

Abstract – Prof. Dr. Arjan W. Kleij

Terpenes are best classified as functional alkene-based monomers that show structural diversity and post-modification potential. Their epoxidized derivatives are particularly attractive in the context of copolymerization with carbon dioxide through ROCOP technology, and this offer ways to modulate their mechanical and thermal properties. We have been interested in the use of various terpene monomers (mostly limonene, menthene and carene oxides) to construct new oligo- and poly-carbonates thereby creating polymers with unusually high thermal resistance. Therefore such monomers can be used to create new types of coating, adhesive and packaging materials of interest in commercial applications. More specifically, the glass transitions of the oligo/polycarbonates can be varied over a wide range of temperatures and thus be fitted towards many applications, also by judiciously changing the nature of the polymer backbone by simple chemical modifications. This contribution will provide a summary of our technological development including process characteristics and market potential underlining the importance of the use of bio-based monomers to create alternative and more sustainable oligomers/polymers as ingredients for consumer based plastics.