

Abstract Submitted  
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**Activated kinetics of the Crystalline to Nematic (K-N) and Nematic to Isotropic (N-I) phase transitions of Pentylcyanobiphenyl (5CB) liquid crystal** DIPTI SHARMA, WIT/MCPHS — Activated kinetics of the crystalline to Nematic (K-N) and the Nematic to Isotropic (N-I) phase transitions of the Pentylcyanobiphenyl (5CB) liquid crystal are discussed here. A kinetic comparison of the same types of transitions of other family member with higher number of carbon atoms i.e. Octylcyanobiphenyl (8CB) are also made to see the difference between the kinetic behavior of the above two transitions of the liquid crystals. Experiments were performed using high resolution calorimetric technique for heating and cooling runs. Two different scans i.e. Temperature scans and Rate scans were performed for 5CB and 8CB from 280 to 333 K at various rates to get the detailed behavior of the transitions. As a result, Double activation was observed for 5CB for two heating rate regimes whereas 8CB indicated single activation only. The 5CB has smaller enthalpy and entropy of the transitions and needs larger activation than 8CB. This kinetic change can be explained in terms of the length scale and mobility of the liquid crystal molecules.

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