Preparation of Chiral Hydrazines

**Significance:** Zhang and co-workers developed a cobalt-catalyzed hydrogenation of substituted hydrazones, which leads to chiral hydrazines in excellent yield and enantioselectivity. Further functionalization of the hydrazines leads to synthetically useful amines, amides, and pyrazole derivatives.

**Comment:** To emphasize the synthetic value of this hydrogenation, the reaction was performed on a gram scale and a TON of 2000, which is the highest TON for this cobalt-catalyzed asymmetric hydrogenation to date, was achieved. Furthermore, the authors performed deuterium labeling experiments and confirmed that H₂, and not i-PrOH, is the hydrogen source for the reaction.

**Equation:**

\[
\text{CoBr}_2 (1 \text{ mol}) \quad \text{Zn} (10 \text{ mol}) \quad \text{(S,S)-Ph-BPE} (1.05 \text{ mol})
\]

\[
\text{H}_2 (20 \text{ atm}) \quad \text{i-PrOH} (0.2 \text{ M})
\]

\[
50-70 ^\circ \text{C}, 24 \text{ h}
\]