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Two-Point Particle Tracking Microrheology of Nematic Lyotropic Liquid Crystals MANUEL GOMEZ-GONZALEZ, Institute for Bioengineering in Catalonia, JUAN CARLOS DEL ALAMO, University of California at San Diego — Biological and technological complex fluids that are usually available in microscopic amounts (e.g. liquid crystals and biopolymer networks) can exhibit microstructural order leading to nematic rheological behavior. However, current microrheological methods cannot measure their directional viscoelastic coefficients. We recently introduced a directional two-point particle-tracking microrheology (D2PTM) technique to determine these coefficients (1). Here, we experimentally validate D2PTM by applying this method to disodium cromoglycate (DSCG), a lyotropic chromonic nematic liquid crystal that has recently sparked attention due to its biocompatibility and other interesting properties. We chose DSCG because its directional viscosity coefficients have been previously characterized by dynamic light scattering and are available in the literature. Our results suggest that D2PTM measurements agree well with measurements from previous methods. Furthermore, this new technique provides additional information about the microrheological response of nematic fluids that was not accessible via previous methods. (1) Gomez-Gonzalez, M and del Alamo, J C, "Two-point particle tracking microrheology of nematic complex fluids" Soft Matter 2016 12, 5758.

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