

Catalysis with Organic Molecules: A Success Story in Modern Catalytic Chemistry

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“The chemistry of non-natural organic catalysts has a relatively short history. With the exception of a few substances, which were purely found by chance in the last century, the systematic work on this topic began in 1908. At that time Bredig and Fajans discovered the stereospecific catalytic effect of optically active alkaloids. In 1924 the author learned about these studies in Karlsruhe and began to focus on the problem of organic catalysis.”

With these words (here translated from German) Wolfgang Langenbeck from the Deutsche Akademie der Wissenschaften zu Berlin began his review on “Organic Catalysts” in 1966 (published in *Fortschritte der Chemischen Forschung*, Vol. 6, Springer Verlag, Berlin, p. 301). Why was it then decided – almost 100 years after the beginning of those studies in 1908 – that it was time for a focused issue of *Advanced Synthesis & Catalysis* on “organic catalysis”?

Undoubtedly, organic synthesis has matured during the past decades, and aspects of selectivity and efficiency of organic reactions have more and more become prime

research targets. Catalysis significantly contributed to the advances of organic chemistry, and not surprisingly, the 2001 Nobel Prizes in Chemistry were awarded to Noyori, Sharpless, and Knowles for their outstanding contributions in this particular area. Often “catalysis” is regarded as being identical to “metal catalysis”, and only recently have processes catalyzed by small, purely organic molecules (re)gained attention. Stimulated by several breakthroughs the community began to focus its attention on alternatives to metal catalysis, and many more reactions were discovered that could efficiently be catalyzed by simple, low-molecular weight organic molecules. Whereas the basis of this field was, in fact, set almost 100 years ago (and maybe even earlier), the use of organic catalysts has only recently been recognized as a valuable addition and/or useful alternative to existing, well-established (often metal-based) methodologies. These developments have led to more options in preparative synthetic organic chemistry and, for sure, chemistry as a whole will benefit from these highly relevant discoveries. Catalysis with organic molecules is only one success story in modern catalytic chemistry – but a very promising one as nicely demonstrated by the excellent contributions presented by the authors of this special issue of *Advanced Synthesis & Catalysis*. Thanks to all of them for giving us a broad spectrum of current research in this exciting new/old area.

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