

Abstract Submitted  
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**Dielectric Properties of Binary Mixtures of MBBA and 7CB** JOHN GAMBLE, SHILA GARG, Physics Department, The College of Wooster, Wooster OH 44691 — The dielectric properties of mixtures of 4-methoxybenzylidene-4-butylaniline (MBBA) and 4-n-heptyl-4'-cyanobiphenyl (7CB) were investigated at different molar concentrations. The isotropic-nematic phase boundary was determined for various mixtures in order to calculate the nematic range. For some concentrations, there was a second transition to a higher order smectic phase, most likely a Smectic G. Our previous work on MBBA and 5CB indicated that there was strong interaction between the two mesogens at certain concentrations. We find similar strong interactions for mixtures around the 1:1 molar concentration. Planar and homeotropic cells were constructed in order to measure the two different dielectric permittivities,  $\epsilon_{\parallel}$  and  $\epsilon_{\perp}$ . The cells were maintained at a fixed reduced temperature  $\tau$  during the measurements, since the nematic range and transition temperatures were different for each mixture. From the  $\epsilon_{\parallel}$  and  $\epsilon_{\perp}$  data, we calculated the dielectric anisotropy  $\Delta\epsilon = \epsilon_{\parallel} - \epsilon_{\perp}$  as a function of molar concentrations of the mixtures.

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