

1067-65-1212      **Noel J Walkington\*** (noelw@andrew.cmu.edu), 5000 Forbes Ave, Pittsburgh, PA 15213.

*Modeling Fluids with Microstructure.*

Macroscopic models of complex fluids typically couple the momentum equation to an equation governing the evolution of the microstructure. Examples include liquid crystals, fluids containing elastic particles, and polymer fluids. This talk will focus on the development and analysis of numerical schemes which inherit the delicate balance between inertia, transport, and dissipation present in these models. The intimate connection between these physical quantities and mathematical properties, such as stability and compactness of solutions, will be highlighted. (Received September 20, 2010)