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**Education, Qualifications and Research Experience**

2010- Professor at the University of Oviedo (Spain).

2006-2010 Assistant Professor at the University of Oviedo (Spain).

2002-2006 "Ramón y Cajal" Researcher (funded by "Ministerio de Ciencia y Tecnología", Spain) at the University of Oviedo (Spain).

1999-2001 Researcher (hired by the University of Oviedo, Spain).

1998-1999 Teaching assistant at the National High School of Engineer in Chemistry and Physic of Bordeaux (University of Bordeaux, France).

Participation for 12 months in the research project: "*Syntheses of fluoroionophores and application in calcium titration*" in collaboration with Dr. René Lapouyade.

1996-1998 Postdoctoral Fellow (funded by "Ministerio de Educación y Ciencia") at the University of Zaragoza (Spain).

Participation for 22 months in the research project: "*Activation of alkynes promoted by a cyclopentadienyl-osmium fragment*" under the supervision of Prof. Miguel Angel Esteruelas.

1996 Ph. D. in Chemistry under the supervision of Prof. Pierre H. Dixneuf and Dr. Bernard Demerseman. "*Synthesis of optically active keto-phosphines and their coordination on a ruthenium center*" (University of Rennes I, France).

1993-1996 Predoctoral Fellow (funded by "Région Bretagne", France).

1993 B. Sc. in Chemistry, University of Rennes I (France).

1992 Undergraduate Fellowship at the Rhône Poulenc Society ("Centre de Recherches de Carrières", Lyon, France). Participation for six months in the research project:

"Polymerization and hydrosilylation reactions" under the supervision of Dr. Gérard Mignani.

### Research area

- Organometallic Chemistry (essentially based on ruthenium chemistry)
- Catalytic processes in environmentally benign solvents
- Design of phosphorous ligands (in particular water-soluble phosphines)

### Papers in peer-reviewed journals

1- "The hemilabile behavior of alkyl diphenylphosphinoacetate ligands promoting the reversible coordination of small molecule on ( $\eta^6$ -arene)ruthenium centres". B. Demerseman, C. Renouard, R. Le Lagadec, M. Gonzalez, P. Crochet, P. H. Dixneuf, *J. Organomet. Chem.*, **1994**, 471, 229-239.

2- "Chelating and hemilabile properties of  $\beta$ - and  $\gamma$ -keto phosphines: ( $\eta^6$ -arene)ruthenium(II) derivatives from  $\gamma$ -keto phosphines and synthesis and reactivity of bis( $\eta^2$ -keto phosphine-P,O)ruthenium complexes". B. Demerseman, R. Le lagadec, B. Guilbert, C. Renouard, P. Crochet, P. H. Dixneuf, *Organometallics*, **1994**, 13, 2269-2283.

3- "Interference of phosphino enolato ligands in the 1-alkyne-to-vinylidene rearrangement: Syntheses of the isomeric [(mesitylene)Ru( $\eta^3$ -CH=CHC(PPh<sub>2</sub>)(Me)C(Bu<sup>t</sup>)=O)][PF<sub>6</sub>] and [(mesitylene)Ru( $\eta^3$ -C(=CH<sub>2</sub>)C(PPh<sub>2</sub>)(Me)C(Bu<sup>t</sup>)=O)][PF<sub>6</sub>] ruthenium(II) complexes". P. Crochet, B. Demerseman, *Organometallics*, **1995**, 14, 2173-2176.

4- "Reactivity of diphenylphosphino enolato ligands in ruthenium(II) complexes and related processes involving easy cleavage of a phosphorus-carbon bond in functionalized phosphine ligands". P. Crochet, B. Demerseman, C. Rocaboy, D. Schleyer, *Organometallics*, **1996**, 15, 3048-3061.

5- "Intramolecular C-C bond formation from  $\beta$ -ketophosphines and allenylidene ligands in related cyclopentadienyl and indenyl ruthenium (II) complexes. X-ray crystal structure of (S<sub>Ru</sub>R<sub>C</sub>/R<sub>Ru</sub>S<sub>C</sub>) [Ru( $\eta^5$ -C<sub>9</sub>H<sub>7</sub>)(PPh<sub>3</sub>){ $\eta^2$ -(P,O)-Ph<sub>2</sub>PCH(Me)C(Bu<sup>t</sup>)=O}][PF<sub>6</sub>] and (S<sub>Ru</sub>R<sub>C</sub>/R<sub>Ru</sub>S<sub>C</sub>)[Ru( $\eta^2$ -(C,P)-C(C=C=CPh<sub>2</sub>)CH[C(=O)Bu<sup>t</sup>][PPh<sub>2</sub>]{ $\eta^5$ -C<sub>9</sub>H<sub>7</sub>)(PPh<sub>3</sub>)]". P. Crochet, B. Demerseman, M. I. Vallejo, M. P. Gamasa, J. Gimeno, J. Borge, S. García-Granda, *Organometallics*, **1997**, 16, 5406-5415.

