α-Amino acid and peptide synthesis using catalytic cross-dehydrogenative coupling

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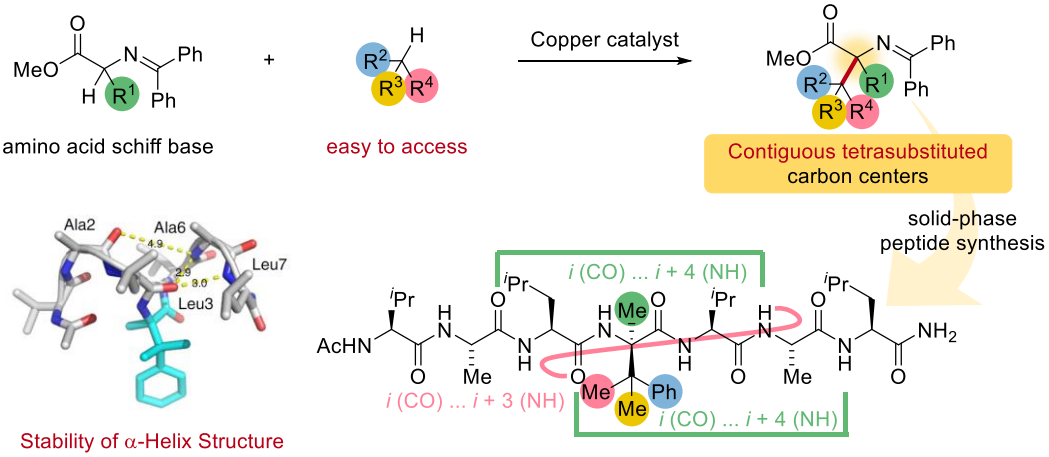
Ionic or radical α-amino Schiff base methods are well known for the synthesis of α,α-disubstituted α-amino acids.[1,2] However, the incorporation of sterically demanding groups is challenging with ionic methods, and radical methods require prefunctionalization of the substrates. We have developed a dehydrogenative coupling process of α-amino acid Schiff bases with hydrocarbon feedstocks for the synthesis of α,α-disubstituted α-amino acid derivatives.[3] These α-amino acid derivatives were transformed into *C*- and *N*-protected amino acids, which could be easily incorporated into peptide synthesis. A range of α-amino acid derivatives could be readily accessed, which includes, notably, those that bear contiguous quaternary centers. Circular dichroism measurements show that the helical peptide structure is stabilized by the highly sterically congested unnatural α-amino acid.



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