PRAYAGA³, University of West Florida — This report describes the complete automation of a setup for the dielectric characterization of liquid crystals (LC). A capacitor cell filled with the LC 8CB is housed in a temperature controlled environment. The temperature of the sample is varied between 25°C and 45°C with a stability and precision of 0.001K, with a PTC10 PID controller. The range covers the phase transitions of the LC. The purpose is to measure the dielectric properties of the liquid crystal near the phase transitions. The capacitance is measured with a SR830 lock-in amplifier and a Fluke4360 LCR meter upto 100kHz. An Agilent 4395A Network Analyzer is used to extend the frequency into the MHz range. In this work, the entire process is automated. All the instruments are connected to a computer through a GPIB (IEEE-488) interface. The program is designed using LabVIEW to control the instruments, send commands and inputs including temperature range and frequencies, receive data, calculate the capacitance, and plot the data automatically. Results of measurements will be presented.

¹Undergraduate Student

²Department of Mathematics

³Department of Physics

Shane Drye
University of West Florida

Date submitted: 27 Dec 2010

Electronic form version 1.4