Chiral Brønsted Acid Catalyzed Allylboration of Aldehydes


**Allylboration of Aldehydes**

**Significance:** A highly enantioselective allylboration of aldehydes catalyzed by the chiral Brønsted acid (R)-TRIP is reported by the authors. This transformation shows a broad substrate scope: aryl, heteroaryl, α,β-unsaturated and aliphatic aldehydes can all be efficiently allylated. Furthermore, the crotylboration of benzaldehyde also proceeded smoothly with high diastereo- and enantioselectivity in the presence of this acid catalyst.

**Comment:** Simple starting materials and a commercially available catalyst make this protocol a useful and efficient method for the synthesis of enantoienriched homoallylic alcohols. A transition state where the boronate is activated by protonation of the boronate oxygen with a chiral phosphoric acid is proposed by the authors. To confirm this activation model, further mechanistic investigation may be required.

**Selected examples:**

- PhOH
  - 99% yield
  - er = 99:1

- Ph(CH=CH)OH
  - 94% yield
  - er = 98:2

- PhCH=CHOH
  - 98% yield
  - er = 95:5

With (E)-boronate: 96% yield (anti), er = 98:2

With (Z)-boronate: 95% yield (syn), er = 97:3