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DATE OF BIRTH

April 29, 1983

NATIONALITY

Spanish

ACADEMIC TITLES

- 2011 Ph. D. in Organometallic Chemistry under the supervision of Prof. José Gimeno and Dr. Victorio Cadierno. Honor Degree Thesis entitled “*New catalytic processes in aqueous media catalyzed by organometallic ruthenium complexes*”. Universidad de Oviedo (Spain).
- 2008 Advanced Studies Diploma, University of Oviedo. Supervisors: Prof. José Gimeno and Dr. Victorio Cadierno.
- 2006 Masters Diploma in Chemistry, Honours, University of Oviedo. Dissertation: “*Ruthenium catalyzed reduction of allylic alcohols into saturated alcohols in organic and aqueous media*”. Supervisors: Prof. José Gimeno and Dr. Victorio Cadierno.
- 2006 Bachelor degree in Chemistry, University of Oviedo, Spain.

EXPERIENCE

- 01/16-Current Postdoctoral Fellow of the national programme “Juan de la Cierva” awarded by the Spanish Government.
- 10/15-12/15 Post-Doctoral Research Assistant, Departamento de Química Orgánica e Inorgánica, University of Oviedo, Spain.
- 06/12-05/15 Post-Doctoral Research Assistant, Department of Pure and Applied Chemistry, University of Strathclyde, Scotland, UK.
- 05/11-05/12 Post-Doctoral Research Assistant, Centro de Química Biológica y Materiales, University of Santiago de Compostela, Spain.
- 09/06-04/11 Graduate Research Assistant, Department of Organic and Inorganic Chemistry, University of Oviedo, Spain.
- 12/05-07/06 Undergraduate Research Assistant, Department of Organic and Inorganic Chemistry, University of Oviedo, Spain.

TECHNICAL SKILLS

- ❑ Experience in manipulation of air and moisture sensitive compounds using Schlenk techniques, glove box and vacuum lines.
- ❑ General knowledge of the methodologies involving inorganic synthesis, organic synthesis, and homogeneous catalysis.
- ❑ General experience with IR and multinuclear NMR spectroscopy.
- ❑ Experience with GC, GC-MS, and HPLC-DAD equipments.
- ❑ Experience with Discover CEM S-Class Microwave Reactor.
- ❑ Experience with X-Ray single crystal diffractometers from Agilent Technologies models XCalibur and Gemini.

AWARDS

- ❑ Premio Extraordinario de Doctorado 2012, Universidad de Oviedo, Award of Universidad de Oviedo, Spain for the best Ph.D. Thesis in Chemistry of the year.
- ❑ Premio San Alberto Magno 2012, Award of the "*Colegio de Químicos de Asturias y León*" for the best Ph.D. Thesis in Chemistry of the year.
- ❑ Fellowship from Ministerio de Educación y Ciencia (Spain). Department of Organic and Inorganic Chemistry of the University of Oviedo from May 2007 to April 2011.
- ❑ “Extraordinary Bachelor Degree in Chemistry” award, Universidad de Oviedo, January 2008.

- Fellowship from Ministerio de Educación y Ciencia (Spain). Department of Organic and Inorganic Chemistry of the University of Oviedo from October 2005 to July 2006.

PROFESSIONAL SOCIETIES

- Member of the Spanish Society of Chemistry (since 2008).
- Member of the American Chemical Society (since 2014).
- Member of the “*Colegio de Químicos de Asturias y León*” (since 2009).

PAPERS IN PEER-REVIEWED JOURNALS

“*Synthetic and reactivity studies of hetero-tri-anionic sodium zincates*” Javier Francos, Alan R. Kennedy, Charles O’Hara, *Dalton Trans.*, **2016**, *in press*.

“*Butadiene dyes based on 3-(dicyanomethylidene)indan-1-one and 1,3-bis(dicyanomethylidene)indane: synthesis, characterization and solvatochromic behavior*” Javier Francos, Sergio E. García-Garrido, Javier Borge, Francisco J. Suárez and Victorio Cadierno, *RSC Adv.*, **2016**, 6, 6858.

