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True colloids of ferroelectric nanoparticles in liquid crystals: grand challenges and recent breakthroughs[1] YURIY GARBOVSKIY, ANATOLIY GLUSHCHENKO, University of Colorado at Colorado Springs — Recent publications in the field of colloids of ferroelectric nanoparticle in liquid crystals revealed a high variety of physical effects. At the same time, there are still many inconsistencies between the results reported by different scientific groups. This fact reflects the complexity of such colloids. Particularly, inherent ferroelectricity of the nanoparticles or particles aggregation in some cases are among the important factors causing the variation of the reports. In this presentation we report experimental results based on the system which is free of the above mentioned challenges. We show how to prepare the true colloid of ferroelectric nanoparticles in liquid crystals; demonstrate impact of the ferroelectricity on the physical properties of the colloid; and present new electro-optical effects observed in these systems. We cover also a variety of possible applications of liquid crystals doped with ferroelectric nanoparticles.

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