9th Liquid Matter Conference (Liquids 2014)

Lisboa, Portugal
July 21–25, 2014

The 9th Liquid Matter Conference took place at the University of Lisbon, Portugal, 21–25 July 2014. Previous conferences in this series were held in Lyon (1990), Firenze (1993), Norwich (1996), Granada (1999), Konstanz (2002), Utrecht (2005), Lund (2008), and Vienna (2011). The conference was organized jointly by the Liquids Section of the Condensed Matter Division of the European Physical Society, the University of Lisbon, and the School of Engineering of the Lisbon Polytechnic Institute (ISEL).

The purpose of this conference is to bring together scientists working on the liquid state of matter and closely related topics, such as soft matter and biophysics, which was achieved with the participation of more than 650 attendants from more than 20 countries worldwide. The rapidly growing field covered by this conference series therefore includes the physics, chemistry, biology, and chemical engineering of liquid matter as well as several areas of applied research. The conference was organized in eleven topical symposia with 11 plenary lectures, 25 keynote lectures, and 93 contributed oral presentations as well as poster sessions (more than 500 posters presented): Ionic Liquids and Liquid Metals, Water and Solutions, Liquid Crystals, Polymers, Polyelectrolytes & Biopolymers, Colloids, Films, Foams, Surfactants & Emulsions, Confined Fluids and Interfacial Phenomena, Supercooled Liquids, Glasses & Gels, Driven Systems, Rheology & Nanofluidics, Active Matter, Biological and Biomimetic Fluids.

In this context, rheology appears as a resourceful technique for characterizing the mechanical behavior of rather diverse systems such as biological systems, colloids, liquid crystals or polymeric systems. Most contributions of a rheological nature were presented under the topic Driven Systems, Rheology and Nanofluidics, although it also appeared as a main technique in several works presented under other topics. Problems associated with colloidal systems and soft glassy materials were discussed in a rheological perspective, both experimentally and theoretically. Of particular interest was the rheological behavior at the macroscopic level, which was and its interpretation on the basis of the microscopic dynamics of structures that develop in the systems, such as creep in colloidal glasses or jamming in soft particle systems. Interfaces and phase transition problems were also addressed through rheology and new microrheology techniques, often using custom made apparatuses. Most impressive was the development of new devices and experimental set-ups especially designed for these specific studies. The study of particular biological systems, such as concentrated suspensions of bacteria known to exhibit patterns and self-organization, not found in "passive" colloidal systems, has benefited from combining techniques such as simultaneous rheological measurements and microscopy.

We are confident that studies that use rheology as experimental characterization technique will find an adequate forum at the Liquid Matter Conferences, where physical interpretation of the behavior of the systems studied is the central focus of all works. Rheology can thus contribute valuable insights to this community.

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