“*Half-sandwich guanidinate-Osmium(II) complexes: Synthesis and application in the selective dehydration of aldoximes*” Javier Francos, Pedro J. González-Liste, Lucía Menéndez-Rodríguez, Pascale Crochet, Victorio Cadierno, Javier Borge, Antonio Antiñolo, Rafael Fernández-Galán, Fernando Carrillo-Hermosilla, *Eur. J. Inorg. Chem.*, **2016**, 393.

“*Palladium(II) complexes with a phosphino-oxime ligand: Synthesis, structure and applications to the catalytic rearrangement and dehydration of aldoximes*” Lucía Menéndez-Rodríguez, Eder Tomás-Mendivil, Javier Francos, Carmen Nájera, Pascale Crochet, Victorio Cadierno, *Catal. Sci. Technol.*, **2015**, 5, 3754.

“*Reactivity of the dimer $[\{RuCl(\mu-Cl)(\eta^3:\eta^3-C_{10}H_{16})\}_2]$ ($C_{10}H_{16}$ = 2,7-dimethylocta-2,6-diene-1,8-diyl) towards guanidines: Access to novel guanidinate-ruthenium(IV) and ruthenium(II) complexes*” Lucía Menéndez-Rodríguez, Eder Tomás-Mendivil, Javier Francos, Pascale Crochet, Victorio Cadierno, Antonio Antiñolo, Rafael Fernández-Galán, and Fernando Carrillo-Hermosilla, *Organometallics*, **2015**, 34, 2796.

“Solid state and solution studies of lithium tris(*n*-butyl)magnesiates stabilised by Lewis donors” Silvia Zaragoza-Calero, Javier Francos, Alan R. Kennedy and Charles T. O’ Hara, *Dalton Trans.*, **2015**, 44, 7258.

“Structural studies of (*rac*)-BIPHEN organomagnesiates and intermediates in the halogen-metal exchange of 2-Bromopyridine” Javier Francos, Philippe C. Gros, Alan R. Kennedy and Charles T. O’Hara, *Organometallics*, **2015**, 34, 2550.

“Easy entry to donor/acceptor butadiene dyes through a MW-assisted InCl₃-catalyzed coupling of propargylic alcohols with indan-1,3-dione in water” Javier Francos, Javier Borge, Josefina Díez, Sergio E. García-Garrido and Victorio Cadierno, *Catal. Commun.*, **2015**, 63, 10.

“Investigation of Binap-based hydroxyphosphine arene-ruthenium(II) complexes as catalyst for nitrile hydration” Eder Tomas-Mendivil, Lucia Menendez-Rodriguez, Javier Francos, Pascale Crochet and Victorio Cadierno, *RSC Adv.*, **2014**, 4, 63466.

“Complexity in seemingly simple sodium magnesiate systems” J. Francos, B. J. Fleming, P. García-Álvarez, A. R. Kennedy, K. Reilly, G. M. Robertson, S. D. Robertson and C. T. O’Hara, *Dalton Trans.*, **2014**, 43, 14424.

“Optimisation of a lithium magnesiate for use in the non-cryogenic asymmetric deprotonation of prochiral ketones” Javier Francos, Silvia Zaragoza-Calero, Charles T. O’Hara, *Dalton Trans.*, **2014**, 43, 1408.

“Axially chiral triazoloisoquinolin-3-ylidene ligands in Gold(I)-Catalyzed asymmetric intermolecular (4+2) cycloadditions of allenamides and dienes” Javier Francos, Francisca Grande-Carmona, Hélio Faustino, Javier Iglesias-Sigüenza, Elena Díez, Isaac Alonso, Rosario Fernández, José M. Lassaletta, Fernando López, José L. Mascareñas, *J. Am. Chem. Soc.*, **2012**, 134, 14322. This paper has been highlighted in *Synfacts* (H. Yamamoto, M. Baidya, *Synfacts* **2012**, 8, 1334).

“Ibuprofenamide: A convenient method of synthesis by catalytic hydration of 2-(4-isobutylphenyl)propionitrile in pure aqueous medium” Rocío García-Álvarez, Javier Francos, Pascale Crochet, Victorio Cadierno, *Tetrahedron Lett.*, **2011**, 52, 4218.

