

Bio-based CO₂ / limonene copolymer as a versatile toolbox

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Polymers made of bio-based monomers open access to engineering materials with novel combinations of physical / chemical properties and represent a sustainable approach. The copolymer of CO₂ with the epoxide of limonene, poly(limonene carbonate) (PLimC) represents an excellent example of such a bio-based and sustainable engineering material. PLimC shows high very high transparency, heat resistance, and high bio-stability. Furthermore, the material is susceptible to a wide variety of chemical modifications by simple means. Hence, we consider PLimC a versatile platform from which many new functional materials can be derived. Such functionalities are smart behavior (pH-responsiveness), antimicrobial activity, or adjustment of mechanical properties, to mention but a few. In our presentation we give details of the preparation of PLimC, its characteristics, and chemical modifications.