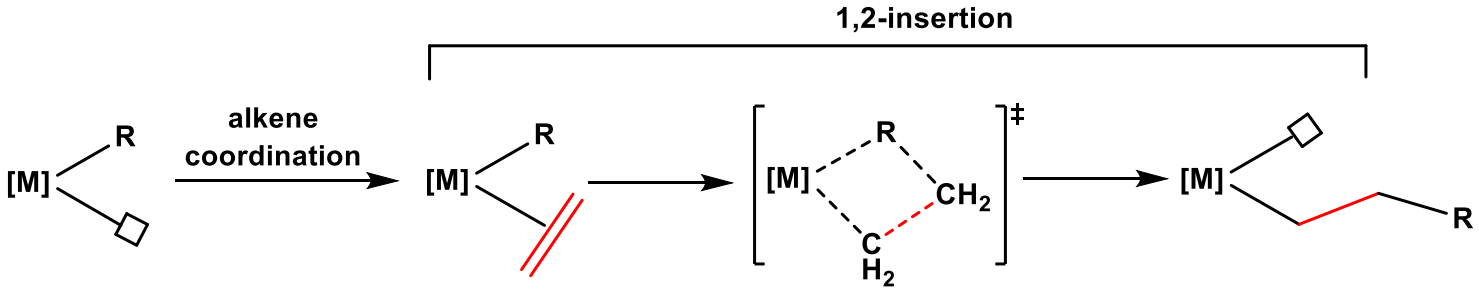
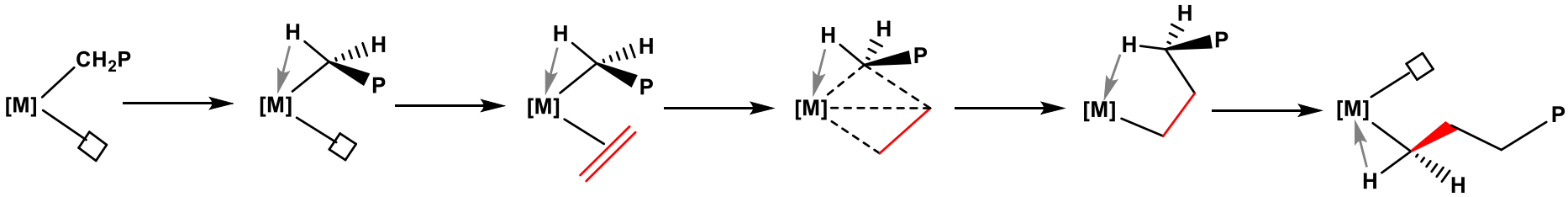
# Mechanism for Olefin Polymerization

## Chain Propagation:

- **Cossee-Arlman Mechanism** = good basic mechanism.
- Cossee *et al. J. Catal.* **1964**, *3*, 80 and 99.




- **Brookhart-Green Mechanism** = an improvement on the Cossee-Arlman mechanism → it includes an α-agostic interaction which helps to facilitate 1,2-insertion.
- Brookhart *et al. J. Organomet. Chem.* **1983**, *250*, 395.




- Supporting calculations: Ziegler *et al. Organometallics* **2004**, 104.
- Supporting experiments: Brintzinger *et al. Angew. Chem., Int. Ed.* **1990**, 1412 (Zr), Piers and Bercaw *J. Am. Chem. Soc.* **1990**, 9406.

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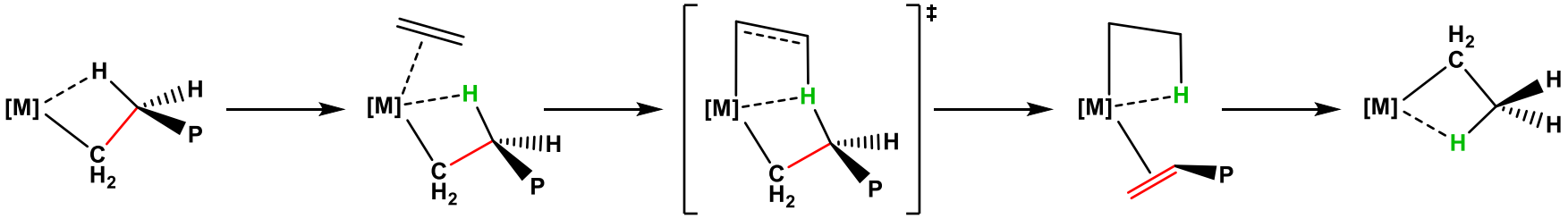
## Chain Termination:

- **β-Hydrogen Transfer:** $H^-$ transferred from the growing polymer chain to an incoming olefin. This is the dominant chain termination mechanism under the usual experimental conditions. Ziegler *et al. J. Am. Chem. Soc.* **1999**, 154.




- **β-Hydrogen Elimination:** β-hydrogen transferred to the metal. *ibid*.