Supercritical anomalies in liquid ODIC-forming cyclooctanol under the strong electric field.

Autorzy

Aleksandra Drozd-Rzoska

Sylwester J. Rzoska

Aleksander Szpakiewicz-Szatan

Szymon Starzonek

Joanna Łoś

Kazimierz Orzechowski

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Streszczenie

The evidence for long-range pretransitional effects in the liquid phase of ODIC-forming cycloctanol is presented. ODIC means ‘orientationally disordered crystal’, i.e. the plastic crystalline material in which translation freezing in a crystalline network coexists with the orientational freedom. The mentioned result was obtained using two methods inherently associated with the strong electric field: Electrooptic Kerr Effect (*EKE*) and Nonlinear Dielectric Effect (*NDE*). The model-analysis revealed the weakly discontinuous character of ODIC←Liquid phase transition and the possibility of a unified description with the isotropic – nematic/smectic transitions in rod-like liquid crystalline compounds. The extension to precritical effects near the critical consolute point and the gas–liquid critical point is indicated. Results obtained can be considered a potential base for the new generation of supercritical technologies, using ODIC- forming liquids with properties controlled by the electric field.

Słowa kluczowe

Pretransitional effects, Supercriticality, Plastic crystals, Strong electric field, Kerr effect, Nonlinear dielectric effect

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