6- "Unusual activation of 1,1-diphenyl-2-propyn-1-ol mediated by the Os( $\eta^5$ -C<sub>5</sub>H<sub>5</sub>) unit". P. Crochet, M. A. Esteruelas, E. Gutiérrez-Puebla, *Organometallics*, **1998**, 17, 3141-3142.

7- "New cyclopentadienylosmium compounds containing unsaturated carbon coligands: synthesis, structure and reactivity of Os( $\eta^5$ -C<sub>5</sub>H<sub>5</sub>)Cl(=C=C=CPh<sub>2</sub>)(P<sup>t</sup>Pr<sub>3</sub>)". P. Crochet, M. A. Esteruelas, A. M. López, N. Ruiz, J. I. Tolosa, *Organometallics*, **1998**, 17, 3479-3486.

- 8- "The seven-coordinate dihydrido-complex  $\text{OsH}_2(\kappa^2\text{-O}_2\text{CCH}_3)(\kappa^1\text{-OC(O)CH}_3)(\text{P}^i\text{Pr}_3)_2$  as precursor of the new organometallics compounds containing unsaturated  $\eta^1$ -carbon ligands". P. Crochet, M. A. Esteruelas, A. M. López, M. P. Martínez, M. Olivan, E. Oñate, N. Ruiz, *Organometallics*, **1998**, *17*, 4500-4509.
- 9- "Oxidative addition of HX (X = H, SiR<sub>3</sub>, GeR<sub>3</sub>, SnR<sub>3</sub>, Cl) molecule to the complex  $\text{Os}(\eta^5\text{-C}_5\text{H}_5)\text{Cl}(\text{P}^i\text{Pr}_3)_2$ ". M. Baya, P. Crochet, M. A. Esteruelas, E. Gutiérrez-Puebla, N. Ruiz, *Organometallics*, **1999**, *18*, 5034-5043.
- 10- "New fluoroionophores from aniline dimer derivatives: a variation of cation signalling mechanism with the number of amino groups". P. Crochet, J. P. Malval, R. Lapouyade, *Chem. Commun.*, **2000**, 289-290.
- 11- "Synthesis and characterization of hydride-alkynyl, allenylidene, carbyne and functionalized-alkynyl complexes containing the  $[\text{Os}(\eta^5\text{-C}_5\text{H}_5)(\text{P}^i\text{Pr}_3)_2]^+$  fragment: the complex  $[\text{Os}(\eta^5\text{-C}_5\text{H}_5)(\text{C}=\text{C}=\text{CPh}_2)(\text{P}^i\text{Pr}_3)]\text{PF}_6$ , a new type of allenylidene derivative from reactivity point of view". M. Baya, P. Crochet, M. A. Esteruelas, E. Gutiérrez-Puebla, A. M. López, J. Modrego, E. Oñate, N. Vela, *Organometallics*, **2000**, *19*, 2585-2596.
- 12- "Generation of functionally substituted cyclopentadienyl ligands in osmium(IV) chemistry". M. Baya, P. Crochet, M. A. Esteruelas, E. Oñate, *Organometallics*, **2001**, *20*, 240-253.
- 13- "Formation of cationic half-sandwich osmium-vinylidene complexes from  $[\text{Os}(\eta^5\text{-C}_5\text{H}_5)(\text{P}^i\text{Pr}_3)_2]^+$  and terminal alkynes". M. Baya, P. Crochet, M. A. Esteruelas, A. M. López, J. Modrego, E. Oñate, *Organometallics*, **2001**, *20*, 4291-4294.
- 14- "Five- and six-coordinate ruthenium(II) complexes containing 2-Ph<sub>2</sub>PC<sub>6</sub>H<sub>4</sub>CH=N<sup>t</sup>Bu and Ph<sub>2</sub>PC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>NH<sup>t</sup>Bu as chelate ligands: Synthesis, characterization and catalytic activity in transfer hydrogenation of ketones". P. Crochet, J. Gimeno, S. García-Granda, J. Borge, *Organometallics*, **2001**, *20*, 4369-4377.
- 15- "Two- and four-electron alkyne ligands in osmium-cyclopentadienyl chemistry: consequences of the  $\pi_1 \rightarrow \text{M}$  interaction". J. J. Carbó, P. Crochet, M. A. Esteruelas, Y. Jean, A. Lledós, A. M. López, E. Oñate, *Organometallics*, **2002**, *21*, 305-314.
- 16- "Neutral and cationic ( $\eta^6$ -arene)-ruthenium(II) complexes containing the iminophosphorane-phosphine ligand Ph<sub>2</sub>PCH<sub>2</sub>P(=N-*p*-C<sub>5</sub>F<sub>4</sub>N)Ph<sub>2</sub>: influence of the arene ring in catalytic transfer hydrogenation of cyclohexanone". V. Cadierno, P. Crochet, J. García-Álvarez, S. E. García-Garrido, J. Gimeno, *J. Organomet. Chem.*, **2002**, *663*, 32-39.
- 17- "Novel ruthenium(II) complexes containing imino- or aminophosphine ligands for catalytic transfer hydrogenation". P. Crochet, J. Gimeno, J. Borge, S. García-Granda, *New J. Chem.*, **2003**, *27*, 414-420.
- 18- "Ruthenium(II) and ruthenium(IV) complexes containing  $\kappa^1$ -P-,  $\kappa^2$ -P,O- and  $\kappa^3$ -P,N,O-iminophosphorane-phosphine ligands Ph<sub>2</sub>PCH<sub>2</sub>P{=NP(=O)(OR)<sub>2</sub>}Ph<sub>2</sub> (R = Et, Ph): synthesis, reactivity, theoretical, studies and catalytic activity in transfer hydrogenation of cyclohexanone". V. Cadierno, P. Crochet, J. Díez, J. García-Álvarez, S. E. García-Garrido, J. Gimeno, *Inorg. Chem.*, **2003**, *42*, 3293-3307.

