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Rapid and Column-Chromatography-Free Peptide Chain Elongation via a One-Flow, Three-Component Coupling Approach
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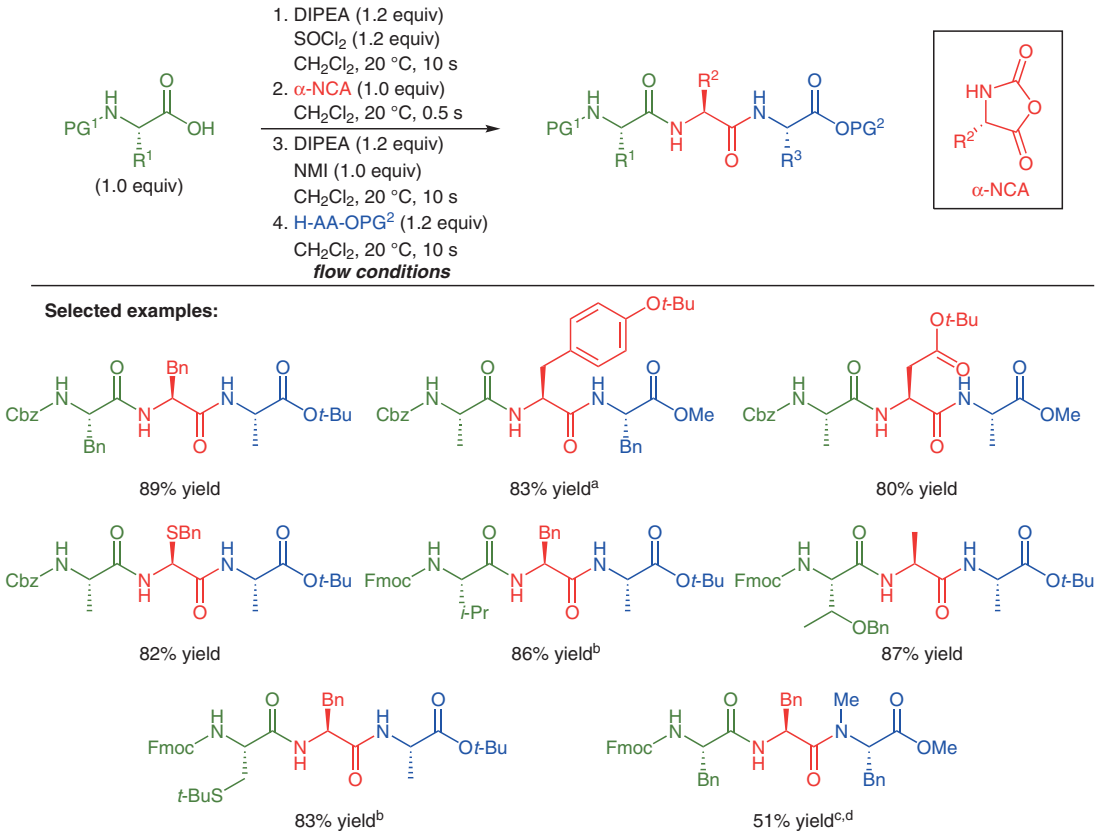
Peptide Elongation Using α-NCAs Both as Nucleophiles and Electrophiles



[a] Reaction time of final step was 10 s (flow) + 1 min (batch). [b] Reaction time of second step was 15 s. [c] Reaction time of final step was 3 h (batch). [d] H-AA-OPG^2 (1.5 equiv) was used.

Significance: Peptides are one of the most useful compounds as drugs. However, conventional methods for peptide synthesis require deprotection steps and cumbersome purification. The authors have developed a rapid and column-chromatography-free three-component peptide-coupling reaction using α-amino acid *N*-carboxy anhydrides (α-NCAs) both as nucleophiles and electrophiles.

Comment: First, the nitrogen of the α-NCAs reacts with amino acid chloride as a nucleophile. Subsequently, a reaction occurs between the acid anhydride moiety of α-NCAs as an electrophile and the amino group of the amino ester, resulting in a formation of various peptides.

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Category
Peptide Chemistry

Key words
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three-component coupling
continuous flow
column-chromatography-free synthesis

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