Dipeptide Synthesis by Two-Component Organocatalysis

**Significance:** Catalytic peptide-bond formation is an important process in providing effective and economical systems for use in the industrial and pharmaceutical fields. The authors have developed a redox organocatalyst system for the formation of peptide bonds.

**Comment:** The two-component catalytic process provides versatility in dipeptide syntheses. The authors propose a mechanism consisting of a reductant-driven phosphine cycle and an oxidant-driven selenium cycle.

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**Selected examples:**

- Boc$_{(R)}$N$_{HC(O)_{(t-Bu)}}$ 94% yield$^a$
- Boc$_{(R)}$N$_{HC(O)_{(t-Bu)}}$ 84% yield$^a$
- Boc$_{(R)}$N$_{HC(O)_{(t-Bu)}}$ 95% yield
- Boc$_{(R)}$N$_{HC(O)_{(t-Bu)}}$ 91% yield
- Boc$_{(R)}$N$_{HC(O)_{(t-Bu)}}$ 94% yield
- Boc$_{(R)}$N$_{HC(O)_{(t-Bu)}}$ 93% yield

$^a$3 × 0.5 equiv of PhSiH$_3$ was used.

**Proposed mechanism:**

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**Category:** Peptide Chemistry

**Key words:** organocatalysis, redox catalysis, peptide bond formation, seleno esters