

## Responsive polyelectrolyte brushes

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The ability of polymers to change conformation in response to their environment is of great utility in soft nanotechnology, for example in the targeted release of drugs, where pH and temperature may affect polymer behaviour. We present results of experiments on polyelectrolytes in dilute bulk solution as well as tethered (chemically grafted) to surfaces. Poly((diethylamino)ethyl methacrylate), a polybase, is grafted to a surface using an atom transfer radical polymerisation route. We present neutron reflectometry and atomic force microscopy data showing the response of these brushes to changes in pH. Similarly, we also discuss the behaviour of polymethacrylic acid (PMAA) and discuss data showing the response of PMAA to changes in pH (atomic force microscopy experiments on grafted chains and fluorescence experiments on dilute chains). Implications of the work to nanoscience will also be discussed.