1075-92-173 **Jennifer J. Young*** (jjyoung@rice.edu), 6100 Main St. MS#134, Houston, TX 77096, and **Sorin Mitran**. *Multiscale Computation of Cytoskeleton Mechanics.*

Creating accurate, macroscopic scale models of microscopically heterogeneous media is computationally challenging. The difficulty is increased for materials with time-varying micro-structures. This talk will present a new continuum-microscopic (CM) modeling approach aimed at modeling such materials. The cell cytoskeleton, a microscopically fibrous medium was chosen as the material of interest upon which to develop and test the algorithm. What is novel about this algorithm, compared to other CM methods, is that information from the material's micro-structure is saved over time in the form of probability distribution functions (PDFs). These PDFs are then extrapolated forward in time to predict what the micro-structure will look like in the future. Keeping track of the micro-structure over time allows for a more accurate computation of the local mechanical parameters used in the continuum-level equations. Results show that the mechanical parameters computed with this algorithm are similar to those computed with a fully-microscopic model. Errors for continuum level variables in the 5-10% range are deemed an acceptable trade-off for the savings in computational expense offered by this algorithm. (Received August 29, 2011)