

Stimuli-responsive reversibility and degradation: An effective platform to develop smart and functional polymeric nanomaterials

Jung Kwon Oh<sup>†</sup>

Concordia University

(john.oh@concordia.ca<sup>†</sup>)

Exploration of stimuli-responsive reversibility and degradation is a promising platform in the development of smart and functional polymer-based nanomaterials useful for biomedical applications and materials science. Dynamic dissociation/association of labile covalent linkages can establish the reversibility of nanomaterials in the presence of stimuli to rebuild their physical, chemical, and mechanical properties. Stimuli-responsive degradation driven by chemical transition through the cleavage of labile covalent linkages enables the disintegration or destabilization of nanomaterials including assemblies, thus offering the controlled/enhanced release of encapsulated therapeutics. This presentation describe how this robust platform can be used to synthesize and fabricate block copolymer-based nanoassemblies, hybrid nanomaterials, and self-healable films for drug delivery as well as electronics and coatings.