- 19- "Synthesis, reactivity and catalytic activity in transfer hydrogenation of ketones of ruthenium(II) and ruthenium(IV) complexes containing the novel *N*-thiophosphorylated iminophosphorane-phosphine  $\text{Ph}_2\text{PCH}_2\text{P}\{\text{=NP(=S)(OR)}_2\}\text{Ph}_2$  (R = Et, Ph)". V. Cadierno, P. Crochet, J. Díez, J. García-Álvarez, S. E. García-Garrido, S. García-Granda, J. Gimeno, M. A. Rodríguez, *Dalton Trans.*, **2003**, 3240-3249.
- 20- "An easy entry to dimers  $[\{\text{RuX}(\mu\text{-X})(\text{CO})(\text{P}^{\wedge}\text{P})\}_2]$  (X = Cl, Br;  $\text{P}^{\wedge}\text{P}$  = 1,1'-bis(diphenylphosphino)ferrocene, 1,1'-bis(isopropylphosphino)ferrocene) from  $\eta^3$ -allyl-ruthenium(II) derivatives  $[\{\text{RuX}(\eta^3\text{-}2\text{-C}_3\text{H}_4\text{R})(\text{CO})(\text{P}^{\wedge}\text{P})\}]$  (R = H, Me): Efficient catalyst precursors in transfer hydrogenation of ketones". V. Cadierno, P. Crochet, J. Díez, S. E. García-Garrido, S. García-Granda, J. Gimeno, *Organometallics*, **2003**, 22, 5226-5234.
- 21- "Ruthenium(II) complexes containing 2-diphenylphosphinobenzaldehyde: Synthesis and catalytic activity in transfer hydrogenation". P. Crochet, M. A. Fernández-Zúmel, C. Beauquis, J. Gimeno, *Inorg. Chim. Acta*, **2003**, 356, 114-120.
- 22- "Efficient transfer hydrogenation of ketones by the bis(isocyanide)-ruthenium(II) complexes *trans,cis*- $[\text{RuX}_2(\text{CNR})_2(\text{dppf})]$  (X = Cl, Br;  $\text{dppf}$  = 1,1'-bis(diphenylphosphino)ferrocene): isolation of active mono- and dihydride intermediates". V. Cadierno, P. Crochet, J. Díez, S. E. García Garrido, J. Gimeno, *Organometallics*, **2004**, 23, 4836-4845.
- 23- "Synthesis and catalytic activity of  $(\eta^6\text{-}p\text{-cymene})(\text{phosphane})\text{ruthenium(II)}$  complexes supported on poly(biphenoxyphosphazene) or chiral poly(binaphthoxyphosphazene) copolymers". G. A. Carriedo, P. Crochet, F. J. García Alonso, J. Gimeno, A. Presa-Soto, *Eur. J. Inorg. Chem.*, **2004**, 3668-3674.
- 24- "Water-soluble ruthenium(II)  $[\text{RuCl}_2(\eta^6\text{-arene})\{\text{P}(\text{CH}_2\text{OH})_3\}]$  for isomerization of allylic alcohols and alkyne hydration". V. Cadierno, P. Crochet, S. E. García Garrido, J. Gimeno, *Dalton Trans.*, **2004**, 3635-3641.
- 25- "Catalytic isomerization of allylic alcohols by  $(\eta^6\text{-}p\text{-cymene})\text{-ruthenium(II)}$  complexes in organic and aqueous media: new recyclable and highly efficient catalysts in water containing ammonium-functionalized ligands". P. Crochet, J. Díez, M. A. Fernández-Zúmel, J. Gimeno, *Adv. Synth. Catal.*, **2006**, 348, 93-100.
- 26- "Water-soluble groups 8-9 transition metal complexes containing a trihydrazinophosphaadamantane ligand: catalytic applications in isomerization of allylic alcohols and cycloisomerization of (*Z*)-enynols in aqueous medium". A. E. Díaz-Álvarez, P. Crochet, M. Zablocka, C. Duhayon, V. Cadierno, J. Gimeno, J.-P. Majoral, *Adv. Synth. Catal.*, **2006**, 348, 1671-1679.
- 27- "Imination reactions of free and coordinated 2-diphenylphosphino-1-phenyl-phospholane: access to regioisomeric ruthenium(II) complexes containing novel iminophosphorane-phosphine ligands". A. E. Díaz-Álvarez, P. Crochet, M. Zablocka, V. Cadierno, C. Duhayon, J. Gimeno, J.-P. Majoral, *New J. Chem.*, **2006**, 30, 1295-1306.
- 28- "Efficient redox isomerization of allylic alcohols under mild conditions catalyzed by arene-ruthenium(II) complexes". P. Crochet, M. A. Fernández-Zúmel, J. Gimeno, M. Scheele, *Organometallics*, **2006**, 25, 4846-4849.

