

CHEMICAL ENGINEERING

SEMINAR SERIES



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Bio-inspired sequence-defined oligoTEAs: assembly, characterization and applications.

ABSTRACT: Precise control over the monomer composition, sequence and architecture of polymers is critical for mediating a high level of control over their chemical and physical attributes. Technologically, control over primary sequence and architecture could lead to the development of new synthetic enzymes, scaffolds for molecular encoding and data storage, nucleic acid mimetics, synthetic affinity ligands, sequence responsive materials, programmable biomaterials and much more. Motivated by these opportunities and the need for sequence-control and structural diversity in polymer research, we present a versatile methodology for the synthesis of a new class of sequence-defined oligomers. Our approach to sequence-defined oligomer assembly involves the sequential use of different N-allylacrylamide and dithiol monomers to build sequence-defined oligothioetheramides (oligoTEA) on a liquid fluororous support. The combination of fast solution-phase reaction kinetics with a robust fluororous solid-phase extraction (FSPE) technology allows for the efficient assembly of molecularly encoded synthetic oligoTEAs with broad structural diversity and tunability. Strategic placement of complementary reactive monomers during the oligoTEA assembly process facilitates the synthesis of a wide variety of sequence-defined architectures. These novel sequences and structures will be presented and used to investigate the effect of primary sequence and structure on macromolecular and biological properties.

RECEPTION 3:30 • LECTURE 4:00 – 5:00
PHYSICS ASTRONOMY BLDG. (PAA) A118



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BIOGRAPHY: Professor Alabi began his research career as an undergraduate student under the direction of Professor David Schuster at NYU. Upon receiving his B.S. in Chemistry from NYU and B.E. in Chemical Engineering from Stevens Institute of Technology, he went on to pursue a graduate degree in Materials Chemistry at California Institute of Technology with Professor Mark Davis. He then moved to MIT in 2009 and served as NIH Postdoctoral Fellow with Professor Langer and Anderson. Chris joined the Cornell faculty in 2013 as an Assistant Professor in the School of Chemical and Biomolecular Engineering. He has won several awards during his short tenure at Cornell including the PhRMA Foundation Research Starter Award, NSF CAREER Award, and the 2016 Cornell Engineering Research Excellence Award.