Special issue devoted to novel trends in rheology

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Rheologica Acta strives to both archive the field of rheology and also capture and identify the new directions in our rapidly changing field. Since 2012, the editors and editorial advisory board have been selecting a group of researchers at early stages of their careers and asking them to contribute an invited paper to a special issue. The selection is intended to sample a range of areas, fields, and researchers from different parts of the world and is in no way exhaustive. At each version of the issue, we are pleased at the enthusiastic response to the invitations and quality of the manuscripts resulting. These papers are original contributions and undergo the same rigorous peer review of all manuscripts published in the journal. Following the success of earlier issues, we selected a group of authors and the results of that effort are found in this issue. The work covers a wide range of topics, techniques, and materials which suggest some of the directions of our field and identify some of the topics that will likely always be of core importance to the field.

This issue includes nine manuscripts which demonstrate the power of multiple particle tracking microrheology to characterize cell mobility in a biological phenomenon as fundamental as wound healing (Daviran and Schultz 2019), and the use of microfluidic flows to quantify how confinement on bacteria has a significant effect on the behavior of a solution of active swimmers (Liu et al. 2019). The current focus in rheology on complex fluid systems is seen through studies quantifying how the detailed surface

chemistry of clay particles alters the interfacial layer between oil and water in emulsions and can be used to control the interfacial and bulk rheology of water-oil emulsions (Hong et al. 2019), how complex structures in seemingly simple surfactant solutions demonstrate the need for caution in interpreting rheology and informing processing (Caicedo-casso et al. 2019), and the ability to use composition to control rheology of block copolymer solutions (Qavi and Foudazi 2019). Polymeric materials maintain importance in the field, and we see the potential trade-off between processability and association strength in ionomers and other associating polymer systems through nonlinear extensional properties (Hinton and Alvarez 2019) and how the concentration of ions in polyacid solutions impact the sol-gel transition through syneresis on rheology and flow behavior (Han et al. 2019). We are reminded of the importance of careful rheometric techniques with a thorough analysis of the impact of loading and edges on rotational rheometry (Cardinaels et al. 2019). A methodology to better sample the Pipkin operating diagram and connect transient nonlinear phenomena through instantaneous versions of existing dimensionless groups has a potential for a huge class of complex materials (Rogers et al. 2019).

We thank the authors for their fine contributions to the journal and the field of rheology. This collection reflects current trends in the field. We hope that you enjoy these contributions by researchers in the early stages of their career as much as we did.

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