

AVVISO DI SEMINARIO

Venerdì 3 marzo alle ore 10.00 in aula **G2** avrà luogo il seminario dal titolo:

Ferroelectric nematic liquid crystals: an introduction to this new phase and a review of the recent results

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Abstract

The recent discovery (dated July 2020) of the ferroelectric nematic phase opened a new chapter not only for the liquid crystal community, but in the whole condensed-matter physics. Beside adding a new, very peculiar, member to the group of ferroelectric materials, the new phase offers a broad range of physical effects to explore ranging from the behavior of topological defects to surface anchoring, response to low frequency electric fields and light, interplay of bound and free electric charges, viscoelastic properties, field-controlled hydrodynamics, field-order coupling and behavior in confined geometry, just to cite a few examples. In this liquid crystal phase almost complete polar ordering of the molecular dipoles generates a spontaneous macroscopic polarization locally collinear to the average molecular long axis. Since the viscosity of nematic liquid crystals has values comparable to those of conventional liquids, this is the first ferroelectric material in the liquid phase. Its electromechanical properties are thus of great interest for both fundamental research and possible technological applications. Indeed, despite the recent discovery, ferroelectric nematic liquid crystals are rapidly becoming the focus of the liquid crystals and soft material scientific communities. In this scenario, we recently studied the behavior of sessile droplets of ferroelectric nematic deposited on ferroelectric solid substrates and found that the coupling between the polarizations of fluid and solid materials, together with the combination of fluidity and polarity peculiar to this phase, give rise to unexpected phenomena as the sudden explosions of ferroelectric droplets and the possibility of controlling their motion with light.