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**Measuring nanoscale dynamics of grafted RAFT polymer using metal-induced energy transfer****Katharina Dabow**

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Tethered polymer chains on a flat surface dramatically change the hydrodynamics of a fluid flow close to the surface. Simulations even predict a cyclic motion of the grafted chains that results in a backflow due to an applied shear flow. To get an insight into the molecular dynamics of a polymer chain on a surface being exposed to an external stimulus, Fluorescence Lifetime Correlation Spectroscopy (FLCS) has proven to be an excellent means. A detailed study in an experimental aspect requires an efficient and flexible synthesis route to produce a homogeneous polymer layer with an adjustable grafting density from the mushroom regime up to a high density brush. Surface-Initiated Reversible Addition-Fragmentation chain Transfer (SI-RAFT) offers the requisite set of properties. We have first conducted Metal-Induced Energy Transfer (MIET) FLCS measurements of a labeled poly (DMAEMA) high density brush. Via MIET experiments the brush height could be determined for the samples in a dry state and a swollen state in water. Additional dynamic MIET experiments yielded a correlation lifetime of  $t=600$  ns for the swollen poly (DMAEMA) brush in water.

**Biography**

Katharina Dabow is pursuing her PhD in Macromolecular Chemistry from the Georg-August-Universität Göttingen, Germany. Her research focuses on the molecular dynamics of grafted polymer chains on flat surfaces measured by fluorescence lifetime correlation spectroscopy.

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