- 29-** "Half-sandwich ruthenium(II) complexes containing a tricyclic  $\beta$ -iminophosphine ligand: catalytic activity in Diels-Alder reactions". A. E. Díaz-Álvarez, P. Crochet, M. Zablocka, V. Cadierno, L. Vendier, J. Gimeno, J.-P. Majoral, *Polyhedron*, **2007**, 26, 933-940.
- 30-** "Octahedral ruthenium(II) complexes *cis,cis*-[RuX<sub>2</sub>(CNR)(CO)(P<sup>^</sup>P)] and *cis,cis,cis*-[RuX<sub>2</sub>(CO)<sub>2</sub>(P<sup>^</sup>P)] (X = Cl, Br; P<sup>^</sup>P = 1,1'-bis(diphenylphosphino)ferrocene, 1,1'-bis(diisopropylphosphino)ferrocene): synthesis and catalytic applications in transfer hydrogenation of acetophenone and cycloisomerization of (*Z*)-3-methylpent-2-en-yn-1-ol". J. Albers, V. Cadierno, P. Crochet, S. E. García-Garrido, J. Gimeno, *J. Organomet. Chem.*, **2007**, 692, 5234-5244.
- 31-** "Developing the Kharasch reaction in aqueous media: dinuclear groups 8 and 9 catalysts containing the bridging cage ligand tris(1,2-dimethylhydrazino)diphosphine". A. E. Díaz-Álvarez, P. Crochet, M. Zablocka, C. Duhayon, V. Cadierno, J.-P. Majoral, *Eur. J. Inorg. Chem.*, **2008**, 786-794.
- 32-** "Highly water-soluble arene-ruthenium(II) complexes: application to catalytic isomerization of allylic alcohols in aqueous medium". B. Lastra-Barreira, J. Díez, P. Crochet, *Green Chem.*, **2009**, 11, 1681-1686.
- 33-** "Ruthenium-catalyzed redox isomerization/transfer hydrogenation in organic and aqueous media: a one-pot tandem process for the reduction of allylic alcohols". V. Cadierno, P. Crochet, J. Francos, S. E. García-Garrido, J. Gimeno, N. Nebra, *Green Chem.*, **2009**, 11, 1992-2000.
- 34-** "Ruthenium-catalyzed estragole isomerization: high *trans*-selective formation of anethole". B. Lastra-Barreira, P. Crochet, *Green Chem.* **2010**, 12, 1311-1314.
- 35-** "Chiral phosphonite, phosphite and phosphoramidite  $\eta^6$ -arene-ruthenium(II) complexes: applications to the kinetic resolution of allylic alcohols". M. A. Fernández-Zúmel, B. Lastra-Barreira, M. Scheele, J. Díez, P. Crochet, J. Gimeno, *Dalton Trans.*, **2010**, 39, 7780-7785.
- 36-** "Iridium(I)-catalyzed coupling of (*Z*)-2-en-4-yn-1-ols with activated alkynes: a new synthetic route of 7-oxanorbornadienes". A. E. Díaz-Álvarez, P. Crochet, V. Cadierno, *Adv. Synth. Catal.*, **2010**, 352, 2427-2431.
- 37-** "Arene-ruthenium(II) complexes containing amino-phosphine ligands as catalysts for nitrile hydration reactions". R. García-Álvarez, J. Díez, P. Crochet, V. Cadierno, *Organometallics*, **2010**, 29, 3955-3965.
- 38-** "Ruthenium(IV) catalysts for selective estragole to *trans*-anethole isomerization in environmentally friendly media". B. Lastra-Barreira, J. Francos, P. Crochet, V. Cadierno, *Green Chem.*, **2011**, 13, 307-313.
- 39-** "Ibuprofenamide: a convenient method of synthesis by catalytic hydration of 2-(4-isobutylphenyl)propionitrile in pure aqueous medium". R. García-Álvarez, J. Francos, P. Crochet, V. Cadierno, *Tetrahedron Lett.*, **2011**, 52, 4218-4220.
- 40-** "Ruthenium-catalyzed reduction of allylic alcohols using glycerol as solvent and hydrogen donor". A. E. Díaz-Álvarez, P. Crochet, V. Cadierno, *Catal. Commun.*, **2011**, 13, 91-96.

