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Numerical Simulation of Fiber Spinning Including Flow-Induced Crystallization.

Today's society has in great abundance products that are made from polymers: clothing made from synthetic fibers, plastic bags, food wrap, and disposable diapers are among the most common examples. It has become imperative for today's manufacturers to understand the processes used to make these products as fully as possible. Numerical simulation is a powerful tool which can be used for this purpose.

In this talk, we will consider equations modeling fiber spinning that include the phenomenon of flow-induced crystallization. The process of fiber spinning will be discussed and the equations will be introduced. Difficulties in the numerical simulation of the model will be addressed and solutions will be presented. (Received September 21, 2010)