

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Measuring the Imaginary Part of the Permittivity Using Calorimetry¹ HEKTOR KASHURI, KRISHNA SIGDEL, KLAIDA KASHURI, GERMANO S. IANNACCHIONE — Modulated or AC calorimetry is a well established technique for measuring the temperature dependence of the heat capacity of many complex fluids. Employing a dielectric or RF heating method, the heat capacity, thermal conductivity, and the dielectric properties of the sample are all probed simultaneously. Combining the results obtained by this technique for the liquid crystal 4-n-pentyl-4-cyanophenyl (5CB) with those obtained by our novel AC calorimetric technique employing RF (dielectric) heating, we have been able to directly measure the temperature dependence of the imaginary part of the permittivity of this liquid crystal. Measurements were performed over a temperature range from 303 to 313 K, spanning the nematic to isotropic phase transition, as well as radio frequencies from 10 to 30 MHz

¹Worcester Polytechnic Institute (WPI)

Klaida Kashuri

Date submitted: 23 Dec 2010

Electronic form version 1.4