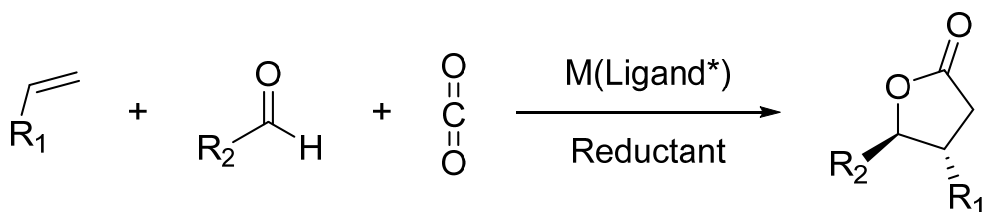


ASYMMETRIC LACTONE SYNTHESIS BY REDUCTIVE OLEFIN ACTIVATION AND CO₂ -FIXATION

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Olefins are an attractive coupling partner with carbon dioxide due their wide availability, low cost and high atom efficiency. In previous studies, olefins have been activated by reaction with a strong nucleophile (hydride[1], organometal reagents[2]) to form strongly nucleophilic carbon, that can further react with carbon dioxide. In our research[3], we have found that metals with high reduction potential can force the olefin to react twice as a nucleophile. This reactivity was used to synthesize 3,4-disubstituted five-membered lactones in moderate to high yields and high diastereoselectivity. We anticipate that this type of reactivity could be useful in a variety of synthesis routes, allowing fast increase of complexity, with formation of two C-C bonds and two chiral centers.



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[3] Aleksi Sahari, Jere K. Mannisto and Timo Repo, Asymmetric lactone synthesis by reductive olefin activation and CO₂ -fixation, Manuscript in preparation