Synthesis of Tertiary and Quaternary Allyl- and Crotylsilanes

Significance: The authors disclose synthetic methods for the preparation of tertiary and quaternary allyl- and crotylsilanes. A lithiation–borylation sequence of alkyl carbamates with silaboronates leads to tertiary silanes with high enantiomeric and diastereomeric ratios. The quaternary allylsilanes were obtained after a sequential lithiation–silylation and lithiation–borylation procedure with comparable enantiomeric ratios.

Comment: The lithiation–borylation pathway was chosen, since the primary silyl-substituted lithiated carbamate intermediate was configurationally unstable. However, the secondary silyl-substituted lithiated carbamates in the reaction sequence towards the quaternary products proved to be configurationally stable at low temperature. The absolute stereochemistry of the isolated products was determined by X-ray crystal structure analysis.