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Domain Walls Mimicking Nematic Biaxiality in the Oxadiazole Bent-Core Liquid Crystal C7[1] YOUNG-KI KIM, GRETA CUKROV, JIE XIANG, Liquid Crystal Institute and Chemical Physics Interdisciplinary Program, Kent State Univ - Kent, SUNG-TAE SHIN, Advanced Materials Engineering for Information & Electronics, KyungHee University, Korea, OLEG D. LAVRENTOVICH, Liquid Crystal Institute and Chemical Physics Interdisciplinary Program, Kent State Univ - Kent — We investigate the origin of "secondary disclinations" that were recently described as new evidence of a biaxial nematic phase in an oxadiazole bent-core thermotropic liquid crystal C7. With an assortment of optical techniques such as polarizing optical microscopy, LC PolScope, and fluorescence confocal polarizing microscopy, we demonstrate that the secondary disclinations represent non-singular domain walls formed in an uniaxial nematic during the surface anchoring transition, in which surface orientation of the director changes from tangential (parallel to the bounding plates) to tilted. Each domain wall separates two regions with the director tilted in opposite azimuthal directions. At the center of the domain wall, the director remains parallel to the bonding plates. Furthermore, we verify that the thickness-dependent anchoring transition of C7 is associated with a local electric field caused by ionic impurities in the material, and examine how the thermal degradation of material affects the surface alignment. The study shows that C7 exhibits only a uniaxial nematic phase.

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Young Ki Kim
Kent State Univ - Kent

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