

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Dynamics of Single Actin Filaments and Bundles in Flow DAG-MAR STEINHAUSER, SARAH KOESTER, HEATHER M. EVANS, HOLGER STARK, THOMAS PFOHL, Max Planck Institute for Dynamics and Self-organization, Goettingen, Germany — Actin filaments, aside from their biological renown as providing the ‘skeleton’ of cells, also proffer an ideal platform from which to study – more generally – the properties of semi-flexible polymers. Microfluidic devices made using soft-lithography are easily adapted in dimension and geometry to create well-defined flow environments. Actin filaments are visualized in continuous flow in a microfluidic channel by stroboscopic laser light illumination. A detailed analysis of filament orientation, center-of-mass distribution, and thermal fluctuations as a function of flow rate and channel geometry is reported. In addition, the non-equilibrium bundling behavior of actin in the presence of actin-binding proteins or multivalent ions is studied in microchannel devices using FRET microscopy.

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Date submitted: 19 Nov 2006

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