



Chemical & Physical Sciences

UNIVERSITY OF TORONTO

MISSISSAUGA

COLLOQUIUM SEMINAR SERIES

PRECISION POLYMER NANOPARTICLES



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Polymerization-induced self-assembly (PISA) is a versatile method to prepare nanoparticles of various morphology. Traditionally, nanoparticles are prepared via self-assembly of pre-formed polymers in H₂O. Rigorous optimization is often required in these systems, involving iterative cycles of polymer synthesis, self-assembly, and evaluation of the self-assembled morphologies. PISA offers an elegant solution to the tedious procedures of conventional self-assembly by forming the particles in situ as the polymerization progresses. PISA involves chain-extension of a hydrophilic macroinitiator (or macro-chain-transfer agent) with monomers that are miscible with water, but form a hydrophobic, immiscible polymer, driving self-assembly. PISA can be conducted at high solids contents under a wide variety of reaction conditions (i.e., low or high temperature, variable solvent mixtures, or in the presence of drugs or biomacromolecules). However, monomers which can be utilized in PISA are often difficult to identify from their chemical structures alone, and experiments are often necessary to determine their usefulness in PISA. We have been developing synthetic methods and developing predictive tools to expand the scope of PISA and also show its application in the design of functional materials.

Colloquium Seminar Series

Wednesday, February 9, 2022

Join us on Zoom at 3:10pm

<https://utoronto.zoom.us/j/88646928603>