Enhancement of Memory Effect in Liquid Crystals

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Abstract. This study investigates the influence of nanoparticle doping on the memory effect in nematic liquid crystals (NLCs). By systematically varying the type and concentration of nanoparticles, the work explores their impact on light transmission and SAW attenuation response behavior under externally applied electric fields. The results reveal that specific nanoparticles, notably SiO_2, significantly enhance the memory effect, while others, such as Fe_3O_4, may introduce complexities detrimental to device stability. These findings underscore the critical role of nanoparticle selection in modulating the electro-optical properties of NLC systems and offer valuable insights into the design of next-generation liquid crystal-based devices with optimized performance, durability, and potential for application in electro-optical memory and information storage technologies.