

## Chapter 2

# Our Main Goals

The core of this work lies on developing a novel Seesaw-type macromonomer strategy for the preparation of “perfect” hyperbranched model samples with uniform subchains and the investigation on their related solution properties. More specifically, the main goals of this work are as follows:

1. Through our well-designed Seesaw-type AB<sub>2</sub> macromonomer, prepare a series of Seesaw-type macromonomers and “perfect” hyperbranched homopolymers and copolymers with uniform and controllable subchain length.
2. Using various characterization methods, accurately determine the molecular parameters of the prepared narrowly distributed hyperbranched samples and clarify the fractal property of “perfect” hyperbranched polymers.
3. Investigate on the deformation property of “perfect” hyperbranched chains; more specifically, using our developed ultrafiltration technique to explore how the branching effect affects the critical flow which hyperbranched chains need to crawl through a cylindrical nanopore.
4. Study the solution behavior of amphiphilic hyperbranched block and graft copolymers, and answer how the branching effect affects their phase behavior in dilute and semidilute solutions.
5. Expand our Seesaw-type macromonomer strategy to the preparation of model hyperbranched hetero-subchain copolymers with two different controllable and uniform subchains and study how the chain parameters affect the related properties.
6. Prepare novel “perfect” degradable hyperbranched model samples with uniform subchains and controlled locations of cleavable disulfide linkages simultaneously; and elucidate how the branching effect affects their degradation property.

Studies on "Perfect" Hyperbranched Chains Free in  
Solution and Confined in a Cylindrical Pore

Li, L.

2014, XIII, 128 p. 111 illus., 26 illus. in color., Hardcover

ISBN: 978-3-319-06096-5