“Access to unusual polycyclic spiro enones from 2,2'-bis(allyloxy)-1,1'-binaphthyls using Grubbs' catalysts: An unprecedented one-pot RCM/Claisen sequence”. Estefanía Piedra, Javier Francos, Noel Nebra, Francisco J. Suárez, Josefina Díez, Victorio Cadierno, *Chem. Commun.*, **2011**, 47, 7886.

“Ruthenium(IV) - Catalyzed markovnikov addition of carboxylic acids to terminal alkynes in aqueous medium”. Victorio Cadierno, Javier Francos, José Gimeno, *Organometallics*, **2011**, 30, 852.

“Ruthenium(IV) catalyst for the selective estragole to trans-anethole isomerization in environmentally friendly media”. Beatriz Lastra-Barreira, Javier Francos, Pascale Crochet, Victorio Cadierno, *Green Chem.*, **2011**, 13, 307.

“Ruthenium-catalyzed intermolecular [2 + 2 + 2] alkyne cyclotrimerization in aqueous media under microwave-irradiation” Victorio Cadierno, Javier Francos, Sergio E. García-Garrido, José Gimeno, *Green Chem. Lett. Rev.*, **2011**, 4, 55.

“Chemistry by Nano-Catalysis: First example of a solid-supported RAPTA complex for organic reactions in aqueous medium” Sergio E. García-Garrido, Javier Francos, Victorio Cadierno, Jean Marie Basset, Vivek Polshettiwar, *ChemSusChem.*, **2011**, 4, 104.

“Palladium-catalyzed cycloisomerization of (Z)-enynols into furans using green solvents: Glycerol vs water” Javier Francos, Victorio Cadierno, *Green Chem.*, **2010**, 12, 1552.

“Bis(allyl)-Ruthenium(IV) complexes containing water-soluble phosphane ligands: synthesis, structure and application as catalysts in the selective hydration of organonitriles into amides” Victorio Cadierno, Josefina Díez, Javier Francos, José Gimeno, *Chem. Eur. J.*, **2010**, 16, 9808.

“Ruthenium/TFA-catalyzed regioselective C-3-alkylation of indoles with terminal alkynes in water: Efficient and unprecedented access to 3-(1-methyl-alkyl)-1H-indoles” Victorio Cadierno, Javier Francos, José Gimeno, *Chem. Comm.*, **2010**, 46, 4175.

“1,4-Butanediol as a reducing agent in transfer hydrogenation reactions” Hannah C. Maytum, Javier Francos, David J. Whatrup, Jonathan M.J. Williams, *Chem. Asian J.*, **2010**, 5, 538.

“Ruthenium-catalyzed synthesis of β -oxo esters in aqueous medium: Scope and limitations” Victorio Cadierno, Javier Francos, José Gimeno, *Green Chem.*, **2010**, *12*, 135. Featured as a “Hot Article”.

“Ruthenium-catalyzed redox isomerization/transfer hydrogenation in organic and aqueous media: A one-pot tandem process for the reduction of allylic alcohols” Victorio Cadierno, Pascale Crochet, Javier Francos, Sergio E. García-Garrido, José Gimeno, Noel Nebra, *Green Chem.*, **2010**, *11*, 1992.

“Microwave-assisted InCl_3 -catalyzed Meyer-Shuster rearrangement of propargylic aryl carbinols in aqueous media: A green approach to α,β -unsaturated carbonyl compounds” Victorio Cadierno, Javier Francos, José Gimeno, *Tetrahedron Lett.*, **2009**, *50*, 4773.

“Selective Ruthenium-Catalyzed hydration of nitriles to amides in pure aqueous medium under neutral conditions” Victorio Cadierno, Javier Francos, José Gimeno, *Chem. Eur. J.*, **2008**, *14*, 6601.

“Ruthenium catalyzed reduction of allylic alcohols: An efficient isomerization/transfer hydrogenation tandem process” Victorio Cadierno, Javier Francos, José Gimeno, Noel Nebra *Chem. Comm.*, **2007**, 2536.

