

Rheology- Application in Materials Processing and Formulation

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Rheology is the study of flow and deformation of materials. It plays a pivotal role in materials processing and product formulation. By understanding the viscoelastic properties of complex fluids, rheology aids in optimizing manufacturing processes such as extrusion, molding, and mixing. It ensures consistency, stability, and performance in products ranging from food and pharmaceuticals to paints and polymers. Rheological measurements guide the formulation of materials with desired flow characteristics, enhancing application efficiency and product quality. Advanced rheological techniques enable precise control of shear-thinning, thickening, and yield stress behaviors, addressing challenges in material design and processing. Thus, in this short course, we will examine how rheology is integral to innovation across diverse industries.

Speaker Bio

Michael Tam obtained his B.Eng. and Ph.D. degrees in Chemical Engineering from Monash University, Australia in 1982 and 1991 respectively. He taught at Nanyang Technological University, Singapore for 15 years, and joined the Department of Chemical Engineering, University of Waterloo in 2007 as a tenured full professor and holds the position of University Research Chair in the field of functional colloids and sustainable nanomaterials. His research interests are in colloids, self-assembly systems, polymer-surfactant interactions, and drug delivery systems. He has published more than 400 journal articles in various fields of polymer science and engineering. His total citation exceeds 30,800 and his H-index is 90. He is also a deputy editor of ACS Sustainable Resource Management.