



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

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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:	Tuesday, June 14, 2022
Time:	03:00 to 04:00 PM (Melbourne, Australia)
Event Registration Link:	https://www.eventbrite.com.au/e/australian-society-of-rheology-seminar-14-june-2022-registration-339680131417

Invited lecture

Prof. Peter Daivis

(Physics Discipline, School of Science, RMIT University)

Presentation Title: Coupled transport in strongly sheared fluids

Abstract: When a fluid is subjected to strong shear, its structure changes and its properties become anisotropic. This leads to the emergence of non-linear couplings between the shear rate and the diffusion of heat and matter. One interesting consequence of this is that a component of heat flow in the flow direction is possible, even though the temperature gradient is purely in the gradient direction. Recent developments in nonequilibrium molecular dynamics simulation methods have made it possible for us to accurately compute all components of the local stress tensor and heat flux vector in an inhomogeneous, shearing fluid. This has allowed us to verify the theoretical prediction of anisotropic heat flow. In this presentation I will discuss the computation of the heat flux, our results for its shear rate dependence and the implications of these results for other transport processes, such as cross-streamline diffusion.

Speaker's biography



Peter Daivis is a professor of physics at RMIT University. His research has included experimental, computational, and theoretical studies of soft matter, and his current research interests are centred on the non-equilibrium statistical and thermal physics of soft matter. He completed his undergraduate and master's degrees in applied physics at RMIT University, a graduate diploma in applied colloid science at Swinburne University and a PhD in physics at Massey University (New Zealand). After completing his PhD, he was appointed to a postdoctoral position in the Research School of Chemistry at the Australian National University, and in 1995 he returned to RMIT as an academic.

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