Hypervalent Iodine Compound for Trifluoromethylthiolation
Shibata Reagent II

A reactive trifluoromethylthio (CF$_3$S−) species is generated from the trifluoromethanesulfonyl group by carbene-mediated in situ reduction catalyzed by a copper (I) salt in the presence of an amine, and reacts well with various nucleophiles to afford the CF$_3$S-substituted products.

**Application**

- **Enamines**
  - CuCl (20 mol%)
  - Dioxane, rt

- **Indoles**
  - PhNMe$_2$ (20 mol%)

- **β-Keto esters**
  - 2,4,6-Collidine (20 mol%)

**Yield**

- Enamines: 74 - 97%
- Indoles: 32 - 84%
- β-Keto esters: 48 - 54%

**Reference**