



# The Australian Society of Rheology, Inc. 2022 Rheology Lecture Series

CAV Reg. No.  
A005806E

The Australian Society of Rheology is presenting a national series of lectures, which is open to anyone interested in the flow and deformation of matter. The next event in the series will be held online.

## Calendar details

Date:	<b>Tuesday, May 3, 2022</b>
Time:	10:00 to 11:30 AM (Melbourne, Australia)
Event Registration Link:	<a href="https://www.eventbrite.com.au/e/australian-society-of-rheology-industry-lecture-3-may-2022-registration-324446647657">https://www.eventbrite.com.au/e/australian-society-of-rheology-industry-lecture-3-may-2022-registration-324446647657</a>

## Invited lecture

**Dr Damien Vadillo**

(Advance Research Specialist at 3M Corporate Research Analytical Laboratory,  
Minnesota, USA)

**Presentation Title: Extensional Rheology: Usefulness and Limitations in  
Industrial Applications**

**Abstract:** The characterization of the extensional rheology of low viscosity viscoelastic fluids, including inkjet inks, coatings, and adhesives to cite a few, has received increasing attention in industry as automation and digital dispense has gained momentum. These fluids are often, either by design or as a consequences of the formulation elements, very complex in nature resulting in rich and diverse rheology both in shear and extension. This, however, presents some significant experimental challenges: from the difficulty to create a self-thinning bridge of liquid, to the very fast dynamics and complex rheology at play.

In this presentation the focus will be placed on the Capillary breakup Extensional Rheology method which consists in monitoring self-thinning filament dynamics to extract extensional viscosity, with particular attention on the implementation of the method on the Trimaster 2+ instrument with an ultra-fast high-speed camera (NAC ACS-1), in order to elucidate the ultrafast thinning dynamics required to characterize fluid performance in real industrial flows. The various methods used in the academic community are quickly compared before a more detailed analysis of the technique's limitations and un-answered questions. Finally, several uses of filament thinning analysis are presented to illustrate some of the potential in an industrial context: (i) determination of inkjet ink jettability from Trimaster 2+ filament transient dynamics, (ii) the effect of commodity polymer Mw distribution extensional response and (iii) determination of polymer excluded volume coefficient using a combination of shear and extensional rheology.



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## Speaker's biography



Dr Damien Vadillo is an Advanced Research Specialist in 3M Corporate Research Analytical Laboratory in St Paul, Minnesota in the USA. His work focuses on extensional rheology and high frequency linear viscoelastic shear rheology of low viscosity viscoelastic fluids with applications in various digital dispense technologies such as inkjet printing or prayers. Since working at 3M, rheology interests have extended to sol-gel and adhesive rheology. Prior to 3M, Damien worked for 7 years in AkzoNobel, including 3 years in one of the spin off Nouryon Chemical, in various RD&I roles and was the recipient of AkzoNobel Innovation Excellence Award in 2014 and 3M CRAL Circle of

Technical Excellence and Innovation award in 2021.

*Enquiries may be directed to Dr Mark Coghill (Mark.Coghill@riotinto.com).*