Ligand-Controlled Copper-Catalyzed Oxidation of Benzylamines with Oxygen

**Significance:** Commercially available red copper catalyzed the oxidation of benzylamines with molecular dioxygen in the presence of isoquinoline or 1,10-phenanthroline to give the corresponding benzonitriles (eq. 1) or dibenzylimines (eq. 2).

**Comment:** The SEM analyses of the catalyst before and after the reaction showed that the surface of the catalyst was roughened during the reaction to suggest leaching of copper.

**Notes:**

- **Equation 1:**
  - **Red copper (10 mg)**
  - NH₄Br (1 mmol)
  - Isoquinoline (1.2 mmol)
  - PhMe, 100 °C under O₂ (1 atm)
  - 6 examples
  - Yield:
    - Benzylamines: 65%, 96%, 84%, 98%, >99%, 67%

- **Equation 2:**
  - 2 R₁ NH₂ (1 mmol)
  - NH₄Br (1 mmol)
  - 1,10-phenanthroline (1.5 mmol)
  - PhMe, 100 °C under O₂ (1 atm)
  - 6 examples
  - Yield:
    - Benzylamines: 86%, >99%, >99%
    - Dibenzylimines: >99%

**Keywords:**
- red copper
- benzylamines
- oxidation
- nitriles
- imines

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