

## Personal Details

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- Dr. Abel de Cózar
- Address: Faculty of Chemistry, University of the Basque Country, Paseo Manuel Lardizabal, 3, 20018 Donostia, Gipuzkoa
- Date of birth: 17/10/1981
- Place: Ronda (Spain)
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## Current Professional Status

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Employing Entity	University of the Basque Country
Department	Organic Chemistry I, Faculty of Chemistry
Professional Category	Ikerbasque Ressearch Associate
Location	San Sebastián-Donostia, Basque Country
Start date (dd/mm/yyyy)	01/10/2017
Phone	+34 (0) 943 01 5753

## Recent Positions

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Employing entity	University of the Basque Country
Department	Organic Chemistry I
Professional Category	Ikerbasque Research Fellow
Start-end date	01/10/2012 - 30/09/2017
Employing entity	Vrije University of Amsterdam
Department	Theoretical Chemistry
Professional Category	Postdoctoral Fellow
Start-end date	09/01/2011 - 30/09/2012
Employing entity	University of the Basque Country
Department	Organic Chemistry I
Professional Category	Postdoctoral Fellow
Start-end date	01/06/2009 - 08/01/2011
Employing entity	University of the Basque Country
Department	Organic Chemistry I
Professional Category	Postdoctoral Fellow
Start-end date	01/02/2009 - 31/05/2011

## Teaching Experience

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| 2024 | <ul style="list-style-type: none"><li>• Lecturer of Master courses “<i>Theoretical and Computational Chemistry</i>” (University of the Basque Country; Synthetic and Industrial Chemistry Master)</li></ul> |
| 2023 | <ul style="list-style-type: none"><li>• Lecturer of Master courses “<i>Theoretical and Computational Chemistry</i>” (University of the Basque Country; Synthetic and Industrial Chemistry Master)</li></ul> |

- 2022
  - Invited lecturer of Master courses “*Molecular Modeling*” (University of Castilla-La Mancha; Chemistry Master)
  - Lecturer of Master courses “*Theoretical and Computational Chemistry*” (University of the Basque Country; Synthetic and Industrial Chemistry Master)
- 2021
  - Invited lecturer of Master courses “*Molecular Modeling*” (University of Castilla-La Mancha; Chemistry Master)
- 2016
  - Lecturer of “*SUSPOL 1st winter school: Basic Concepts of Modeling in Organocatalyzed Reactions*” (University of the Basque Country)
- 2013
  - Lecturer of *HRSMC Course Molecular Modeling*, Vrije University Amsterdam (The Netherlands)

### **Supervision of graduate/undergraduate students**

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2024 – on going	<b>2 PhD.</b> University of the Basque Country, Spain.
2024 – on going	<b>1 Master Student.</b> University of the Basque Country, Spain.
2024 – on going	<b>1 undergraduate Students.</b> University of the Basque Country, Spain.
2010 – 2014	<b>1 PhD candidate.</b> University of the Basque Country, Spain.
2012 – 2013	<b>1 Master Student.</b> University of the Basque Country, Spain.
2020 – to date	<b>3 undergraduate Students.</b> University of the Basque Country, Spain.

### **Research Experience**

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Since 2017	<b>Ikerbasque Research Associate.</b> University of the Basque Country, Spain.
10/2012 – 9/2017	<b>Ikerbasque Research Fellow.</b> University of the Basque Country, Spain.
01/2011 – 09/2012	<b>Postdoc Researcher.</b> Vrije University of Amsterdam, The Netherlands.
01/2009 – 12/2010	<b>Postdoc Researcher.</b> University of the Basque Country, Spain.
05/2007 – 11/2007	<b>Pre-doctoral stage.</b> University of Cambridge, UK.

### **Participation in Research Projects**

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01/2022 – to date	Project from Eusko Jaularitzza (Basque Government). Topic: Bioorganic, Supramolecular Chemistry and Modeling. University of the Basque Country. PI: Prof. Fernando P. Cossío
08/2021 – to date	Project from Spanish Government. Topic: Doping effect of Ge in Pt nanoclusters. University of the Basque Country. PI: Dr. Elisa Jimenez-Izal
01/2018 – 11/2020	Project from Regional Andalucian Government. Topic: Nanoparticle-Monitored Gene and Cellular Immunotherapy for the Clinical Modulation of Immune Tolerance. University of Cadiz. PI: Prof. Francisco García-Cózar
03/2014 – 06/2016	Project from Eusko Jaularitzza (Basque Government). Topic: Experimental and Theoretical Studies on Catalytic Cycloaddition Reactions. University of the Basque Country.

