Dibromomaleimides and aminobromomaleimides: New functional handles in polymer science
Rachel O’Reilly

Dithiomaleimides (DTMs) and monoaminomaleimides (MAMs) with alkyl substituents are shown to be a novel class of highly emissive and stable fluorophores. Variable solubility and further functionalization of this unit can easily be tailored through the choice of N and S substituents. Furthermore, inclusion of a DTM or MAM unit into a polymerization initiator or insertion into the disulfide bond of proteins demonstrates the utility for fluorescent labeling. A key advantage of this new reporter group is its versatile chemistry and its notably small size, which allows for ready incorporation without affecting or disrupting the self-assembly process. This is critical to the formation of core-shell polymeric contrast and drug delivery agents and enables the facile tracking of the nanostructure. We demonstrate the potential of this functionality through incorporation into a range of polymerization systems, which can be tailored to undergo assembly and when in the assembled state, does not self-quench. The further exploration of this functional group as a handle in a range of polymeric materials will be discussed.