**Effect of 0.125% Azo Dye on Electro-Optic and Optical Band Gap Characteristics in ZnO Nanoparticles Induced Vertically Aligned Liquid Crystal Cells**

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**Abstract**. Alignment of liquid crystal (LC) molecules in vertical direction is the most promising and interesting aspect for display devices in view of scientific and technological growth. Moreover, in accordance with the photovoltaic device applications, liquid crystals (LCs) show numerous applications. In the present work, the impact of dye as dopant with appropriate amount, over the electro-optic (E-O) and band gap properties as well as phase behaviour of vertically aligned liquid crystals (VALCs) has been studied and discussed [1-2]. Initially, zinc oxide (ZnO) nanoparticles (NPs) were mixed to induce the vertical alignment (VA) in confined cell. Then, to prepare the dye doped LC sample, 0.125% of azo dye as dopant was uniformly mixed in the host sample. The results showed enhanced E-O characteristics with reduction in optical band gap as calculated using UV Visible study in 0.125% dye doped cell as compared to host sample cell.

References:

1. P. Kumar, S. Y. Oh, V. K. Baliyan, S. Kundu, S. H. Lee and S. W. Kang, Opt. Express **26**, 8385-8396 (2018).
2. D. Y. Kim, S. Kim, S. A. Lee, Y. E. Choi, W. J. Yoon, S. W. Kuo, C. H. Hsu, M. Huang, S. H. Lee and K. U. Jeong, J. Phys. Chem. C **118(12)**, 6300–6306 (2014).