

- Achieve precisely controlled block (co)polymers with reactive end groups
- Synthesis in aqueous medium
- Produce polymers with controlled molecular weight and narrow distribution

WHAT IS RAFT?

Reversible Addition-Fragmentation Transfer polymerization, a technique developed by researchers at CSIRO in Australia, allows the synthetic tailoring of macromolecules with pre-determined molecular weights, narrow molecular weight distributions, and complex architectures. The University of Southern Mississippi has taken this technology one step further by achieving the same benefits in aqueous systems.



One key to RAFT polymerizations is identifying chain transfer agents (CTAs) that suppress termination reactions. Southern Miss has focused research on identifying CTAs that are soluble in water, experience slow hydrolysis and contain both electronic and structural similarities to the monomers to be polymerized. Shell/core and micelle-like systems illustrated in Figure 1 can be used for sequestration and complexation and have been demonstrated in aqueous media. This technology is particularly suited to controlled delivery systems, pharmaceutical polymers, and self-assembled diagnostic systems.

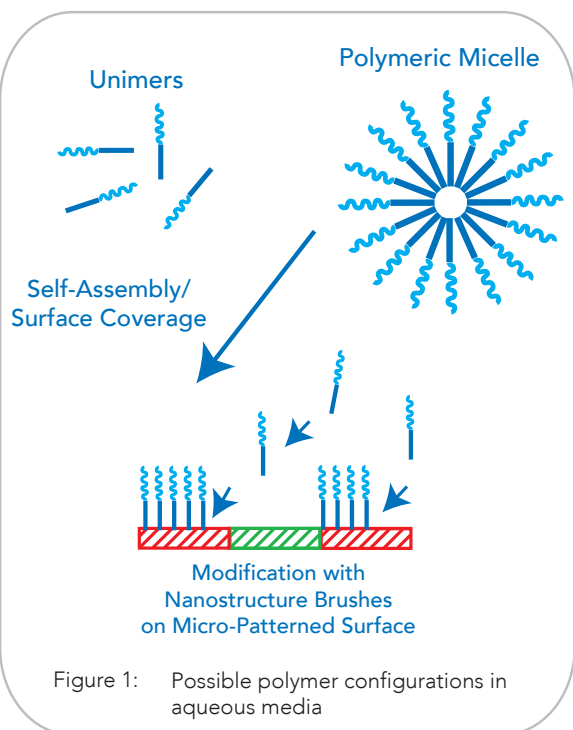


Figure 1: Possible polymer configurations in aqueous media

RAFT can be used to develop polymers for the preparation, stabilization, and modification of transition metal nanoparticles and surfaces. The terminal end groups resulting from the selection of the CTAs can be further functionalized to form polymeric brushes for specialty thin films on patterned surfaces. This technology has potential use in optics, medicine, electronics, biochips, high-throughput screening, and biological transfer agents.

OPPORTUNITIES

With the available resources of The University of Southern Mississippi School of Polymers and High Performance Materials, we offer research capabilities to develop a custom system to meet your specific performance needs.

for more information contact: