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Carbon nanotube liquid crystal composites[1] REZA DODGE, SHIN-WOONG KANG, SATYENDRA KUMAR, Department of Physics, Kent State University, Kent, Ohio 44242, CHEOL PARK, MIA SIOCHI, National Institute of Aerospace, Hampton, VA 23666, Advanced Materials and Processing Branch, NASA Langley Research Center, Hampton, VA 23681 — The miscibility of carbon nanotubes (CNTs) in thermotropic liquid crystals is extremely low, yet they can have marked influence on the properties of their host medium. We mixed very small amounts of multi-walled CNTs in a number of cyanobiphenyl mesogens and measured the dielectric and electro-optical properties, and studied the optical textures of the composites. The homeotropic samples show a unique texture, under polarizing microscope, which indicates that the nanotubes behave as line singularities with the strength of +1. The distorted alignment around these singularities covers a limited range, which is comparable with the sample thickness. The results of experiments on composites with various concentrations of CNT will be presented.

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