## Metallacycle-Mediated Annulation for the Synthesis of Hydroindanes


$R^{1}=\mathrm{Me}, \mathrm{Bn}$
$\mathrm{R}^{2}=\mathrm{H}, \mathrm{Me}, \mathrm{Ph}$
$\mathrm{R}^{3}=\mathrm{Me}, \mathrm{PMB}$
$\mathrm{R}^{4}=\mathrm{Me}, \mathrm{Ph}, 4-\mathrm{BrC}_{6} \mathrm{H}_{4}, \mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{OPMB}, i$-propenyl
Proposed pathway:

$\longleftarrow$




Selected examples:

$45 \%$ yield

$36 \%$ yield


54\% yield

Significance: Cheng and Micalizio report a stereoselective annulation reaction to afford crossconjugated triene-containing hydroindanes that are subsequently trapped by a dienophile in a [4+2]-cycloaddition reaction to obtain highly functionalized carbo- and heterocyclic systems.

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Comment: The tendency of products of type $\mathbf{A}$ to undergo Diels-Alder-based dimerization upon standing was harnessed to accomplish this reaction cascade of annulation and intermolecular cycloaddition.

