Especies de boro nucleófilas:

Nuevas oportunidades para la formación de enlaces C–B

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Universidad Autónoma de Madrid

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Boronic esters are versatile synthetic intermediates for the preparation of a wide range of organic molecules. The development of new methods to create C-B bonds in an efficient, inexpensive, and environmentally friendly way is therefore an important challenge in organic chemistry. Traditionally, the methods to form C-B bonds have mostly been based on the electrophilic nature of boron. While this classical approach works well for reactions with nucleophilic partners, it naturally limits the types of boron compounds that can be prepared. Recently, copper-catalyzed borylations have emerged as a new source of nucleophilic boron. The lower price and toxicity of copper versus other transition metals and the unique reactivity of the boryl-copper intermediates make these processes particularly attractive. Inspired by unsolved problems found in the total synthesis of complex molecules, we have used boryl-copper species to synthesize 1,4-diols, trisubstituted alkenes, and cyclopropyl derivatives. These and other preliminary studies ongoing in our group 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) 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) 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.

Fellowships and Awards

- 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
- 2010- Ramón y Cajal Contract
- 2008-2010 Juan de la Cierva Contract (Research Associate)
- 2005-2007 Postdoctoral Fellowship (Spanish government)
- 2001-2005 Predoctoral Fellowship (Spanish government)
- 2004 Eli Lilly Ph.D. award
- 1999 Universidad Autónoma de Madrid Award (for the top students in Chemistry)
- 1997-2000 Fellowship from the Madrid Regional Government