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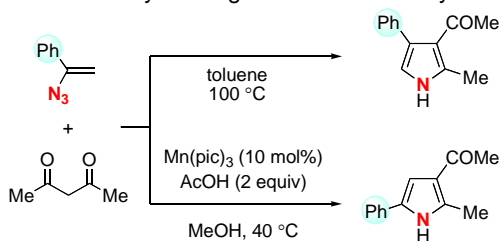
Major Research Interests: **Synthetic Organic Chemistry**

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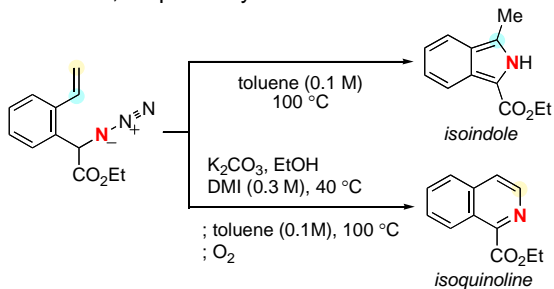
Development of New C-N Bond Forming Reactions

Nitrogen containing organic molecules have attracted much attention as bioactive compounds and functional materials. Thus the development of the efficient construction methods of the C-N bond is desirable for the synthesis of nitrogen containing compounds. In our group are currently focused on the chemical reactivity of organic azides and oxime derivatives, and their chemical activation for generation of nitrogen reactive species such as metal-nitrene complexes, alkylideneaminometal species, and iminyl radicals. Such chemical species would lead to the development of unprecedented C-N bond forming reactions. The products synthesized by these reactions are especially important in medicinal, agricultural, and natural product chemistry as well as in the material science. For example, we have recently found thermal, Cu(II)-, and Mn(III)-catalyzed reactions for the synthesis of tetra- and trisubstituted *N*-H pyrroles from vinyl azides and 1,3-dicarbonyl compounds. By applying these two methods, regioisomeric pyrroles can be prepared selectively starting from the same vinyl azides.



Synthesis of Poly-Substituted *N*-H Pyrroles

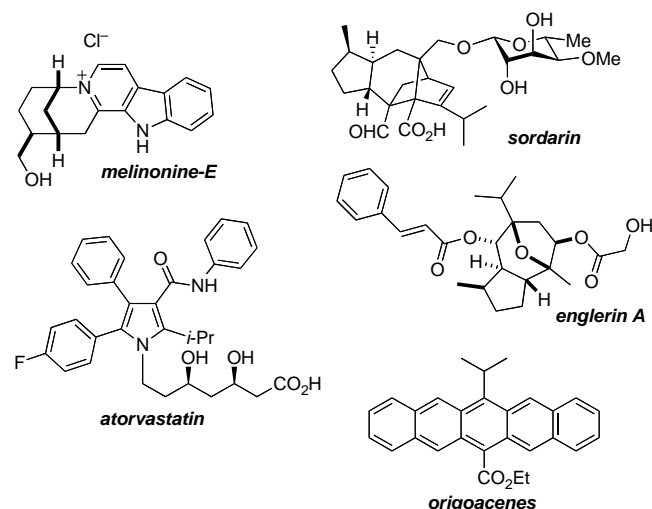
It was recently reported that α -Azido carbonyl compounds bearing a 2-alkenylaryl moiety at α -position are found to be promising precursors for synthesis of isoindole and isoquinoline derivatives via 1,3-dipolar cycloaddition of azides onto alkenes and 6π -electrocyclization of *N*-H imine intermediates, respectively.



Orthogonal Synthesis of Isoindoles and Isoquinolines

Synthesis of Natural and Unnatural Products

We are interested in synthesis of natural and unnatural products bearing complex chemical structures as well as attractive biological activities and chemical properties. Some of current target molecules in our group are described below.



Selected Publications

"Orthogonal Synthesis of Isoindole and Isoquinoline Derivatives from Organic Azides"

Hui, B. W.-Q.; Chiba, S. *Organic Letters*, **2009**, *11*, 729-732.

"Mn(III)-Catalyzed Synthesis of Pyrroles from Vinyl Azides and 1,3-Dicarbonyl Compounds"

Wang, Y.-F.; Toh, K. K.; Chiba, S.; Narasaka, K. *Organic Letters*, **2008**, *10*, 5019-5022. (Highlighted in *Synfacts* **2009**, 143.)

"Synthesis of Polysubstituted *N*-H Pyrroles from Vinyl Azides and 1,3-Dicarbonyl Compounds"

Chiba, S.; Wang, Y.-F.; Lapointe, G.; Narasaka, K. *Organic Letters*, **2008**, *10*, 313-316.

"Rh(II)-catalyzed Isomerization of 2-Aryl-2*H*-azirines to 2,3-Disubstituted Indoles"

Chiba, S.; Hattori, G.; Narasaka, K. *Chemistry Letters*, **2007**, *36*, 52-53.

"Synthesis of (-)-Sordarin"

Chiba, S.; Kitamura, M.; Narasaka, K. *Journal of the American Chemical Society*, **2006**, *128*, 6931-6937.