A Journey into the World of Peptoid Polymers: Twists, Turns and Discovery

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Peptoid polymers featuring *N*-substituted polyglycine backbones with proteinogenic or synthetic sidechains are structural mimics of polypeptides. The physicochemical properties of the polypeptoids are strongly dependent on the *N*-substituents structures, enabling systematic tuning of the polymer solubility, crystallinity and backbone conformations. In addition, peptoid polymers are backbone degradable, often biocompatible, and thermally processable similarly as conventional thermoplastics. The combination of these attributes makes peptoid polymers an attractive class of pseudo-peptidic polymers that are potentially useful for various biotechnological applications. In this presentation, I will discuss the development of synthetic methods to access peptoid polymers, and our recent efforts towards unravelling the effect of sequence-encoded electrostatic interaction on the solution structure of ionic peptoid diblock oligomers. Examples will also be given on the design, synthesis and characterization of thermoreversible peptoid-based hydrogelators towards 3D cell culture applications.

Bio: *Donghui Zhang is a Professor of Chemistry and the Director of Graduate Studies in the Department of Chemistry at the Louisiana State University (LSU). She obtained B.S. in Chemistry from Peking University in 1998 and Ph.D. in Organometallic Chemistry from Dartmouth College in 2003 and did one and half year postdoctoral research at University of Minnesota on the synthesis and characterization of polymers from biorenewable feedstocks. She joined LSU in 2007 after a two-year stint as a research faculty in New Mexico State University. She serves on the editorial advisory board of Biomacromolecules and Scientific Reports. Her research interests include polymerization method development, synthesis and investigation of the structure-property relationship of biomimetic, bioinspired and bioderived functional polymers and high precision macromolecules. In her spare time, she enjoys outdoor activities and spending time with her family.*

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