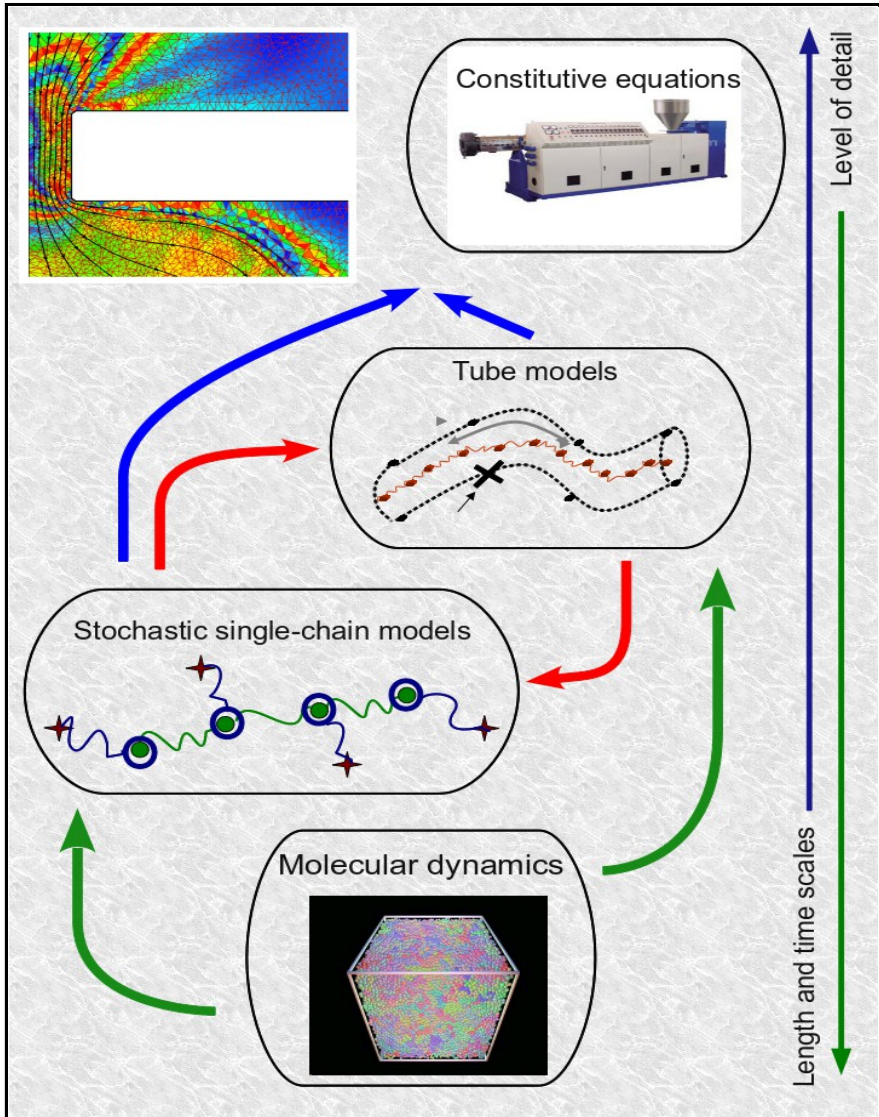


Dynamics and rheology of entangled polymeric liquids

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Content:

The focus of our group is on flow phenomena in soft matter with an emphasis on polymeric materials. We use computer simulations and analytical theory with vital input in the form of questions, motivation and reality check provided by experiments. The work has direct relevance for industrial polymer processing and for solving problems encountered during product manufacture. Another aspect of our work is the potential to leverage the insights gathered by studying soft matter systems to investigate phenomena of biological origin.

One long term goal of our group is to understand macroscopic flow phenomena from a molecular point of view, i.e., in terms of the individual and collective dynamics of the molecules themselves. Towards this end, we are pursuing a hierarchical approach using various models to span the entire range of length and time scales in polymeric materials. The models include different levels of detail depending on the size and time scale (see adjacent). By establishing the relationship between the models, we hope to freely move back and forth across the hierarchy.

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