

**473a Development of Flow Instabilities during the Extrusion of Energetic Materials:
Mathematical Analysis and Experimental Results**

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The development of flow instabilities manifest themselves through myriad changes in the bulk and surface characteristics of energetic materials. It will be shown that the onset of flow instabilities is associated with the change in the boundary condition for flow from stick to slip or slip to stick at some point along the die. The factors which play a role include the pressure dependence of the wall slip coefficient and the compressibility of the suspension. The predictions of the mathematical model of the process compares very favorably with experimental studies involving both viscoplastic suspensions and pure polymeric binders.

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