

Abstract Submitted  
for the CAL12 Meeting of  
The American Physical Society

**Dielectric Spectroscopy in Liquid Crystals:** ZACHARY SAILER, CROSBY SPERLING, Student - Cal Poly State University San Luis Obispo, JONATHAN FERNSLER, Professor - Cal Poly State University San Luis Obispo — We use the technique of dielectric spectroscopy (or impedance spectroscopy) to measure the frequency response of common electronic elements and liquid crystal samples. Using the HP 4192A LF impedance analyzer, an alternating electric field is applied across the sample while the impedance is measured. Applying these fields over a range of frequencies allows us to observe the resonant frequency at which a circuit resists or responds to the field. In a liquid crystal sample, this peak describes the frequency at which the molecules are susceptible to rotating around their tilt cone in the Smectic A and Smectic C phases. This technique also allows us to measure other dielectric properties such as the real and imaginary components of the impedance and the phase angle at which the impedance is projected into the imaginary plane.

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Date submitted: 01 Oct 2012

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