REFEREED REVIEW ARTICLES AND ACCOUNTS

“Aplicaciones en catálisis homogénea de derivados bis(alilo) de rutenio(IV)”. Javier Francos, Victorio Cadierno, *An. Quim.*, **2016**, *submitted*.

“Metal-catalyzed nitrile hydration reactions: The specific contribution of ruthenium”. Rocío García-Álvarez, Javier Francos, Eder Tomás-Mendivil, Pascale Crochet, Victorio Cadierno, *J. Organomet. Chem.*, **2014**, *771*, 93.

“Recent advances in the use of glicerol as green solvent for synthetic organic chemistry”. Alba E. Díaz-Álvarez, Javier Francos, Pascale Crochet, Victorio Cadierno, *Current Green Chemistry*, **2014**, *1*, 51.

“Glycerol and derived solvents: New sustainable reaction media for organic synthesis”. A. E. Díaz-Álvarez, Javier Francos, Beatriz Lastra-Barreira, Pascale Crochet, Victorio Cadierno, *Chem. Comm.*, **2011**, *47*, 6208.

PRESENTATIONS

Victorio Cadierno, José Gimeno, Javier Francos. "*Hidratación selectiva de nitrilos en amidas en medio acuoso catalizada por complejos hidrosolubles de rutenio*" (poster communication). Reunión grupo ORFEO Consolider-Ingenio 2010, Ciudad Real, Spain, July 2008.

Victorio Cadierno, José Gimeno, Javier Francos. "*Hidratación selectiva de nitrilos en amidas en medio acuoso catalizada por complejos hidrosolubles de rutenio*" (flash presentation). Reunión grupo ORFEO Consolider-Ingenio 2010, Ciudad Real, Spain, July 2008.

Victorio Cadierno, José Gimeno, Javier Francos. "*Ruthenium-catalyzed selective hydration of nitriles to amides in pure aqueous media*" (poster communication). XXIII ICOMC 2008, Rennes, France, July 2008.

Victorio Cadierno, Javier Francos, Sergio E. García-Garrido, José Gimeno, Noel Nebra, Estefanía Piedra. "*The ruthenium(IV) dimer $[\{Ru(\eta^3:\eta^3-C_{10}H_{16})(\mu-Cl)Cl\}_2]$ ($C_{10}H_{16}$ = 2,7-dimethylocta-2,6-diene-1,8-diyl): A promising precursor for catalytic organic synthesis in aqueous media*" (poster communication). XXIII ICOMC 2008, Rennes, France, July 2008.

Victorio Cadierno, José Gimeno, Javier Francos. "*Ruthenium-catalyzed selective hydration of nitriles to amides in pure aqueous media*" (poster communication). VII SISOC 2008, Oviedo, Spain, September 2008.

Victorio Cadierno, Javier Francos, Sergio E. García-Garrido, José Gimeno. " *$[\{Ru(\eta^3:\eta^3-C_{10}H_{16})(\mu-Cl)Cl\}_2]$ ($C_{10}H_{16}$ = 2,7-dimetilocta-2,6-dien-1,8-diilo): Un catalizador eficiente para la ciclotrimerización [2+2+2] de alquinos asistida por irradiación con microondas en medio acuoso*" (poster communication). XXVI Reunión del grupo especializado en Química Organometálica, Santiago de Compostela, Spain, September 2008.

Victorio Cadierno, Javier Francos, José Gimeno. "*Isomerización Meyer-Schuster de alcoholes propargílicos en compuestos carbonílicos α,β -insaturados catalizada por $InCl_3$ en medio acuoso y asistida por irradiación microondas*" (poster communication). XXXII Reunión bienal de la RSEQ, Oviedo, Spain, September 2009.

Victorio Cadierno, Pascale Crochet, Josefina Díez, Javier Francos, Rocío García-Álvarez. "*Síntesis de nuevos catalizadores hidrosolubles de rutenio(II): Aplicación en procesos de hidratación de*

nitrilos" (poster communication). XXXII Reunión bienal de la RSEQ, Oviedo, Spain, September 2009.

