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Effect of pH on Swelling Behavior of Polyelectrolyte Brushes Produced via Surface Confined Atom Transfer Radical Polymerization. AMIT SANKHE[1], SCOTT HUSSON, MICHAEL KILBEY, Department of Chemical Engineering, Clemson University, Clemson, SC 29634-0909 — Surface-tethered polyelectrolyte brushes comprised of poly (itaconic acid) (PIA) and poly(methacrylic acid) (PMAA) were grown using surface-confined atom transfer radical polymerization (ATRP). The surface- tethered initiator monolayer was formed by self-assembling 2-bromoisobutyryl bromide terminated thiol molecules on gold coated silicon substrates. This polymerization initiator molecule and a copper-based organometallic catalyst allowed tethered polyelectrolyte chains to be grown via radical polymerization at room temperature in aqueous solutions. The behavior of these polyelectrolyte brushes as a function of pH was studied using a phase modulated ellipsometery. The presentation explains how the brushes are affected by external conditions such as the pH of the contacting solution. As the polymer brushes already exist in the charged state, addition of neutral water or salt solution did not affect the polymer brush height, however a decrease of thickness with pH is found.

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