1035-74-1780   **Callie A Johnson*** (`johnsoca@jmu.edu`), 32 Tamela Ct., Harrisonburg, VA 22801, and **Anthony Tongen** (`tongenal@jmu.edu`). *Modeling Atomic Force Microscope Deformation of Fibrin Fibers.*

One use for an Atomic Force Microscope (AFM) is to measure the force used to deform a cylindrical tube. One example of this type of deformation study is the investigation of extensibility and rupture of fibrin fibers. We model the deformation of a circular cylinder due to an applied point force on a lateral side in one and three dimensions. We developed the linear and nonlinear one dimensional models from the Bernoulli-Euler equation for a deflecting beam. The analysis in one dimension gives qualitative information about the correct choice of boundary conditions to be used for more complicated models. In addition, one dimensional analysis verifies experimental results of rupture occurring at either the center of the stretched fiber or at the clamped ends. The nonlinear three dimensional study utilizes a model for the bending of a thick-walled tube due to end loading, and yields valuable information on the comparative behavior of biological tissue deformation. (Received September 20, 2007)

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