- 41.- "Arene-ruthenium(II) complexes containing inexpensive tris(dimethylamino)phosphine: highly efficient catalysts for the selective hydration of nitriles into amides". R. García-Álvarez, J. Díez, P. Crochet, V. Cadierno, *Organometallics*, **2011**, *30*, 5442-5451.
- 42.- "A general route for the stereoselective synthesis of (*E*)-(1-propenyl)phenyl esters by catalytic C=C bond isomerization". A. E. Díaz-Álvarez, P. Crochet, V. Cadierno, *Tetrahedron*, **2012**, *68*, 2611-2620.
- 43.- "Arene-ruthenium(II) and bis(allyl)-ruthenium(IV) complexes containing 2-diphenylphosphanylpyridine ligands: potential catalysts for nitrile hydration reactions?". R. García-Álvarez, S. E. García-Garrido, J. Díez, P. Crochet, V. Cadierno, *Eur. J. Inorg. Chem.*, **2012**, 4218-4230.
- 44.- "Ruthenium-catalyzed rearrangement of aldoximes to primary amides in water". R. García-Álvarez, A. E. Díaz-Álvarez, J. Borge, P. Crochet, V. Cadierno, *Organometallics*, **2012**, *31*, 6482-6490.
- 45.- "Ruthenium(II) arene complexes with asymmetrical guanidinate ligands: synthesis, characterization and application in the base-free catalytic isomerization of allylic alcohols". R. García-Álvarez, F. J. Suárez, J. Díez, P. Crochet, V. Cadierno, A. Antiñolo, R. Fernández-Galán, F. Carrillo-Hermosilla, *Organometallics*, **2012**, *31*, 8301-8311.
- 46.- "Catalytic isomerization of allylic alcohols promoted by complexes  $[\text{RuCl}_2(\eta^6\text{-arene})(\text{PTA-Me})]$  under homogeneous conditions and supported on Montmorillonite K-10". L. Menéndez-Rodríguez, P. Crochet, V. Cadierno, *J. Mol. Catal. Chem.*, **2013**, *366*, 390-399.
- 47.- "Facile transmetalation of a pyridyl-phosphine ligand from ruthenium to gold and silver". E. Tomás-Mendivil, R. García-Álvarez, S. E. García-Garrido, J. Díez, P. Crochet, V. Cadierno, *J. Organomet. Chem.*, **2013**, *727*, 1-9.
- 48.- "Functionalized arene-ruthenium(II) complexes: dangling vs. tethering side chain". B. Lastra-Barreira, J. Díez, P. Crochet, I. Fernández, *Dalton Trans.* **2013**, *42*, 5412-5420.
- 49.- "Ruthenium-catalyzed one-pot synthesis of primary amides from aldehydes in water". R. García-Álvarez, A. E. Díaz-Álvarez, P. Crochet, V. Cadierno, *RSC Adv.*, **2013**, *3*, 5889-5894.
- 50.- "Thiazolyl-phosphine hydrochloride salts: effective auxiliary ligands for ruthenium-catalyzed nitrile hydration reactions and related amide bond forming processes in water". R. García-Álvarez, M. Zablocka, P. Crochet, C. Duhayon, J.-P. Majoral, *Green Chem.*, **2013**, *15*, 2447-2456.
- 51.- "Eugenol isomerization promoted by arene-ruthenium(II) complexes in aqueous media: influence of the pH on the catalytic activity". B. Lastra-Barreira, A. E. Díaz-Álvarez, L. Menéndez-Rodríguez, P. Crochet, *RSC Adv.* **2013**, *3*, 19985-19990.
- 52.- "A catalytic system for the estragole to anethole isomerization based on  $[\{\text{RuCl}(\mu\text{-Cl})(\eta^6\text{-}p\text{-cymene})\}_2]$ ". L. Menéndez-Rodríguez, P. Crochet, V. Cadierno, *Curr. Green Chem.*, **2014**, *1*, 128-135.

