The Benzoin Condensation:
a new catalysis for an old reaction

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The Benzoin Condensation: a New Catalysis for an Old Reaction

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The umpolung strategy represents nowadays a powerful tool for the development of new, selective, and efficient routes for the synthesis of target molecules. The benzoin condensation is a classical example of this concept as it proceeds through the generation of an acyl anion equivalent from an aldehyde, pyruvate, acylsilane, acylphosphonate, or α-diketone. Non-enzymatic benzoin reactions have been realized catalytically only by the use of the cyanide anion, N-heterocyclic carbenes (NHCs), or metallophosphites, the efficiency of each class of catalyst being strictly dependent on the family of acyl anion precursors employed.
In this talk, the unprecedented reactivity of methylsulfinyl carbanion (dimsyl ion) as a new class of catalyst capable of promoting the challenging cross-benzoin condensation and Stetter-like reaction is presented.

Olga BORTOLINI received a Laurea degree in Chemistry from the University of Padua in 1979. 1980-1981 Accademia dei Lincei research fellow, Padua University. Researcher of the Italian National Research Council (CNR) since 1982. 1983 post-doctoral research fellow at CNRS Laboratoire de Chimie de Coordination, Toulouse (France) in Prof. B. Meunier's group. 1987-2003 Associate Professor of Organic chemistry at the University of Ferrara. 2004-2010 Full Professor of Organic Chemistry at the University of Calabria and since 2011 at University of Ferrara. Since 2012 Dean of the Chemistry Board of Studies at the University of Ferrara, and Vice-Dean of the Department of Chemistry and Pharmaceutical Sciences. June-August 1989, June-July 1992 and April-May 1994 visiting professor at Purdue University, West Lafayette IN, USA, in Prof. R.G. Cooks's group.

Author of 170 papers in international journals. She has published some reviews in international series as CRC and Patai-Rappoport (Wiley) and a book of Introduction to Organic Chemistry. She has given invited lectures at several international and national congresses and at Italian and foreign Universities. She had the primary responsibility of many National Research Programs (COFIN-PRIN) and PON. Memberships: Italian Chemical Society (SCI) and American Society for Mass Spectrometry (ASMS).

International collaborations: University of Southern California LA (USA), Prof. C. McKenna, Dr. F. Devlin; Purdue University, West Lafayette IN (USA), Prof. R. G. Cooks; University of Zaragoza (SP), Prof. P. Merino; National collaborations: Università di Roma Tor Vergata, Prof. V. Conte, Prof. B. Floris; Università di Pisa, Prof. C. Chiappe; Università di Padova, Prof. M. Bonchio, Prof. G. Licini; Università della Calabria Prof. De Nino and Dr. L. Maiuolo; CNR Padova, Prof. P. Traldi.

Major scientific interests: metal-catalyzed oxidations, oxidations with purely organic systems, bio-oxidations (enzymes and microorganisms). Regio-, diastereo- and enantioselective oxidations using economical bulk oxidants like H2O2, KHSO5 and perborate. Bile acids as chiral inducers in both oxidation processes and host-guest racemate resolutions. Mass spectrometry for the characterization of labile intermediates in mechanism studies. Cycloaddition reactions for the preparation of pharmacologically active compounds. Ionic liquids and PEGs as valuable substitutes of common organic solvents in oxyfunctionalization and cycloaddition reactions. Organocatalysed reactions promoted by *N*-heterocyclic carbenes and equivalents for new C-C bond formation.