

THE FIRST ANNUAL
**John Eisch Lectureship
in Organic Synthesis**

Friday, October 26, 2012, 4 p.m.
Academic Building A, Room G-008

BINGHAMTON
UNIVERSITY
STATE UNIVERSITY OF NEW YORK

DEPARTMENT OF CHEMISTRY

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**“Palladium-Catalyzed Carbon-Nitrogen and
Carbon-Carbon Bond-Forming Reactions:
Progress, Applications and Mechanistic Studies”**

Stephen L. Buchwald
Department of Chemistry, MIT

Cross-coupling methodology is an indispensable part of the everyday repertoire of synthetic organic chemists. In recent years the creation of new ligands has opened the way for the discovery of catalysts with ever-increasing activity and scope. Crucial to our success in the development of new and more generally applicable methods has been the use of a new class of monodentate biaryl phosphine ligands. This lecture will detail our progress in formation of carbon-heteroatom and carbon-carbon bonds. Included will be: 1) studies on structure-reactivity relationships of biaryl phosphine ligands and the catalyst systems based on them; 2) mechanistic studies of both catalytic processes and stoichiometric model systems; 3) our latest progress in the discovery of new catalysts and transformations of interest; and 4) applications of these catalyst systems to the preparation of interesting compounds.

Professor John J. Eisch

John Joseph Eisch joined the Department of Chemistry at Binghamton University in 1972 as chair and professor of chemistry with the mandate of fostering the national reputation of its graduate teaching and research. Over the next six years as chair, he guided the recruiting of six senior and junior faculty with this goal in mind, while expanding his own research in organometallic chemistry to a yearly group of 8 to 12 graduate and postdoctoral students with support from Federal and industrial resources. In 1983 his composite achievements were recognized by his promotion to the SUNY-wide rank of Distinguished Professor of Chemistry.



His prior education and professional experience consisted of receiving his BS degree in chemistry, summa cum laude, from Marquette University in 1952; earning his PhD degree in 1956, with Henry Gilman, at Iowa State University; and serving as Union Carbide Research Fellow with Karl Ziegler at the Max-Planck-Institut

für Kohlenforschung, Mülheim, Germany (1956-57). After junior professional appointments at St. Louis University (1957-59) and at the University of Michigan (1959-63), he became Ordinary Professor and Department Head at the Catholic University of America (1963-1972).

Over the years, his research has involved the fruitful collaboration of more than 200 students as master's, doctoral, postdoctoral or baccalaureate associates. The results have been reported in more than 380 scientific publications, in some 275 invited lectures worldwide, in the monograph "The Chemistry of Organometallic Compounds" (Macmillan, 1967), and in the edited series, "Organometallic Syntheses" (four volumes, J.J. Eisch and R.B. King, authors and editors). He has been an industrial consultant on organometallic chemistry and an expert witness in several patent litigations on Ziegler-Natta polymerization catalysis. Recently he has published his reminiscences as a postdoctoral fellow with Karl Ziegler and as a young academic, in the invited review, "Fifty Years of Ziegler-Natta Polymerization: From Serendipity to Science. A Personal Account," in *Organometallics*, issue of July 23, 2012.

Professor Stephen L. Buchwald

Stephen L. Buchwald was born in 1955 in Bloomington, Indiana. He received his ScB degree from Brown University in 1977, where he worked with Kathlyn A. Parker and David E. Cane, as well as with Professor Gilbert Stork at Columbia University. He entered Harvard University as a National Science Foundation Predoctoral Fellow in 1977 and received his PhD in 1982. His thesis work, with Jeremy R. Knowles, concerned the mechanism of phosphoryl transfer reactions in chemistry and biochemistry. He then was a Myron A. Bantrell postdoctoral fellow at Caltech with Professor Robert H. Grubbs, where he studied titanocene methylenes as reagents in organic synthesis and the mechanism of Ziegler-Natta polymerization.



In 1984 he began as an assistant professor of chemistry at MIT. He was promoted to associate professor in 1989 and to professor in 1993, and was named the Camille Dreyfus Professor in 1997. During

his time at MIT he has received numerous honors including the Harold Edgerton Faculty Achievement Award of MIT; an Arthur C. Cope Scholar Award; the 2000 Award in Organometallic Chemistry, from the American Chemical Society; and a MERIT award, from the National Institutes of Health. He has also been the recipient of the Bristol-Myers Squibb Distinguished Achievement Award and the CAS Science Spotlight Award, both in 2005, as well as the American Chemical Society's Award for Creative Work in Synthetic Organic Chemistry and the Siegfried Medal Award in Chemical Methods which Impact Process Chemistry, both in 2006. In 2010, he received the Gustavus J. Esselen Award for Chemistry in the Public Interest.

In 2000, he was selected as a fellow of the American Academy of Arts and Sciences and in 2008 he was selected as a member of the National Academy of Science. He is the coauthor of more than 375 published or accepted papers and 42 issued patents. He serves as a consultant to a number of companies and is an associate editor of *Chemical Science and Advanced Synthesis and Catalysis*.