- 53.- "Exploring rhodium(I) complexes [RhCl(COD)(PR<sub>3</sub>)<sub>2</sub>] (COD = 1,5-cyclooctadiene) as catalysts for nitrile hydration reactions in water: the aminophosphines make the difference". E. Tomás-Mendivil, R. García-Álvarez, C. Vidal, P. Crochet, V. Cadierno, *ACS Catal.*, **2014**, *4*, 1901-1910.
- 54.- "Tethered  $\eta^5$ -oxocyclohexadienyl piano stool Ru(II) complexes: a new class of catalysts?". M. Kechaou, L. Vendier, S. Bastin, J.-M. Sotiropoulos, K. Miqueu, L. Menéndez-Rodríguez, P. Crochet, V. Cadierno, A. Igau, *Organometallics*, **2014**, *33*, 6294-6297.
- 55.- "Investigation of Binap-based hydroxyphosphine arene-ruthenium(II) complexes as catalysts for nitrile hydration". E. Tomás-Mendivil, L. Menéndez-Rodríguez, J. Francos, P. Crochet, V. Cadierno, *RSC Adv.*, **2014**, *4*, 63466-63474.
- 56.- "Reactivity of the dimer  $[\{\text{RuCl}(\mu\text{-Cl})(\eta^3\text{-}\eta^3\text{-C}_{10}\text{H}_{16})\}_2]$  (C<sub>10</sub>H<sub>16</sub> = 2,7-dimethylocta-2,6-diene-1,8-diyl) towards guanidines: Access to ruthenium(IV) and ruthenium(II) guanidinate complexes". L. Menéndez-Rodríguez, E. Tomás-Mendivil, J. Francos, P. Crochet, V. Cadierno, A. Antiñolo, R. Fernández-Galán, F. Carrillo-Hermosilla, *Organometallics*, **2015**, *34*, 2796-2809.
- 57.- "Palladium(II) complexes with a phosphino-oxime ligand: Synthesis, structure and applications to the catalytic rearrangement and dehydration of aldoximes". L. Menéndez-Rodríguez, E. Tomás-Mendivil, J. Francos, C. Nájera, P. Crochet, V. Cadierno, *Catal. Sci. Technol.* **2015**, *5*, 3754-3761.
- 58.- "C-H versus O-H bond activation in phosphino-alcohol ligands: Synthesis of the  $\alpha$ -hydroxy-alkyl ruthenium(II) derivatives  $[\text{Ru}\{\kappa^2(\text{P},\text{C})\text{-Ph}_2\text{PC}_6\text{H}_4\text{C}(\text{R})\text{OH}\}(\eta^6\text{-arene})]$ ". A. E. Díaz-Álvarez, C. Vidal, F. J. Suárez, J. Díez, V. Cadierno, P. Crochet, *Organometallics*, **2015**, *34*, 3670-3677.
- 59.- "Half-sandwich guanidinate-osmium(II) complexes: Synthesis and application in the selective dehydration of aldoximes". J. Francos, P. J. González-Liste, L. Menéndez-Rodríguez, P. Crochet, V. Cadierno, J. Borge, A. Antiñolo, R. Fernández-Galán, Fernando-Carrillo-Hermosilla, *Eur. J. Inorg. Chem.*, **2016**, 393-402.
- 60.- "Chlorophosphines as auxiliary ligands in ruthenium-catalyzed nitrile hydration reactions: Application to the preparation of  $\beta$ -ketoamides". R. González-Fernández, P. J. González-Liste, J. Borge, P. Crochet, V. Cadierno, *Catal. Sci. Technol.*, **2016**, *6*, 4398-4409.
- 61.- "Synthesis and catalytic applications of ruthenium(II)-phosphino-oxime complexes". J. Francos, L. Menéndez-Rodríguez, E. Tomás-Mendivil, P. Crochet, V. Cadierno, *RSC Adv.*, **2016**, *6*, 39044-39052.
- 62.- "Ruthenium-catalyzed synthesis of  $\beta$ -hydroxyamides from  $\beta$ -ketonitriles in water". R. González-Fernández, P. Crochet, V. Cadierno, *Org. Lett.*, **2016**, *18*, 6164-6167.
- 63.- "Half-sandwich ruthenium(II) complexes with water-soluble Schiff base ligands: Synthesis and catalytic activity in transfer hydrogenation of carbonyl compounds". S. Azizi Talouki, G. Grivani, P. Crochet, V. Cadierno, *Inorg. Chim. Acta*, **2017**, *456*, 142-148.

