

Abstract Submitted  
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**Visualization of the secondary flow formation during contraction flow of a viscoelastic fluid by NMR methods** GALINA PAVLOVSKAYA, Colorado State University — Viscoelastic fluids are known to exhibit a variety of flow transitions at low Re numbers. These fluids are also known to form secondary flows in the corners of abrupt contractions during the entry flow. We have applied NMR methods to determine the areas where the vortices are formed during the entry flow of a viscoelastic fluid in a tubular abrupt contraction. We have measured volume-averaged dispersion coefficients at different axial locations above the contraction entry plane. We also have measured velocity fields in the same spatial locations. In both types of experiments the flow encoding time was varied. We found no time dependence in the velocity fields while dispersion coefficient profiles were strongly dependent on the flow encoding time in the areas where vortices were formed. Based upon these results some information about the dynamics of the vortex formation in this type of flow could be deduced.

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