V. Cadierno, J. Francos, J. Gimeno. "*Ruthenium/TFA catalyzed regioselective C-3-alkylation of indoles with terminal alkynes in water: unprecedented access to 3-(1-methyl-alkyl)-1H-indoles*" (poster communication). Reunión grupo ORFEO Consolider-Ingenio 2010, Oviedo, Spain, July 2010.

V. Cadierno, J. Francos, J. Gimeno. "*Ruthenium/TFA catalyzed regioselective C-3-alkylation of indoles with terminal alkynes in water: unprecedented access to 3-(1-methyl-alkyl)-1H-indoles*" (flash presentation). Reunión grupo ORFEO Consolider-Ingenio 2010, Oviedo, Spain, July 2010.

Victorio Cadierno, Javier Francos, Sergio E. García-Garrido. "*Ruthenium complexes supported on magnetic nanoparticles as highly efficient catalyst in aqueous media*" (poster communication). Reunión grupo ORFEO Consolider-Ingenio 2010, Oviedo, Spain, July 2010.

Victorio Cadierno, Javier Francos, José Gimeno. "*Cicloisomerización de (Z)-eninoles catalizada por paladio en disolventes alternativos: Glicerol vs Agua*" (poster communication). XXVIII Reunión del grupo especializado en Química Organometálica, Huelva, Spain, September 2010.

Victorio Cadierno, Javier Francos, José Gimeno. "*Bis(allyl)-ruthenium(IV) complexes containing wáter-soluble phosphanes: catalytic activity in nitrile hydration reactions*" (poster communication). XXVIII Reunión del grupo especializado en Química Organometálica, Huelva, Spain, September 2010.

J. Francos, B. Lastra-Barreira, P. Crochet, V. Cadierno. "*Ruthenium(IV) catalysts for the selective estragole to trans-anethole isomerization in environmentally friendly media*" (poster communication). Reunión grupo ORFEO Consolider-Ingenio 2011, Santiago de Compostela, Spain, July 2011.

Victorio Cadierno, Javier Francos, Sergio E. García-Garido, Francisco J. Suárez, Agustí Lledós, Gregori Ujaque. "*Microwave-assisted $InCl_3$ -catalyzed synthesis in aqueous media and spectroscopic properties of novel push-pull butadiene dyes*" (poster communication). Reunión grupo ORFEO Consolider-Ingenio 2011, Santiago de Compostela, Spain, July 2011.

Estefanía Piedra, Javier Francos, Noel Nebra, Francisco J. Suárez, Josefina Díez, Victorio Cadierno. "Acess to unusual polycyclic spiro enones from 2,2'-bis(allyloxy)-1,1'-binaphthyls using Grubbs' catalysts" (poster communication). Reunión grupo ORFEO Consolider-Ingenio 2011, Santiago de Compostela, Spain, July 2011.

V. Cadierno, J. Francos, S. E. García-Garrido, F. J. Suárez, A. Lledós, G. Ujaque. "Microwave-assisted $InCl_3$ -catalyzed synthesis in aqueous media and spectroscopic properties of novel push-pull butadiene dyes" (poster communication). 9th Green Chemistry Conference, Alcalá, Spain, July 2011.

B. Lastra-Barreira, J. Francos, P. Crochet, V. Cadierno. "Selective estragole to trans-anethole isomerization in environmentally friendly media" (oral presentation). 9th Green Chemistry Conference, Alcalá, Spain, July 2011.

Javier Francos, Francisca Grande-Carmona, Hélio Faustino, Javier Iglesias-Sigüenza, Elena Díez, Isaac Alonso, Rosario Fernández, José M. Lassaletta, Fernando López, José L. Mascareñas. "Axially chiral triazoloisoquinolin-3-ylidene ligands in Gold(I)-Catalyzed asymmetric intermolecular (4+2) cycloadditions of allenamides and dienes" (poster communication). Reunión grupo ORFEO Consolider-Ingenio 2013, Alicante, Spain, June 2013.

Silvia Zaragoza-Calero, Javier Francos, Charles T. O'Hara. "Structural diversity and utilization of a series of mixed s-block-metal magnesiates" (poster communication). Universities of Scotland Inorganic Conference 2013, Edinburgh, United Kingdom, July 2013.

