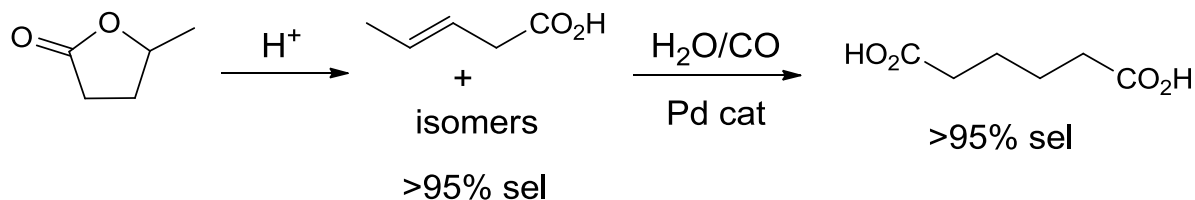


Catalytic Conversion of Bio-based γ -Valerolactone to Adipic Acid

Adipic acid is an intermediate for making nylon. ICES is developing an alternative catalytic chemical process that would eliminate nitric oxide emissions as well as mitigate the large carbon footprint associated with the conventional petrochemical routes of making adipic acid. The new route uses bio-based γ -valerolactone as feedstock and involves two-steps: (1) reactive distillation to drive the acid-catalyzed rearrangement of γ -valerolactone to a mixture of thermodynamically less stable pentenoic acid isomers, and (2) hydroxycarbonylation of the pentenoic acid isomers to adipic acid. High selectivity (>95%) has been achieved for both steps.



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