

Introduction to Synthesis of polymers and vitrimers

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In this lecture, the two main modes of polymer chain growth during polymerization, namely step-growth and chain-growth, will be briefly introduced.

Radical polymerization, both free and controlled, will be discussed in detail, covering the elementary steps, structure/reactivity correlation and copolymerization. Radical polymerization, a chain-growth polymerization, is certainly the most versatile polymerization technique in terms of polymerization media and processes, chemical compatibility, and accessible compositions and topologies. It is the process used to prepare some of the vitrimer precursors in the DN ReBond.

In the last part of the lecture, the synthesis of vitrimers by reactive processing of commodity polymers, such as polyolefins, polydienes, and polystyrene, will be exemplified.