The 17th International Conference on Ferroelectric Liquid Crystal, after 28 years, again took place in picturesque Boulder from August 4–7, 2019. It was held under the auspices of the Soft Materials Research Center, the NSF Materials Research Science and Engineering Center at the University of Colorado Boulder. The local organisers Noel Clark (Honorary Chair), Dave Walba (Conference Chair), Matt Glaser, Eva Korblova, Joe Maclennan, Christine Morrow, and Dakota Nanton provided a pleasant and inspiring ambient for the 83 attendees from 13 countries (Figure 1).

The FLC 2019 focused on frontiers of polarity and chirality in soft matter. In six plenary lectures, 12 invited talks and 19 oral presentations, as well as 21 posters the main themes: (i) design and synthesis of novel ferroelectric/polar liquid crystal materials; (ii) the twist-bend phases; (iii) spontaneous achiral symmetry breaking (chiral self-assembly of achiral molecules); (iv) fluid ferroelectrics and ferromagnetics; (v) blue phases; (vi) liquid crystals and biology; (vii) simulation, modelling and theory; (viii) advances in resonant X-ray scattering; and (ix) industrial applications, were covered.

In his plenary lecture, Corrie Imrie presented a range of new liquid crystal dimers and other types of materials which exhibit the twist-bend nematic and, the recently observed twist-bend smectic phases and discussed structure–property relationships. Oleg Lavrentovich demonstrated electrically driven three-dimensional particle-like dissipative solitons representing self-trapped waves of oscillating director, called director bullets, which propagate with a very high speed perpendicularly to the electric field. Ewa Gorecka showed that a molecular system built of achiral mesogenic dimeric molecules exhibits a complexity with four levels of structural chirality, which were studied using resonant X-ray scattering. Alenka Mertelj presented a new modulated nematic phase, called the splay nematic phase, which results from polar ordering of the molecules and consequent instability towards splay deformation. Frank Giesselmann reviewed some new aspects of chirality in lyotropics, among them chiral structures that appear due to anomalously small twist elastic constants in chro-monic and standard micellar lyotropic nematics confined to, e.g. cylindrical capillaries. Carsten Tschierske discussed the development of polarity and chirality in systems made of molecules with a shape at the cross-over from linear to bent which provides a series of interesting phenomena related to layer coupling, emergent polar order and concerning chirality issues.

In the concluding session, chaired by Joe Maclennan, the prizes were awarded and future prospects for ferroelectric liquid crystals and chiral/polar soft matter were discussed.

The Luckhurst-Samulski prize, which is handed out for the best paper published each year in Liquid Crystals, was awarded to Carsten Tschierske for the paper Mirror symmetry breaking in liquids and liquid crystals (Figure 2).

The Best Student Poster prizes, sponsored by Forth Dimensions Displays, were given to Nathan Cobasko from the University of Colorado Boulder for his contribution Fréedericksz transition in ferromagnetic nematic filaments and Greg Smith also from the University of Colorado Boulder for Intricate behaviour of 4-base nanoDNA sequences: an intersection between condensed matter and RNA world.

The general observation was that the focus of the FLC conferences has moved from traditional display technologies to the very frontiers of soft matter research including mechanisms for molecular assembly, which determine the behaviour and properties of soft matter, from simple liquid crystalline phases to complex biological systems.

Besides the scientific program, two equally very enjoyable social events took place. The meeting began with a Welcome Reception, which set the atmosphere for stimulating discussions that remained throughout the conference, and ended with Conference Banquet, held at the Millennium Harvest House in the evening of the last day.
The attendees will remember the FLC 2019 for the presentations of high-quality research at the frontiers of soft matter and inspiring discussions in a friendly and relaxed atmosphere.

Figure 1. The FLC2019 conference took place in the village centre at the Williams village complex on the University of Colorado Campus, a location known to be occasionally visited also by bears. Photo courtesy of the conference organisers.

Figure 2. Corrie T. Imrie, editor of the journal liquid crystals, and Carsten Tschierske, the recipient of the annual Luckhurst-Samulski prize. Photo courtesy of Corrie T. Imrie.

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Alenka Mertelj
Department of Complex Matter,
Jozef Stefan Institute, Ljubljana, Slovenia
alenka.mertelj@ijs.si