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Polyethylene Incorporating Diels–Alder Comonomers: A "Trojan Horse" Strategy for Chemically Recyclable Polyolefins
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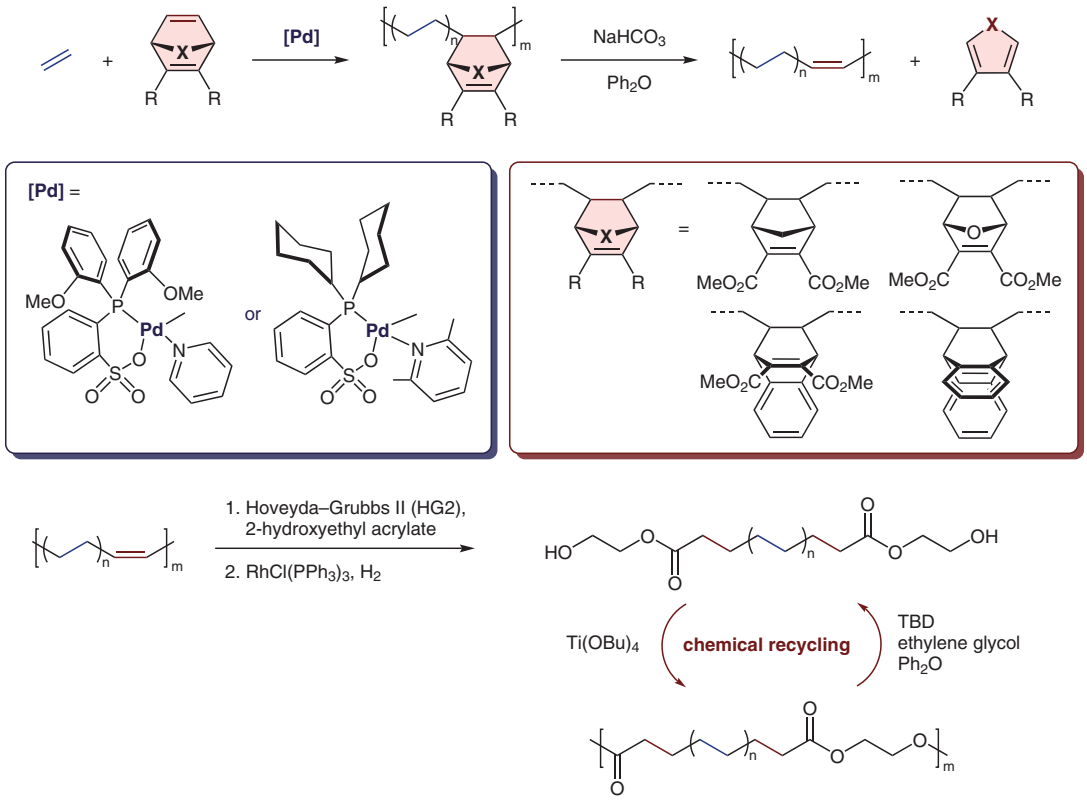
Introducing Double Bonds to Polyolefins via Retro-Diels–Alder Reaction



Significance: Immense research attention has been drawn to tackling the difficulties presented by polyolefin degradation and recycling. Introducing certain unsaturation, susceptible to chemical cleavage and functionalization, appears to be one of the possible solutions.

Comment: By introducing Diels–Alder comonomers, masked double bonds are incorporated in the backbone of polyethylenes. Then, via the post-polymerization retro-Diels–Alder reactions, the double bonds are readily revealed. When subjected to metathesis conditions, telechelic polyethylene macromonomers are produced, which can then be used to make recyclable polyesters.

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Synthesis of Materials and Unnatural Products

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functional polyolefin
telechelic polymer
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