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# Editorial: Advanced Catalysts in Ring-Opening Polymerization of Cyclic Esters

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## Editorial on the Research Topic

## Advanced Catalysts in Ring-Opening Polymerization of Cyclic Esters

Now lots of biodegradable polymers were produced to replace the petroleum-based plastics to solve the environmental pollution. Herein, the scientists designed and synthesized the effective catalysts for the ring-opening polymerization (ROP) of cyclic esters, such as *o*-carboxyanhydrides, ε-caprolactone (CL), β-butyrolactone (BBL), ε-decalactone (DL), and lactide (LA). The catalysts for the ROP of *o*-carboxyanhydrides were explored in the review by Zhong and Tong. The ligands are essential for enhancing the catalytic activity and the selectivity control of catalysts. A study of CL polymerization by using Al complexes as catalysts reported by Zou et al. revealed that Al complexes bearing biphenolate phosphinoxide had higher catalytic activity of CL and *rac*-LA ROP than those bearing amino-bridged and phosphine-bridged biphenolates. The Zn complexes bearing amido-pyridinates reported by Chen et al. revealed that Zn complex with chelating dimethyl amino group could be tolerated in tetrahydrofuran during CL polymerization and exhibited greater catalytic activity than that with chelating pyridinyl group. The *rac*-LA polymerization mediated by urea/potassium alkoxide system reported by Kan et al. showed that urea/potassium alkoxide system had very high catalytic activity (90% conversion, 1–2 min), and produced PLAs with high $P_i$ values ($P_i$ = 0.83–0.93) and narrow $M_w/M_n$ values (1.05–1.09). Studies of BBL and DL copolymerizations employing (salan) yttrium catalysts reported by Kiriratnikom et al. revealed that the syndiotactic-enriched poly(3-hydroxybutyrate)s blocks copolymers were produced. Finally, a special case reported by Lu et al. revealed that the phenoxyl oxygen of the catalyst attracked the α-hydrogen of the LA to produce the weaken H-O bond, and the benzyl alcohol initiated LA directly without replacing the ethyl group of the Zn complex.

The Research Topic of Advanced Catalysts in Ring-Opening Polymerization of Cyclic Esters provides knowledge on how the ligands affect the catalytic activity of the catalysts and a new possible mechanism of ROP. It is useful information for the scientists to design more effective catalysts for ROP of cyclic esters.

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