

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Shear thickening, shear localization and elastic turbulence.**

DANIEL BONN, LPS/ENS and WZI Amsterdam — The vast majority of complex fluids is shear thinning. The mechanisms of shear thinning are relatively well understood, and the phenomenon is widely used to tailor the rheology of complex fluids. Shear thickening is the exception to this rule, is incompletely understood and hardly ever used to tailor fluid properties. We study shear thickening in granular pastes (cornstarch), and show that shear localization (banding) is an essential ingredient for shear thickening. For high flow rates, the shear banding is followed by elastic turbulence. Our measurements provide us with the mechanism of both shear thickening and the flow instabilities that result from it.

Daniel Bonn  
LPS/ENS and WZI Amsterdam

Date submitted: 30 Nov 2005

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