## Stereoselective Synthesis of syn- $\beta$-Hydroxy-$\alpha$-vinyl Carboxylate Esters

Category
Metal-Mediated Synthesis

## Key words



## Selected examples:

$86 \%$ yield, $82 \%$ ee dr $>40: 1$



91\% yield, $82 \%$ ee dr $>40: 1$
up to $91 \%$ yield dr > 40:1 up to $89 \%$ ee
$\mathrm{R}=\mathrm{Ph}, \mathrm{Cy},\left(\mathrm{CH}_{2}\right)_{2} \mathrm{Ph}, \mathrm{CH}_{2} \mathrm{OTBDPS}, \mathrm{CHCHPh}, 3$-pyridyl, 2-furyl

$80 \%$ yield, $83 \%$ ee dr > 40:1


$79 \%$ yield, $78 \%$ ee dr > 40:1


83\% yield, 89\% ee dr > 40:1

Significance: The authors report a novel enantioand diastereoselective synthesis of syn- $\beta$-hydroxy-$\alpha$-vinyl carboxylate esters. The reaction proceeds via a reductive aldol reaction of an ethyl allene carboxylate with 10-TMS-9-borabicyclo[3.3.2]decane.

Comment: The exclusive formation of syn-$\beta$-hydroxy- $\alpha$-vinyl carboxylate esters can be explained by an aldol reaction via a chair-like transition state. DFT calculations suggest that the allene hydroboration involves a 1,4-reduction of the ethyl allene carboxylate with 10-TMS-9-borabicyclo[3.3.2]decane.

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