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### Advances in the catalyses of polymerizations

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## **ADVANCES IN THE CATALYSES OF POLYMERIZATIONS**

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### **ABSTRACT**

Nearly all technical processes for the production of polymers are carried out in the presence of catalysts. In the case of addition polymerization reactions, two mechanisms are possible: Start of the reaction via an initiator (e.g., peroxides) or start via a true catalyst (e.g., Ziegler/Natta systems). In both areas remarkable progress has been made: Cationic "living" polymerizations of oxacycloalkanes, group transfer polymerization, metal-catalyzed alternating copolymerization of ethylene with carbon monoxide, and metallocene-catalyzed polymerizations of alpha-olefins. The polymerization of alpha-olefins with metallocene catalysts not only leads to the improvement of well-known polymers like polyethylene and polypropylene, but also enables the production of new polymers like syndiotactic polypropylene, syndiotactic polystyrene, and cycloolefin copolymers on an industrial scale.