

Palladium catalyzed coupling reactions of arenes with cooperating pyridone ligands

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Palladium-catalyzed C-C coupling reactions that directly functionalize C-H bonds have emerged as a powerful tool for C-C bond formation. These reactions do not require a previous functionalization of every reaction partner and therefore conform to the principles of green chemistry, standing in a good position towards a more sustainable chemical synthesis. We have been looking closely at some of these transformations in order to understand them better and make them more efficient. In particular we have been using chelating cooperating ligands such as [2,2'-bipyridin]-6(1H)-one (bipy-6-OH). Palladium complexes derived from this ligand are capable of accelerating these reactions, considerably reducing the reaction times. Mechanistic studies show the cooperating effect of the ligand and its assistance in the C-H cleavage step by a concerted mechanism in the metal coordination sphere. The application of this type of ligands to direct arylations as well as aerobic oxidative Heck reactions of arenes will be discussed.



Ana C. Albéniz is a Full Professor of Inorganic Chemistry at the University of Valladolid. Born and raised in Calahorra (La Rioja), she studied chemistry at the University of Zaragoza and obtained her Ph. D. at the University of Valladolid in 1989 under the supervision of Prof. Pablo Espinet. She spent two years working as a postdoctoral Fulbright fellow in Prof. Crabtree's group at Yale University. Then, she returned to Valladolid as an Associate Professor and, since 2007, she is a Full Professor working in the Center for Innovation in Chemistry and

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Her research interests include the development and mechanistic study of new metal-catalyzed reactions applied to organic synthesis, the synthesis of new polymers, and their application in catalysis as recyclable supports for catalysts and reagents.

Among other activities, she has been chemistry coordinator of the Spanish National Evaluation Agency (ANEP) and currently she is the President of the Organometallic Chemistry Group (GEQO) of the Spanish Royal Society of Chemistry. She is a member of the Editorial Board of the European Journal of Inorganic Chemistry and of the International Advisory Board of Organometallics (ACS). She has been recognized as Chemistry Europe fellow (2020).