**Refereed review articles**

- 1.- "Bis(allyl)-ruthenium(IV) complexes: promising precursors for catalytic organic synthesis". V. Cadierno, P. Crochet, S. E. García-Garrido, J. Gimeno, *Curr. Org. Chem.*, **2006**, *10*, 165-183.
- 2.- "Ruthenium-catalyzed isomerization of allylic and propargylic alcohols: applications in synthesis". V. Cadierno, P. Crochet, J. Gimeno, *Synlett*, **2008**, 1105-1124.
- 3.- "Ruthenium-catalyzed furan- and pyrrole-ring formation". V. Cadierno, P. Crochet, *Curr. Org. Synth.*, **2008**, *5*, 343-364.
- 4.- "Metal-catalyzed transformations of propargylic alcohols into  $\alpha,\beta$ -unsaturated carbonyl compounds: from the Meyer-Schuster and Rupe rearrangements to redox isomerizations". V. Cadierno, P. Crochet, S. E. García-Garrido, J. Gimeno, *Dalton Trans.*, **2010**, *39*, 4015-4031.
- 5.- "Glycerol and derived solvents: new sustainable reaction media for organic synthesis". A. E. Díaz-Álvarez, J. Francos, B. Lastra-Barreira, P. Crochet, V. Cadierno, *Chem. Commun.*, **2011**, *47*, 6208-6227.
- 6.- "Metal-catalyzed isomerization of allylic and propargylic alcohols in aqueous media". J. García-Álvarez, S. E. García-Garrido, P. Crochet, V. Cadierno, *Curr. Top. Catal.*, **2012**, *10*, 35-56.
- 7.- "Metal-catalyzed amide bond forming reactions in environmentally friendly aqueous medium: nitrile hydrations and beyond". R. García-Álvarez, P. Crochet, V. Cadierno, *Green Chem.*, **2013**, *15*, 46-66.
- 8.- "Recent advances in the use of glycerol as green solvent for synthetic organic chemistry". A. E. Díaz-Álvarez, J. Francos, P. Crochet, V. Cadierno, *Curr. Green Chem.*, **2014**, *1*, 51-65.
- 9.- "Metal-catalyzed nitrile hydration reactions: the specific contribution of ruthenium". R. García-Álvarez, J. Francos, E. Tomás-Mendivil, P. Crochet, V. Cadierno, *J. Organomet. Chem.*, **2014**, *771*, 93-104.
- 10.- "Ruthenium-catalyzed amide-bond formation". P. Crochet, V. Cadierno, *Top. Organomet. Chem.*, **2014**, *48*, 81-118.
- 11.- "Arene-ruthenium(II) complexes with hydrophilic P-donor ligands: versatile catalysts in aqueous media". P. Crochet, V. Cadierno, *Dalton Trans.*, **2014**, *43*, 12447-12462.
- 12.- "Catalytic synthesis of amides via aldoximes rearrangement". P. Crochet, V. Cadierno, *Chem. Commun.*, **2015**, *51*, 2495-2505.
- 13.- "Water-tolerant bis(allyl)-ruthenium(IV) catalysts: An account of their applications". J. Francos, S. E. García-Garrido, J. García-Álvarez, P. Crochet, J. Gimeno, V. Cadierno, *Inorg. Chim. Acta*, **2017**, *455*, 398-414.



