

## Catalysis to increase complexity: stereoselective synthesis of $sp^3$ -rich building blocks

Mariola Tortosa

Departamento de Química Orgánica and Institute for Advanced Research in Chemical Sciences (IAChem),  
 Universidad Autónoma de Madrid, Madrid 28049, Spain  
[mariola.tortosa@uam.es](mailto:mariola.tortosa@uam.es), <http://tortosagroup.com>

Transition metal catalysis is a powerful tool for the creation of stereocenters in organic molecules. Both, the use of a chiral catalyst or a chiral starting material, are valuable and complementary approaches to accomplish this goal. In our group, we have recently focused on the development of metal-catalyzed enantioselective and stereospecific transformations, in the context of carbon-boron bond formation and carbon-nitrogen bond cleavage. These methods have allowed us to prepare a broad variety of useful synthetic intermediates, with a special focus on functionalized small rings. Some of these transformations will be presented in this talk.



**Mariola Tortosa** obtained her B.S. in Chemistry from the Universidad Autónoma de Madrid (UAM) in 1999. She then joined the group of Dr. R. Fernández de la Pradilla at the Instituto de Química Orgánica General (Madrid, Spain) to carry out her graduate work on the development of new asymmetric methods using chiral sulfoxides. In 2004, she received the Lilly Award for PhD students. In 2005, she moved to The Scripps Research Institute in Florida (USA) to work as a Postdoctoral Fellow with Prof. William Roush. Her research in Florida was directed toward completion of the total synthesis of the antitumor agent Superstolide A using a transannular Diels–Alder strategy. In 2008 she returned to the Instituto de Química Orgánica General (Madrid, Spain) as a Research Assistant. In 2011 she started her independent research at the Universidad Autónoma de Madrid as a Ramón y Cajal Fellow. More recently, she received the ERC-Starting Grant awarded by the European Research Council to work on the project “Design and Applications of Unconventional Borylation Reactions”. Her research interests include boron chemistry, asymmetric catalysis and the synthesis of natural products. In December 2017, she was promoted to Associate Professor. Her research was awarded with many distinctions, e.g., Thieme Journal Award (2015), Eli Lilly Young Researcher Award (2014) RSEQ Young Investigator Award 2014, ERC Starting Grant (2013), JSP Fellowship 48th Bürgenstock Conference (2013). Since November 2019, she serves as an Associate Editor of the ACS journal Organic Letters. She is also a member of the editorial advisory board of Angew. Chem. Int. Ed. She published more than 50 papers in such journals as Chem. Sci., Angew. Chem. Int. Ed., ACS Catal., Nature Chemistry, Org. Lett. Her H-index is 24 (based on Scopus).



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