

## BRIEF C.V. - Prof. Pedro MERINO

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### Current Position

Full Professor (Chair of Organic Chemistry)

### Research Areas of Interest

Organic Chemistry. Asymmetric Synthesis. Asymmetric Catalysis. Organocatalysis. Bioorganic Chemistry. Carbohydrates. Nucleosides. Aminoacids. Nitrogenated compounds. Heterocycles. Organometallics. Theoretical calculations.

### Professional Career

1989-1992 University of Ferrara (Italy), Prof. A. Dondoni  
1992-1993 Assistant Professor at the University of Zaragoza  
1993-1995 Associate Professor at the University of Zaragoza  
1995-2006 Senior Lecturer at the University of Zaragoza  
2005 Habilitation as Full Professor of Organic Chemistry  
since 2006 Chair in Organic Chemistry at the University of Zaragoza

### Memberships

Royal Spanish Society  
American Chemical Society  
International Society of Heterocyclic Chemistry

### Publications

(more than 200 ISI publications since 1987)

h-index = 42

Several reviews, treatises and chapter books (*Science of Synthesis*, *Organic Reactions*, *Comprehensive Organic Synthesis*)

## Selected recent publications from the last 5 years

Glycomimetics Targeting Glycosyltransferases: Synthetic, Computational and Structural Studies of Less-Polar Conjugates.

Ghirardello, M.; de las Rivas, M.; Lacetera, A.; Delso, I.; Lira-Navarrete, E.; Tejero, T.; Martin-Santamaria, S.; Hurtado-Guerrero, R.; Merino, P.  
*Chem. Eur. J.* **2016**, *22* (21), 7215-7224.

Mechanistic Insights in the Mode of Action of Bifunctional Pyrrolidine-Squaramide-derived Organocatalysts.

Roca-López, D.; Uria, U.; Reyes, E.; Carrillo, L.; Jørgensen, K. A.; Vicario, J. L.; Merino, P.,  
*Chem. Eur. J.* **2016**, *22*, 884-889.

Revisiting Oxime-Nitrone Tautomerism. Evidences of Nitrone Tautomer Participation in Oxime Nucleophilic Addition Reactions.

Roca-López, D.; Darù, A.; Tejero, T.; Merino, P.,  
*RSC Adv.* **2016**, *6*, 22161-22173.

Revealing Stepwise Mechanisms in Dipolar Cycloaddition Reactions: Computational Study of the Reaction between Nitrones and Isocyanates.

Daru, A.; Roca-López, D.; Tejero, T.; Merino, P.,  
*J. Org. Chem.* **2016**, *81*, 673-680.

Understanding Bond Formation in Polar One-Step Reactions. Topological analyses of the Reaction between Nitrones and Lithium Ynolates.

Roca-López, D.; Polo, V.; Tejero, T.; Merino, P.,  
*J. Org. Chem.* **2015**, *80*, 4076-4083.

A Natural Ternary Complex Trapped in Crystal Reveals the Catalytic Mechanism of a Retaining Glycosyltransferase.

Albesa-Jové, D.; Mendoza, M. F.; Rodrigo-Unzueta, A.; Gomollón-Bel, F.; Cifuentes, J.; Urresti, S.; Comino, N.; Gómez, H.; Romero-García, J.; Lluch, J. M.; Sancho-Vaello, E.; Biarnés, X.; Planas, A.; Merino, P.; Masgrau, L.; Guerin, M. E.,  
*Angew. Chem. Int. Ed.* **2015**, *54*, 9898-9902.

Oxidation reactions of Furan.

Merino, P.,  
*Org. React.* **2015**, *87*, 1-256.

DFT Investigation of the Mechanism of E/Z Isomerization of Nitrones.

Roca-Lopez, D.; Tejero, T.; Merino, P.  
*J. Org. Chem.* **2014**, *79*, 8358-8365

Highly Diastereoselective 1,3-Dipolar Cycloadditions of Chiral Non-Racemic Nitrones to 1,2-Diaza-1,3-dienes: An Experimental and Computational Investigation.

Majer, R.; Konechnaya, O.; Delso, I.; Tejero, T.; Attanasi, O. A.; Santeusano, S.; Merino, P.  
*Org. Biomol. Chem.* **2014**, *12*, 8888-8901

Theoretical Elucidation of the Mechanism of the Cycloaddition between Nitrone Ylides and Electron-deficient Alkenes.

Merino, P.; Tejero, T.; Diez-Martinez, A.  
*J. Org. Chem.* **2014**, *79*, 2189-2202

A Friedel–Crafts alkylation mechanism using an aminoindanol-derived thiourea catalyst.

Roca-López, D.; Marques-López, M. E.; Alcaine, A.; Merino, P.; Herrera, R. P.  
*Org. Biomol. Chem.* **2014**, *12*, 4503-4510

[2n2π + 2n2π] Cycloadditions: An alternative to forbidden [4π + 4π] processes. The Case of Nitrones Dimerizations

David Roca-López, D.; Tejero, T.; Caramella, P.; Merino, P.  
*Org. Biomol. Chem.* **2014**, *12*, 517-525

Evasive Neutral 2-Aza-Cope Rearrangements. Kinetic and Computational Studies with Cyclic Nitrones  
Delso, I.; Melicchio, A.; Isasi, A.; Tejero T. and Merino, P.  
*Eur. J. Org. Chem.* **2013**, 5721-5730

Synthesis of O- and C-glycosides derived from β-(1,3)-D-glucans  
Marca, E.; Valero-Gonzalez, J.; Delso, I.; Tejero, T.; Hurtado-Guerrero, R. and Merino, P.  
*Carbohydr. Res.* **2013**, *382*, 9-18.

