

Alignment mechanisms and ionic properties of LCDs

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Since 1960, there have been extensive R&Ds and publications to understand the alignment mechanisms of nematic LCDs from heuristic approaches to the evolutions of advanced equations to explain the corresponding experimental results. I will focus this talk on the latter approaches limited to robust alignment methods used in LCD production including oblique-evaporated SiO_x , buffed and photo-exposed polyimide or other organic films. By neglecting the ions from the alignment layers, we have developed unified ion-generation and transport equations within LC mixtures of nematic LCDs when the ion concentrations are sufficiently low as found inside the current TFT-LCD products. The comparison between experimental results and theoretical calculations will also be discussed in this talk.

Speaker Biography

[Kei-Hsiung Yang](#), alumnus of National Taiwan University, received his Ph.D. degree in Physics from UC Berkeley. He worked at Lawrence Berkeley Laboratory, Bell Telephone Labs., GE R&D Center, and IBM T. J. Watson Research Center prior to his service as Vice President in HannStar Display Corporation from 2000 to 2008. Dr. Yang is currently affiliated with National Chiao Tung University, as Chair Professor of Photonics. His milestone papers on: 1. Generation of far-infrared-radiation (THz) by picosecond light pulses (*APL* 1971), 2. VUV fluorescent solids (*APL* 1976), and 3. Two-domain TN and VA for wide-viewing-angle LCDs (*IDRC* 1991) as well as other journal publications have significantly contributed to the diversified fields and areas of LC alignment, LC optics, ions in LCDs, LCOS, EPD, nonlinear optics, and medical x-ray imagers. He acquired 72 US patents, SID Fellow Award (2001), the Best Paper Award of SID'00, and Distinguished Paper Award of SID'06. Dr. Yang was President of the Taiwan Liquid Crystal Society between 2004 and 2007.