1012-35-102   **Alexander Panchenko*** (`panchenko@math.wsu.edu`), Dr. Alexander Panchenko, Department of Mathematics, Washington State University, Pullman, WA 99164. *Homogenization of flows with microstructure.* Preliminary report.

We consider a simplified model of a two-phase incompressible viscoelastic flow with microstructure. The inertial terms incorporate the actual interface advected by the flow, while the frozen interface is used in the microscale constitutive equation. Homogenization of the problem is based on a variant of Tartar's method of oscillating test functions. Unlike two-scale convergence, this method works for general disordered microstructures. The effective constitutive equation contains a long memory viscoelastic term, as well as instantaneous elastic and viscous terms. (Received September 12, 2005)