Stereoselective hydride transfer by aryl-alcohol oxidase, a member of the GMC superfamily.  
A. Hernandez-Ortega, P. Ferreira, P. Merino, M. Medina, V. Guallar, A. T. Martínez  
*ChemBioChem* **2012**, *13*, 427-435

Sequential Nucleophilic Addition/Intramolecular Cycloaddition to Chiral Non-racemic Cyclic Nitrones: A Highly Stereoselective Approach to Polyhydroxy-nor-Tropane Alkaloids.  
I. Delso, T. Tejero, A. Goti, P. Merino.  
*J. Org. Chem.* **2011**, *76*, 4139-4143.

Nitrone ylides: Two possible 1,3-dipolar cycloadditions but only one stepwise formation of all-cis-5-aryl-2,3,5-trisubstituted N-hydroxypyrrolidines.  
P. Merino, T. Tejero, A. Diez-Martinez, Z. Gultekin  
*Eur. J. Org. Chem.* **2011**, 6567-6573.

Structural insights into the mechanism of Protein O-fucosylation.  
E. Lira-Navarrete, J. Valero-Gonzalez, R. Villanueva, M. Martinez-Julvez, T. Tejero, P. Merino, S. Panjikar, R. Hurtado-Guerrero  
*PLoS One* **2011**, *9*, e25365 (14 pages).

Thiourea-Catalyzed organocatalytic enantioselective Michael addition of diphenyl phosphite to nitroalkenes.  
A. Alcaine, E. Marques-Lopez, P. Merino, T. Tejero, R. P. Herrera.  
*Org. Biomol. Chem.* **2011**, *9*, 2777-2783

Expanding the limits of Boron chemistry: Synthesis of functionalized arylboronates.  
P. Merino, T. Tejero.  
*Angew. Chem. Int. Ed.* **2010**, *49*, 7614-7615

Tunable diastereoselection of biased rigid systems by Lewis acid-induced conformational effects: A rationalization of the vinylation of cyclic nitrones en route to polyhydroxylated pyrrolidines.  
I. Delso, E. Marca, V. Mannucci, T. Tejero, A. Goti, P. Merino.  
*Chem.Eur. J.* **2010**, *16*, 9910-9919.

## Invited Conferences

More than 60 invited conferences in symposia (plenary and invited speaker) and universities

## Evaluation Activities

### European Community

Expert evaluator in several schemes of FP6 (IPs, RTN, etc.). 2003-2005

Expert evaluator in several schemes of FP7 (COFUND, IAPP, IRSES). 2008-2013

Vice-chair of CHEM Panel in FP6 (Marie Curie Actions-RTN) 2005-2006  
Vice-chair of CHEM Panel in FP7 (Marie Curie Actions-ITN) 2007,2008  
Chairman of CHEM Panel in FP7 (Marie Curie Actions-ITN) 2008, 2011, 2012, 2013  
Chairman of CHEM Panel in Horizon 2020 (Marie Curie Actions-ITN) 2014, 2015  
Vice-chair of CHEM Panel in Horizon 2020 (Marie Curie Actions-ITN) 2017

#### National Agencies

Chemistry Coordinator for the Region of Andalucia (Spain)  
Expert evaluator of Research Projects and Full Member of the Panel of National Research Agency of Portugal (FCT). CHEM Panel 2012 & 2014  
Expert evaluator of of Research Projects for National Research Agency of Italy (CINECA). Since 2011  
Collaboration as evaluator of Research Projects in other National Research Agencies from Czech Republic (CSK), France (ANR) and USA (NSF)  
Expert evaluator of several regional agencies in Spain including Full membership of National Chemistry Panel. Since 2005

#### **Other Activities**

15 Ph.D. thesis supervised  
Principal investigator of >10 Projects of National Spanish agencies  
Editor of Wiley's book: *Chemical Synthesis of Nucleoside Analogues* (published in 2013). 925 pp  
Award as referee of excellence for Angew. Chem. (2009-2013) and EurJOC (2010)

#### **Research Interests**

##### - General Areas

Asymmetric Synthesis  
Asymmetric Catalysis  
Organometallic Chemistry  
Chemical Biology  
Bioorganic Chemistry  
Nucleoside Analogues  
Glycochemistry & Glycobiology  
Theoretical & Computational Chemistry

##### - Current Projects

Rational design of glycomimetics inhibitors of glycosyltransferases and transglycosylases  
Theoretical studies on organic reactions (cycloadditions, nucleophilic additions)  
Application of nitrene chemistry to the synthesis of nitrogenated biologically active compounds  
Development of new organocatalytic reactions  
Nucleophilic Additions of Organometallic Reagents  
Synthesis of nucleoside analogues