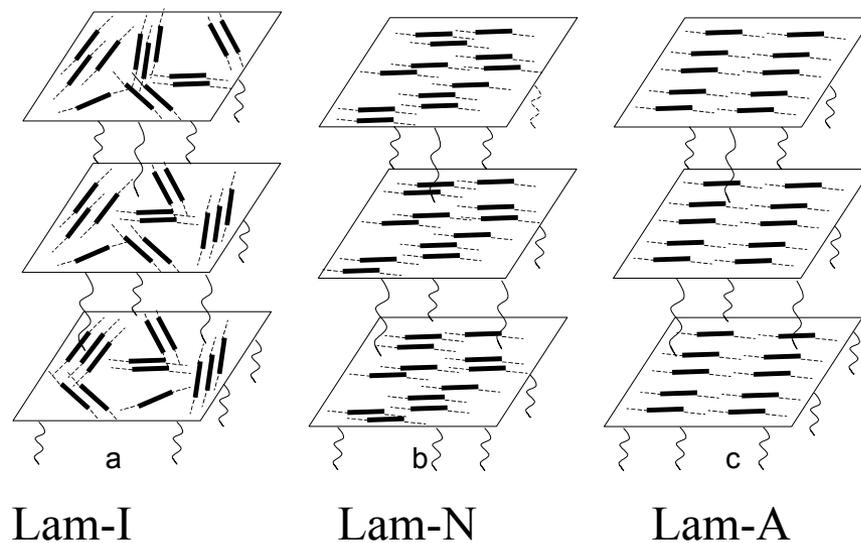
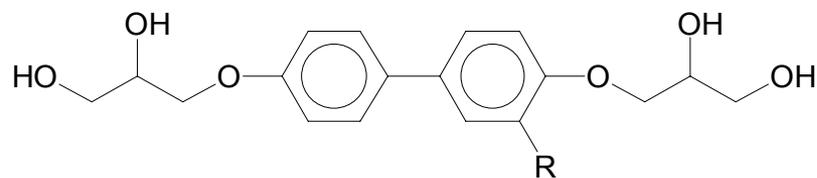


Lamellar Liquid Crystals

Charles Rosenblatt, Case Western Reserve U., DMR-9982020

Recently there has been an explosion of interest in composite LC molecules, each composed of simpler units, that interact via noncovalent forces to create supramolecular structures. Carsten Tschierske's group in Halle, Germany has shown that the molecule in Fig. 1 exhibits a lamellar isotropic (Lam-I), a lamellar nematic (Lam-N), and a lamellar smectic A (Lam-A) phase (Fig. 2). In collaboration with Tschierske, we have demonstrated greatly reduced interactions between mesogenic moieties in adjacent lamellae, resulting in a decrease of the twist elasticity by more than an order of magnitude from its 3D nematic value. Other work in progress examines the possibility of 3D to 2D crossover behavior as the length of the spacer group is increased.



Manuscript(s) available from <http://liq-xtal.case.edu/preprints.htm>

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Education:

Three graduate students (Neha M. Patel, M.R. Dodge, and Min Hua Zhu) contributed to this work. Dodge recently received his Ph.D. in physics and will be joining the LC group at Trinity College in Dublin as a postdoc. Patel is expected to finish her Ph.D. in the spring, 2004, and Zhu is a new student. Also involved were colleagues Rolfe G. Petschek at Case Western Reserve University and Carsten Tsdchierske at Halle.

PI Outreach:

Each year the PI supervises several science fair projects and serves as science fair judge at a number of middle schools. The PI also mentors high school junior Anuraag Chigurupati, who is working on a project aimed at the 2005 Intel International Science and Engineering Fair. Additionally, each year the PI serves as an instructor in the Short Course on LCs (mostly for industrial scientists and technicians) sponsored by the Liquid Crystal Institute at Kent State University, where he generally speak on smectic phases.