# Highly Stereoselective Synthesis of γ,δ-Unsaturated Quaternary α-Amino Esters via the Tandem *N*-Alkylation/Claisen Rearrangement of α-Imino Allylesters

(*Graduate School of Engineering, Mie University*) ○Isao Mizota, Toshikazu Fukaya, Yumi Miwa, Yoshinari Kobayashi, Tomoki Ejima, Mizuki Yamaguchi, Makoto Shimizu

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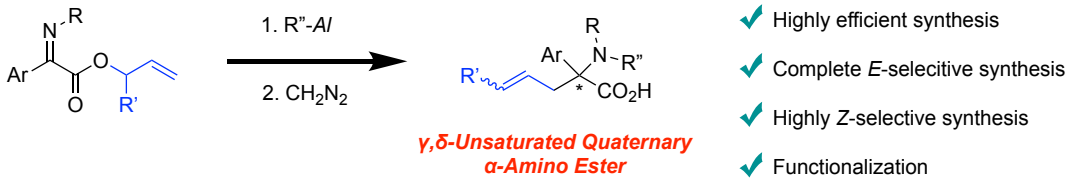
γ,δ-Unsaturated α-amino acids are important molecular backbones present in many natural products and pharmaceuticals such as antithrombotic agents and antibacterial agents. γ,δ-Unsaturated α-amino esters are also important building blocks for the synthesis of α-methylene-γ-butyrolactone or pyrrolidine, which are the core units in many natural products. Therefore, much attention has been paid to the development of practical and efficient approaches to obtain γ,δ-unsaturated α-amino acid derivatives.

Previously, we have reported umpolung reactions for α-imino esters (*N*-alkylation) and integrated various reactions using *N*-alkylation.[1,2] These methods allow the free introduction of various substituents on nitrogen and can yield α-amino acid derivatives in one-pot reactions. In addition, we have previously reported a tandem *N*-alkylation/Claisen rearrangement of α-iminoallyl esters to give γ,δ-unsaturated α-amino esters; however, there are some limitations to this reaction.[3] Herein, we would like to report a more efficient synthetic method to achieve γ,δ-unsaturated quaternary α-amino esters using a broad range of substrates. In addition, a highly *E*- and *Z*- selective Claisen rearrangement was achieved by controlling the reaction conditions and substrates. Moreover, further transformations of the products was achieved.

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