

Sodium complexes as precise tools for cutting polymer chains. Exploration of PLA degradation by unique cooperation of sodium centers

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Novel sodium coordination compounds with aminonaphtholate and aminophenolate ligands have been synthesized and characterized by spectroscopic methods, X-ray analysis, and DFT calculations. The flexible ligand framework forms tetra- or binuclear complexes suitable for binding polylactide chains. All compounds mediate the depolymerization of polylactide highly effectively at room temperature in a controlled fashion. Furthermore, the experimental data, a possible pathway for sodium compound transformation from a stable structural motif to an active form, and a mechanistic pathway for the depolymerization process have been verified by applying theoretical studies.

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