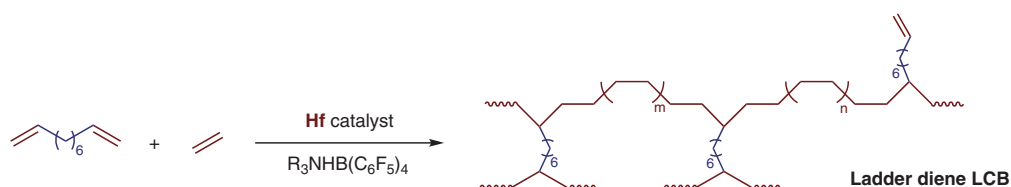
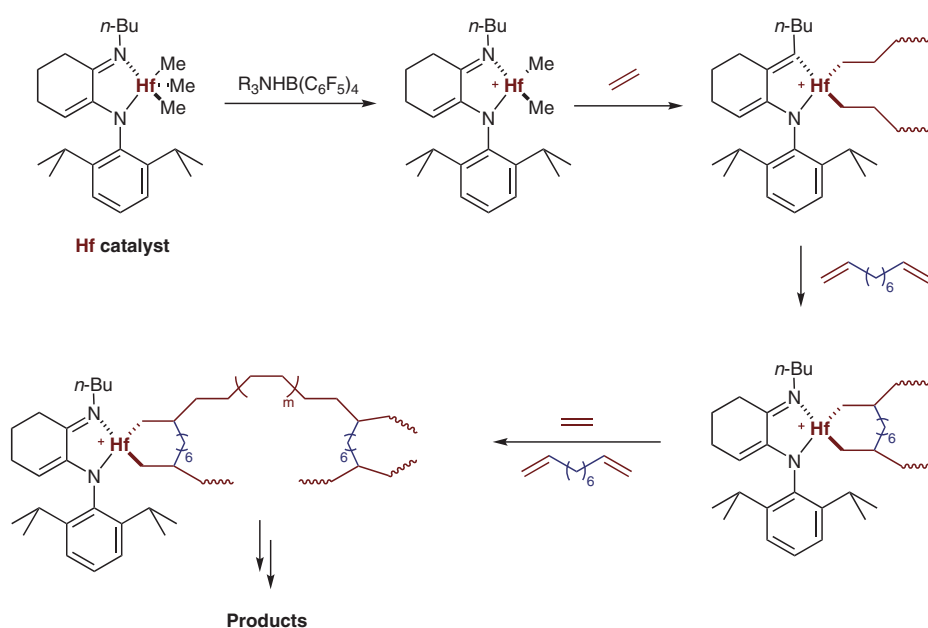


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A Commercially Viable Solution Process to Control Long-Chain Branching in Polyethylene
Science 2024, 383, 1223–1228, DOI: 10.1126/science.adn3067.

Polyethylene with Laddered Long-Chain Branching



Mechanism of polymerization



Significance: Low-density polyolefin (LDPE) with long-chain branching (LCB) is an important type of commodity product, in which the LCB is usually introduced by a radical process under high-pressure conditions. In this work, a more cost-effective synthetic method is developed for LDPE with ladder-type LCB, presenting similar rheological properties to conventional LDPE.

Comment: The imino-enamido Hf catalyst is selected for its advantageous dual active sites. Hence, two polymer chains can grow from a single catalytic center. With diene introduced as a co-monomer, laddered LCB can be achieved, and the unique polymer structure is confirmed by ^{13}C NMR spectroscopy.

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Category

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ladder polymer

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