Special Issue

The Impact of Nanoparticles on Phase Transitions in Liquid Crystals

Message from the Guest Editors

In recent years a strong impact of even tiny addition of nanoparticles of properties of liquid crystalline (LC) compounds has been revealed. It includes changes in phase transition temperatures, unique dynamics, the permanent inherent superior orientations of rod-like LC molecules, or the appearance of the pre-melting and post-freezing effects. When combining nanoparticles and pressure, one can even observe the near-continuous Isotropic—Nematic transition, formally 'forbidden' in pure rod-like KC compounds. The dominant part of these unique features is the results of the mutual influence of nanoparticles, molecular features of LC compound, and multimolecular pretransitional fluctuations. We stress the latter because the essential impact of fluctuations has only recently been noted. The target of this issue is to broaden the fundamental insight into the given topic and indicate possible applications emerging from the experimental evidence and modelling.

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Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

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