

Abstract Submitted  
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**Concentration dependence of the effects of polymer additives on bulk turbulence**<sup>1</sup> HENG-DONG XI, HAITAO XU, EBERHARD BODEN-SCHATZ, Max-Planck Institute for Dynamics and Self-Organization — We present an experimental study of the polymer concentration dependence of the effects of minute long chain polymer additives on bulk turbulent flow. It is found that the measured Eulerian structure function of the velocity field is strongly modified by the presence of the polymer additives. And there exists a critical concentration below which only small scales are modified while above which both small scales and large scales are modified. We found that the critical concentration depends on the energy dissipation rate of the flow, this dependence can be explained by de Gennes' elastic theory on turbulence of dilute polymeric solution.

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