

# Engineering Smart Polymer Brushes

## Towards Antifouling Coatings

### Research Themes

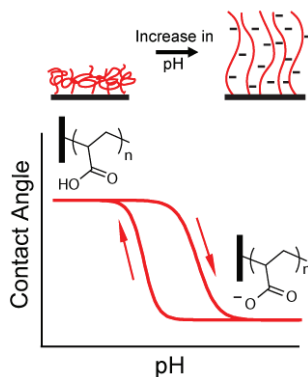
- Synthesizing pH-responsive polyelectrolyte brushes for applications in drug delivery, enhanced oil recovery and antifouling coatings
- Exploring impact of brush properties (length and breadth in the molecular weight distribution) on pH-response
- Modulating bacterial adhesion by varying polymer brush surface properties

### Recent Accomplishments

- Established a novel method to tune breadth of the molecular weight distribution (dispersity) of polymer synthesized through controlled radical polymerization techniques
- Demonstrated dispersity is an important parameter to tune pH-response of a polyelectrolyte brush
- Showcased the ability of poly(acrylic acid) brushes as fouling-release coatings
- Received the “Society of Plastics Engineers Graduate Research Award”
- Selected for participation in the “Excellence in Graduate Polymer Research” award session at the AIChE 2016 Annual Meeting

### Issues

- Examining the underlying mechanisms governing tuning dispersity in controlled radical polymerizations
- Understanding the role of brush length and dispersity on pH response of poly(acrylic acid) brushes
- Investigating the mechanism of bacterial release from poly(acrylic acid) brushes



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