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Other - Enabling Process Innovation through Computation (EPIC) Seminar Series

Processing of Complex Fluids for the Consumer Products Industry - A Case Study of Wormlike Micelle Solutions

William Hartt, The Procter & Gamble Co.

Patrick F. Taylor Hall 1502
January 30, 2015 - 03:00 pm

Abstract:

Consumer products include detergents, toothpaste, beauty care products, and more. These products are often complex fluids consisting of polymers, surfactants, emulsions and suspended particulates. This talk will cover these complex fluids from the viewpoint of a non-Newtonian fluid mechanician and process engineer.

Creating solutions to processing challenges involve optimization of existing knowledge, modeling & simulation, and experimental measurements. Process challenges often revolve around producing a product with a specified microstructure. Processing a formulation of the same composition in different ways often results in very different performance, appearance, and texture.

This presentation will cover flow visualization and modeling of surfactant solutions referred to as wormlike micelles. Wormlike micelles are aggregates of surfactants that form long and dynamic chains in solution. Many anomalous flow phenomena have been observed with these solutions. We desire to predict mixing behavior of wormlike micelles in static mixers. We will show results using MRI-Velocimetry and numerical simulation. Many flow phenomena are observed that are not predictable with models today. The combination of experimental flow visualization and numerical models enable fast development of new processes and emphasize the need for a combined approach when dealing with complex fluids.

Watch the seminar online at: <http://connect.lsu.edu/EPIC-Seminars>

Speaker's Bio:

Dr. William Hartt is a technical section head at Procter & Gamble. He runs the Complex Fluids Engineering section within P&G's Global Engineering organization. Will is in his 19th year at P&G. Before joining P&G, he received a Ph.D and B.S. in chemical engineering from Virginia Tech. Active research interests include measurement and modeling of process flows of complex liquids.

