

Abstract Submitted
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In situ SAXS measurement of nanoparticles filtered with a thin film of macromolecules¹ F.J. DE JONG, Institute of Multiphase Flows (TUHH), A. BUFFET, G. HERZOG, M. SCHWARTZKOPF, J. PERLICH, German Electron Synchrotron (DESY), Hamburg, V. KOERSTGENS, Physik Dep. E13, TU München, M. MECKLENBURG, T. SCHNOOR, Institute of Polymer Composites (TUHH), P. MUELLER-BUSCHBAUM, Physik Dep. E13, TU München, S. ROTH, German Electron Synchrotron (DESY), Hamburg, K. SCHULTE, Institute of Polymer Composites (TUHH), M. SCHLUETER, Institute of Multiphase Flows (TUHH) — Nanofluidics is connected to many different domains in technology, biology and medicine [1]. Exploring new science using controlled regular nanostructures is by far the most significant benefit of nanofluidics [2]. Macromolecules typically serve as well-ordered nanostructures that can be used for filtering purposes. Especially sieving and filtering of nanoparticles is of big interest in medicine [3]. We investigated the filtering of a colloidal suspension by a thin film of functionalized macromolecules in a microchannel using the technique of Small-angle X-ray scattering (SAXS). SAXS is a nonintrusive measurement technique that enables in situ investigations of the interaction between the functionalized macromolecules and the flowing nanoparticles on the nanoscale. We present our findings on the filtered nanoparticles by the thin film of macromolecules and give an outlook on how to optimize the filtering ability of the thin film based on the in situ SAXS measurements.

[1] Eijkel, *et al.* *Micro. Nano.* 1, 249 (2005). [2] Schooch, *et al.* *Rev. mod. Phy.*, 80, 840 (2008). [3] Chen *et al.*, *Small* 7, 1061 (2011).

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