Nematic/Smectic-A Transition (NS_A), Location of Tri Critical Point (TCP) in nO.m Series – A Birefringence Study

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The tri critical point (TCP), where the second-order transition transforms to first order has been located in nO.m homologous series. The order parameter has been estimated from the birefringence δn, from the refractive indices and from birefringence data available in literature and from those obtained at our laboratory on a number of nO.m compounds. The compounds in the nO.m series exhibit both second and first-order nematic/smectic-A (NS_A) transition depending on the McMillan ratio (T_{NA}/T_{IN}) which in turn depends on the nematic and smectic-A thermal ranges. The data presented are compared with the body of the data available on this homologous series obtained with other techniques.

Key words: nO.m Compounds; NS_A Phase Transition; Tricritical Point (TCP); Birefringence.