

Mechanisms of ordering in 2D liquid crystal systems

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Two-dimensional liquid crystal systems attract recently great attention due to their potential applications in photoelectronic industry. Typically they are formed by the molecules of mesogenic character confined to the surface. They can form then a thin film whose optical properties strongly depend on the type and degree of ordering. These ordering is determined as well by the state parameters like density or temperature as by the shape of the constituent particles. Hard spherocylinders are here a good model of a mesogenic molecule on the basis of which also more complicated bent-core or chiral Z – shape molecules can be formed. Using the Onsager type of the density functional theory the ordering of different mesogenic molecules based on the spherocylinder shape have been studied with the focus on the smectic or lamellar formation. These results may also serve as a reference model for the macroscopic size spherocylinders on a vibrated plane.

Acknowledgements

This work was supported partly by Grant No. DEC-2013/11/B/ST3/04247 of the National Science Centre in Poland and partly by DS project of Institute of Physics of Kraków University of Technology.