## Category

Peptide Chemistry

## Key words

## azotides

hetero-Diels-Alder reaction
cobalt catalysis
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Azotides as Modular Peptide-Based Ligands for Asymmetric Lewis Acid Catalysis
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## Azotide Ligands for Hetero-Diels-Alder Reactions

Synthesis of the azotide ligands:


1. Lawesson's reagent
2. $\mathrm{BrCH}_{2} \mathrm{COCO}_{2} \mathrm{Et}, \mathrm{KHCO}_{3}$, then $\left(\mathrm{CF}_{3} \mathrm{CO}\right)_{2} \mathrm{O}, 2,6$-lutidine 3. $\mathrm{NaOH}(\mathrm{aq})$, THF

$\mathrm{CICO}_{2} \mathrm{Et}$, DIPEA, then amino alcohol DAST, $\mathrm{CH}_{2} \mathrm{Cl}_{2}$, then $\mathrm{NaHCO}_{3}(\mathrm{aq})$



## Selected examples:


$>95 \%$ conversion, $82 \%$ ee

$55 \%$ conversion, ent-12\% ee

$88 \%$ conversion, $64 \%$ ee

$80 \%$ conversion, $48 \%$ ee

$>95 \%$ conversion, $61 \%$ ee

$>95 \%$ conversion, $57 \%$ ee

Significance: Azotides, which are abundantly found as scaffolds in natural products, are known to coordinate metal ions. The author report new azotide ligands for enantioselective Lewis acid catalysis.

Comment: The ligands were readily prepared from the chiral pool of amino acids and demonstrated enantioselectivity when used as ligands in a cobalt(II)-catalyzed hetero-Diels-Alder reaction.

