Differential Dynamic Microscopy for measuring viscoelastic ratios of Chromonic Liquid Crystals

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Differential Dynamic Microscopy (DDM) enables one to access the scattering information from a sample by
Fourier analyzing the real space images obtained from a light microscope. Thermal fluctuations of the
director about the mean position allows one to study the viscoelastic properties of the nematic. Normally
such measurements of the viscoelastic constants require time consuming and sensitive light scattering
experiments. DDM enables us to extract the same data just by analyzing a real space movie a few seconds
long using a high speed camera. We present results of viscoelastic measurements of Chromonic liquid
crystal Sunset yellow using DDM measurements.