



Houk-Jung Organic Colloquium

Organocatalytic Polymerization: From Chemistry to Immunology

Abstract: We have developed a family of versatile organic catalysts for the living polymerization of lactone and carbonate monomers that have been integrated into efficient flow reactors for the programmed synthesis of block copolymer libraries. These synthetic methods spawned the development of a new concept for gene delivery based on a class of dynamic oligomeric cationic materials that are designed to self-assemble with polyanionic nucleotides to form coascervate nanoparticles. These Charge-Altering Releasable Transporters (CARTs) are structurally unique oligomers that operate through an unprecedented mechanism, serving initially as oligo(α -amino ester) cations that complex, protect and deliver mRNA, and then change physical properties through a degradative, charge-neutralizing intramolecular rearrangement, leading to intracellular release of functional mRNA and highly efficient protein expression, both in cell culture and in live mice. Selected applications of in-vivo mRNA delivery for cancer and COVID vaccination will be described.

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Thursday, April 27, 2023 | 4:00 PM
Mani L. Bhuamik Collaboratory - YH 4222
Dongwon Yoo Seminar & Conference Hall

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