Controlling Macromolecular Architectures for Biomass Polymers towards Enhanced Mechanical Properties

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Biomass based polymers show promise for the mitigation of commodity petroleum derived polymers. However, for biomass with bulky or long chain structures, they suffer from low chain entanglement, resulting in poor mechanical properties. Controlling macromolecular architectures of biomass polymers could overcome the above barriers and allow for tailorability of thermomechanical properties. In this presentation, supramolecular interactions, including hydrogen bonding and metal-ligand coordination are introduced to allow chain entanglement of biomass polymers which exhibit impressive enhancement of mechanical properties. A wide range of applications for biomass polymers can now be achieved through these cheap and facile methods, which show great promise for the future of sustainable polymers.