

Abstract Submitted
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A Simple Method For The Determination of High-Accuracy Refractive Indices of Liquid Crystals via High-Resolution Birefringence Data SENAY USTUNEL, ERLIN KUTLU, MEHMET CAN CETINKAYA, HALUK OZBEK, Istanbul Tech Univ — We proposed a simple procedure to determine extraordinary (n_e) and ordinary refractive indices (n_o) of LCs both in the N and Sm A phases based on the high-accuracy birefringence measurements. We show that, apart from the birefringence data, the procedure needs only a single value for the refractive index which is the value of that in the isotropic (I) phase just above the N-I transition temperature. By checking the consistency of our approximation model using the criteria found in the literature, we then conclude that our proposal is self-consistent. Additionally, we show that the temperature variation of refractive indices is well portrayed by the fit expression presented here for the first time contrary to the Haller extrapolation method. Furthermore, we then show that, without addressing density measurements, the proposed method allows one to obtain the temperature dependence of normalized molecular polarizabilities for extraordinary and ordinary rays, and the effective geometry parameter.

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