Abstract Submitted
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Flow NMR in complex systems ULRICH SCHELER, Leibniz Institute of Polymer Research Dresden — The combination of NMR imaging for spatial resolution with pulsed-field gradient (PFG) NMR for the measurement of displacements is an ideal tool for the investigation of flow in complex systems. The non-invasive nature of the NMR experiment permits the investigation of flow in arbitrary geometry. For each pixel the velocity is determined by direction and magnitude. Other NMR parameters like relaxation times and chemical shift are applied to generate contrast, when in the experiment only one component of a complex system is excited. Thus both the spatial distribution and the velocity map for each component are measured separately. Applications show flow in a Couette cell, a modified Couette generating high local shear and flow in a pipe varying the cross section. Due to the differences in viscosity the global external shear field results in different flow pattern, resulting in a bent interface at the onset of shear induced mixing. A 3D surface representation shows the spatial distribution of the components.

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