Javier Francos, Silvia Zaragoza-Calero, Charles T. O'Hara. "New chiral organomagnesiates as deprotonating agents in enantioselective synthesis of silyl enol ethers" (poster communication). OMCOS 17, Fort Collins – Colorado, USA, July 2013.

Javier Francos. "Optimisation of a lithium magnesiate for use in the non-cryogenic asymmetric deprotonation of prochiral ketones" (oral presentation). Dalton 2014, Joint Interest Group Meeting, Warwick, United Kingdom, April 2014.

Silvia Zaragoza-Calero, Javier Francos, Charles T. O'Hara. "*Chiral Alkali-Metal Magnesiates: Structural elucidation and optimization for the deprotonation of prochiral ketones*" (poster communication). XXVI ICOMC 2014, Sapporo, Japan, July 2014.

Javier Francos, Silvia Zaragoza-Calero, Charles T. O'Hara. "*Optimisation of a lithium magnesiate for use in the non-cryogenic asymmetric deprotonation of prochiral ketones*" (oral presentation). 248th ACS National Meeting & Exposition, San Francisco, USA, August 2014.

J. Francos, B. J. Fleming, P. García-Álvarez, A. R. Kennedy, K. Reilly, G. M. Robertson, S. D. Robertson and C. T. O'Hara. "*Complexity in seemingly simple sodium magnesiates systems*" (poster communication). Universities of Scotland Inorganic Conference 2014, Glasgow, United Kingdom, September 2014.

Victorio Cadierno, Lucía Menéndez-Rodríguez, Eder Tomás-Mendivil, Pascale Crochet, Javier Francos, Antonio Antiñolo, Rafael Fernández-Galán, Fernando Carrillo-Hermosilla. "*First examples of ruthenium(IV)-guanidinate complexes: Synthesis, reactivity and catalytic activity*" (poster communication). VIII School on Organometallic Chemistry Marcial Moreno Mañas, Sevilla, Spain, June 2015.

Pascale Crochet, Mariano A. Fernández-Zúmel, Rebeca González-Fernández, Eder Tomás-Mendivil, Javier Borge, Victorio Cadierno, Javier Francos. "*Synthesis of ruthenium and osmium complexes containing phosphino-alcohol ligands through carbon-carbon and carbon-heteroatom coupling processes*" (poster communication). VIII School on Organometallic Chemistry Marcial Moreno Mañas, Sevilla, Spain, June 2015.

Silvia Zaragoza-Calero, Javier Francos, Charles T. O'Hara. "*Chiral Alkali-Metal Magnesiates: Structural elucidation and optimization for the deprotonation of prochiral ketones*" (poster communication). Universities of Scotland Inorganic Conference 2015, Scotland, United Kingdom, July 2015.

Lucía Menéndez-Rodríguez, Eder Tomás-Mendivil, Javier Francos, Pascale Crochet, Victorio Cadierno. "*Palladium(II) complexes with phosphino-oxime ligand: Application to catalytic rearrangement and dehydration of aldoximes*" (poster communication). Third EuCheMS Inorganic Chemistry Conference, EICC -3: Chemistry over the horizon, Wroclaw, Poland, July 2015.

OTHER ACHIEVEMENTS

- 155 hours of teaching assistance, Department of Organic and Inorganic Chemistry of the University of Oviedo, April 2009 and April 2010.
- Short research stay in *Department of Chemistry, University of Bath*, under the supervision of professor Jonathan M. J. Williams, June 2009-August 2009. Research topic: “*1,4-Butanediol as a Reducing Agent in Transfer Hydrogenation Reactions*”.
- Attendance to “*ICIQ Summer School 2007*”. Tarragona (Spain), July 2007.
- Attendance to “*1ª Reunión sobre Funcionalización de Moléculas Orgánicas promovidas por complejos Organometálicos*” Jaca (Spain), November 2007.
- Attendance to “*IV Workshop de Introducción a la Resolución Estructural Mediante Difracción de Rayos-X*” Toledo (Spain), April 2012.

REFERENCES

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