



2013-2014 POCC Lecture Series

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Prof. Daniel L. Comins

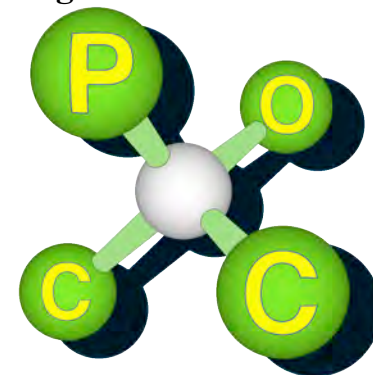
North Carolina State University

Concise Asymmetric Synthesis of Alkaloids

Carolyn Hoff Lynch Lecture Hall

Chemistry Building, University of Pennsylvania

The Philadelphia
Organic Chemists' Club



POCClub.org

Professor Daniel Comins received his B.A. degree in Chemistry in 1972 from the State University of New York at Potsdam and his Ph.D. in 1977 from the University of New Hampshire. During 1977-1979, he was a Postdoctoral Associate under the direction of Professor A.I. Meyers at Colorado State University working on the total synthesis of the antitumor alkaloids N-methylmaysenine and maysine. He joined the faculty of Utah State University in 1979, became an Associate Professor in 1984, and moved to North Carolina State University as a Full Professor in 1989. In 1994, Professor Comins received the NCSU Alumni Association Outstanding Research Award, and was an NCSU Inventors Award Recipient in the years 1993-96, 2000, and 2002-11. He was a consultant with Johnson and Johnson for eight years, and has been or is presently a consultant with Boehringer Ingelheim, SePRO, Scynexis, BioNumerik Pharmaceuticals, Vertellus Specialties, Inc. and the Research Triangle Institute. In 1995 and again in 1999, he was elected to the Advisory Board of the International Society of Heterocyclic Chemists. In 1995, he was selected as a member of the SUNY Alumni Honor Roll, and in 1997 he received the Minerva Award from SUNY-Potsdam. He has been or is a member of the Editorial Advisory Boards of Progress in Heterocyclic Chemistry, Letters in Organic Chemistry, Current Topics in Medicinal Chemistry, and Advances in Heterocyclic Chemistry. Since 1996, Professor Comins has been an Associate Editor of the Journal of Organic Chemistry. In 1998, he became a Japan Society Promotion of Science (JSPS) Research Fellow. Recently, he was a recipient of the 2005 North Carolina ACS Distinguished Lecturer Award and the NCSU Distinguished Service Award. In 2005 he gave the 7th Charles Rees Lecture at the 17th Lakeland Symposium, Grasmere, UK. Recently, he was named a Fellow of the American Chemical Society (2010) and a member of the Honorary Editorial Board of Reports in Organic Chemistry. In 2011, he was elected President of the International Society of Heterocyclic Chemistry (2013-2015). In addition to 12 book chapters and review articles, Professor Comins and coworkers have published over 225 papers including 40 U.S. patents in various areas of organic synthesis and medicinal chemistry.

Abstract: Over the years, heterocycles have been found to be versatile building blocks for the synthesis of functionalized organic compounds and structures of diverse architecture. In this area of organic synthesis, my research group has contributed by exploring the synthesis and synthetic utility of *N*-acyldihydropyridones of the type **I**.

These heterocycles can be prepared enantiopure and have the potential to be used as precursors to indolizidines, quinolizidines, perhydroquinolines, various substituted piperidines, indole alkaloids, pipercolic acids, benzomorphans, peptide mimics, novel amino acids, scaffolds for combinatorial chemistry, and ligands for asymmetric synthesis. The importance of nitrogen heterocycles in natural products, biologically active compounds, and synthetic pharmaceuticals continues to drive research in the development of new strategies and methods for their preparation and application in synthesis. Our latest progress toward the total synthesis of alkaloids **II** and **III** using heterocycles

