



# The Physics of Soft and Biological Matter

## **P.24 Effect of temperature on orientational ordering in a modified Gay-Berne fluid**

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A second order density-functional theory has been used to study the effect of varying temperature on the orientational ordering in a fluid of molecules interacting via a modified Gay-Berne potential in which the attraction force can be tuned by adjusting one parameter only. An attractive parameter  $P_s$  has been introduced in the Gay-Berne potential for describing the strength of attractive force relative to its repulsive counterpart. The direct pair-correlation functions of the isotropic phase that enters in the density-functional theory as input information have been obtained by solving the Ornstein-Zernike equation using the Percus-Yevick integral equation theory for different densities, (reduced) temperatures and attractive parameters. The isotropic-nematic phase coexistence and thermodynamic parameters of liquid crystal have been investigated using density-functional theory. The theoretical results have been compared with the available computer simulation results and the traditional Gay-Berne potential.