PHASE TRANSITIONS IN CHAIN MOLECULAR POLYCRYSTALS OF 1-OCTADECENE

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S u m m a r y

Phase transitions in 1-octadecene polycrystals are studied by means of thermophysical, dielectric, and spectroscopic methods. An expansion of the intercrystalline space is detected in 1-octadecene at −55 °C. At −30 °C, there appeared topological solitons of the "one-unit constriction" and "180° reorientation" types. A soliton arises at the terminal $-CH_3$ groups, passes along the molecule, is reflected from the double bond of a vinyl group, and returns back. In this case, crystallites of 1-octadecene are transformed to the orthorhombic rotation-crystalline phase. Under heating to 0 °C, the energy of topological solitons is sufficient for the reorientation of vinyl groups with the simultaneous translation of the molecule along the *c*-axis. The concentration of topological solitons increases with the temperature rise. The azimuth correlation between the molecular planes disappears at 18 °C, and octadecene is transformed into the hexagonal rotation-crystalline phase. Melting of octadecene occurs at 21 °C.