Challenges and solutions in the rheometry of soft materials: special emphasis on Rheo-Optics

J.R. Agudo [*], *G. Arnold, A. Braun, F. Barth and M. Schäffler*

Anton Paar Germany GmbH, Ostfildern, Germany

The proper rheological characterization of soft materials still remains as a challenge in modern rheometry. Artifacts derived from instrument inertia, the own sample inertia or other external effects as drying or wall-slide may lead to misinterpretation of the rheological properties [1].
This webinar introduces typical disturbance effects that may play a huge role when measuring soft solids such as hydrogels, biopolymers or low viscous complex fluids. Commercially available solutions with application examples are presented here. They include the use of a so-called separated motor transducer (SMT) configuration to drastically reduce inertial effects or the use of a humidity chamber to avoid drying up of the sample. In the second part, other novel solutions with particular emphasis on Rheo-optics are introduced. We show exemplarity how different optical configurations can be coupled to a rheometer to extract complementary information from the measurements. Direct mapping of individual particle motion, rotation, orientation, deformation or erosion can be obtained besides rheological measurements [2].
With this series of webinars our main goal is to provide the customer an overview of both commercially available and novel solutions as well as to connect scientist and organisations working in the field of rheometry.

References

[1] Ewoldt R.H., Johnston M.T., Caretta L.M. (2015) In: Spagnolie S. (eds) Complex Fluids in Biological Systems. Biological and Medical Physics, Biomedical Engineering. Springer, New York, NY
[2] Agudo J.R, Luzi, Han J., Hwang M., Lee J., Wierschem A. (2017) Rev. Sci. Instruments, 88 051805

*jose.rodriguez@anton-paar.com