**Book Chapters**

- 1.- "Mononuclear ruthenium and osmium compounds with cyclic C<sub>5</sub>-C<sub>6</sub> ligands (except compounds containing  $\eta^1$  ligands)". J. Gimeno, V. Cadierno, P. Crochet, in *Comprehensive Organometallic Chemistry III*; R. H. Crabtree, D. P. M. P. Mingos Eds.; Elsevier Ltd., Oxford: U. K.; **2006**, Vol. 6, Chapter 6.14, p. 465-550. ISBN: 978-0-0804-4590-8.
- 2.- "Half-sandwich ruthenium complexes containing water-soluble phosphine ligands: catalytic applications". V. Cadierno, P. Crochet, in *Advances in Organometallic Chemistry Research*, K. Yamamoto Ed., Nova Science Publishers, New-York: USA, **2007**, p. 37-65. ISBN: 978-1-60021-799-1
- 3.- "Preparation and stoichiometric reactivity of metal allenylidene complexes". V. Cadierno, P. Crochet, J. Gimeno, in *Metal vinylidene and allenylidenes in catalysis*, C. Bruneau, P. H. Dixneuf Eds., WILEY-VCH, Weinheim: Germany, **2008**, p. 61-98. ISBN: 978-3-527-31892-6.
- 4.- "Alkyne cyclootrimerizations in environmentally benign media: current state of the art". V. Cadierno, P. Crochet, S. E. García-Garrido, in *Green Chemistry Research Trends*, J. T. Pearlman Ed., Nova Science Publishers, New-York: USA, **2009**, p. 97-130. ISBN: 978-1-60692-092-3.
- 5.- "Metal-catalyzed reactions in water under MW-irradiation". V. Cadierno, P. Crochet, S. E. García-Garrido, in *Aqueous Microwave Assisted Chemistry*, V. Polshettiwar, R. S. Varma Eds., RSC Publishing, Cambridge: UK, **2010**, Chapter 2, p. 10-54. ISBN: 978-1-84973-038-9.
- 6.- "Ruthenium-catalyzed nitrile hydration reactions using glycerol as solvent". A. E. Díaz-Álvarez, R. García-Álvarez, P. Crochet, V. Cadierno, in *Glycerol: Production, Structure and Applications*, M. de Santos Silva, P. Costa Ferreira Eds., Nova Science Publishers, **2012**, p. 249-262. ISBN: 978-1-62081-120-7.
- 7.- "Ruthenium-catalyzed furan- and pyrrole-ring formation". V. Cadierno, P. Crochet, in *Advances in Organic Synthesis* (e-Book), Atta-ur-Rahman Ed., Bentham Science Publishers, Sharjah: UAE, **2013**, Vol. 3, p. 36-80. ISBN: 9780-1-60805-587-6; e-ISBN: 9780-1-6085-468-8.

**Invited talks at Chemistry Departments and Meetings**

- 1- Paul Sabatier University, Toulouse (France), October 21<sup>st</sup> 2008, "Synthèse de complexes hydrosolubles et applications en catalyse". Invited lecture.
- 2- Chemistry Research Institute, CSIC, Sevilla (Spain), January 28<sup>th</sup> 2011, "Procesos catalíticos promovidos por rutenio: hacia la Química Verde". Invited lecture.
- 3- XXX Aniversario de la Creación del GEQO, Madrid, May 24<sup>th</sup> 2011, "Procesos de isomerización promovidos por complejos de rutenio". Invited lecture.
- 4- XXXIV Reunión Bienal de la Real Sociedad Española de Química, Santander, September 15-18<sup>th</sup> 2013, "Síntesis de amidas primarias promovidas por catalizadores de rutenio". Invited lecture.

5- Institute of Chemical Synthesis and Homogeneous Catalysis, University of Zaragoza - CSIC (Spain), February 16<sup>th</sup> 2015, "Procesos catalíticos para la síntesis de amidas". Invited lecture.

### PhD supervised

- 1.- "Catalytic activity of new ruthenium, rhodium and iridium complexes containing amino-and imino-phosphine ligand in organic or aqueous medium", Alba E. Díaz Álvarez, July 2007.
- 2.- "New advances in the isomerizations of allylic alcohols promoted by arene-ruthenium(II) complexes in organic and aqueous media", Mariano A. Fernández-Zúmel Larraceleta, September 2008.
- 3.- "Synthesis of water-soluble ruthenium complexes and development of new catalytic processes in water", Beatriz Lastra Barreira, July 2011.
- 4.- "Arene-ruthenium(II) complexes as selective catalysts for the formation of primary amides in water and for redox isomerization of allylic alcohols", Rocío García Álvarez, May 2013.
- 5.- "Nuevos complejos organometálicos de rutenio y paladio como catalizadores selectivos para reacciones de isomerización e hidratación", Lucía Menéndez Rodríguez, November 2015.

### Membership of Professional bodies

- Member of the Spanish Royal Society of Chemistry (RSEQ) (*Expert Group on Organometallic Chemistry* since 2000; *Expert Group on Organic Chemistry* since 2013).