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Transition of Hexagonal to Lamellar Packing in a Discotic Liquid Crystal CHENCHEN XUE, FAYSAL ILHAN, SHI JI, STEPHEN Z .D. CHENG, MICHAEL A. MEADOR, MARY ANN. B. MEADOR, R. K. EBY, MAURICE MORTON INSTITUTE OF POLYMER SCIENCE, THE UNIVERSITY OF AKRON, AKRON, OH 44325 COLLABORATION, OHIO AEROSPACE INSTITUTE, CLEVELAND, OH 44142 COLLABORATION, NASA GLENN RESEARCH CENTER, BROOK PARK, OH 44135 COLLABORATION — Self-assembled columnar liquid crystal structures were investigated for a discotic mol. (N,N′,N″-trioctylbemzene-1,3,5-tricarboxamide), candidate for lithium batteries. DSC and WAXD diffraction results revealed that the high-temp. phase transition is between the isotropic melt (I) and a 2D low-ordered hexagonal columnar phase. The low-temp. phase transition was attributed to the transition between a highly ordered, hexagonal columnar phase and the low-ordered hexagonal columnar phase. Between these two phase transitions, there is another recrystallization transition. By annealing at the onset of this transition, it has found the alky tails crystallized and destroyed the hexagonal packing to oblique and finally a lamellar structure.

Chenchen Xue

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