Abstract
Main-chain functionality is critical to polymeric thermal properties and degradation behavior. This presentation will introduce synthetic routes for incorporating various functional groups into the main-chain of linear polymers. Novel methodologies have been developed for preparing renewable polyesters, polycarbonates, polyoxalates, polyacetals, polysilicon acetalts, and polylactam esters with prescribed thermal properties and degradation pathways. Additionally, this presentation will describe our efforts to employ vanillin, ferulic acid, and other bio-based aromatics for the synthesis of polymers for higher temperature applications. These various novel thermoplastics will be discussed in the context of replacing specific fossil fuel-based plastics.

References