Chiral Brønsted Acid Catalyzed Allylboration of Aldehydes


**Allylboration of Aldehydes**

![Reaction Scheme](image)

**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 enantioenriched 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
- PhOH 94% yield, er = 98:2
- PhOH 98% yield, er = 95:5
- with (E)-boronate: 96% yield (anti), er = 98:2
- with (Z)-boronate: 95% yield (syn), er = 97:3