## Grants, Fellowship and Awards

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10/2012	<b>Ikerbasque Fellowship</b>
01/2011 – 09/2012	Postdoctoral Grant. Prof. Matthias F. Bickelhaupt, Vrije University Amsterdam (The Netherlands)
01/2004 – 12/2008	José Castillejo grant for Predoctoral Studies. University of Castilla-La Mancha, Spain.
01/2004 – 12/2011	PI: Prof. Fernando P. Cossío Project from Spanish Government. Topic: Development of Organometallic Entities for Selective Functionalization of Organic Moieties. University of Zaragoza. PI: Prof. Miguel A. Esteruelas

## List of Publications

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*90 accepted scientific publications in peer-reviewed journals. 15 manuscripts have been published in High-Impact journals such as "Nature Communications", "Angewandte Chemie", "Journal of the American Chemical Society" and "Chemical Science". 9 manuscripts have been highlighted with the cover.*

90) "Deposited PtGe Clusters as Active and Durable Catalysts for CO Oxidation" Andoni Ugartemendia, Jose M. Mercero, Abel de Cózar, Marko M. Melander, Jaako Akola, Elisa Jimenez-Izal *ChemCatChem* 2024, 16, e202301137.

89) "Dehydration of alcohols catalyzed by copper(ii) sulfate: type II dyotropic reactions and stepwise mechanisms" Jorge Sánchez-Quesada, Carlos López-Cruz, Abel de Cózar, Ana Arrieta, Iosune Arrastia, Fernando P. Cossío *Org. Biomol. Chem.* 2024, 22, 1800–1811.

88) "Higher-Order Electrocyclizations in Biological and Synthetic Processes". Abel de Cózar,\* Ana Arrieta, Fernando P. Cossío\* **ChemPlusChem** 2023, 88, e202300482.

87) "Chiral self-recognition in a bispericyclic cyclodimerisation reaction of 1-azadienes". Adrián López-Francés, Xabier del Corte, Zuriñe Serna-Burgos, Jesús M. de los Santos, Abel de Cózar,\* Javier Vicario\* **Org. Chem. Front.** 2023, 10, 6103–6111.

86) "Synergic photoprotection of phenolic compounds present in tomato fruit cuticle: a spectroscopic investigation in solution". Ana González Moreno, Jack M. Woolley, Eva Domínguez, Abel de Cózar, Antonio Heredia, Vasilios G. Stavros **Chem. Phys. Phys. Chem.** 2023, 25, 12719–12799.

85) "Selectivity in Cationic Cyclizations Involving Alkynes: a Computational Study on Biomimetic Synthesis of Polycyclic Metabolites" Abel de Cózar,\* Ana Arrieta, Fernando P. Cossío\* **Chem. Eur. J.** 2023 29, e202204028. **Highlighted with the cover.**

84) "Boundaries of hyperconjugation from pi-Extended Six-Membered Phosphorus Heterocycles" Abel de Cózar,\* Carlos Romero-Nieto\* **Inorg. Chem.** 2023 62, 4097–4105

83) "Diastereoselectivity on Intramolecular Alder-ene Reaction of 1,6-Dienes" Abel de Cózar\* **ChemPhysChem** 2022, 23, e202200377

82) "Does the composition in PtGe cluster play any role in fighting CO poisoning?" Andoni Ugartemendia. José M. Mercero. Abel de Cózar. Elisa Jimenez-Izal **I. Chem. Phys.** 2022.

156,174301–11.

81) "Radiationless mechanism of UV deactivation by cuticle phenolics in plants" Ana González Moreno, Abel de Cózar,\* Pilar Prieto, Eva Domínguez, Antonio Heredia\* **Nature Comm.** 2022, 13, 1786–1797. "**Plants and agriculture**" *Editors' Highlights page.*

80) "Triarylamine enriched Organostannoxane Drums: Synthesis, Optoelectrochemical Properties, Association Studies, and Gelatin Behavior" Silvia Collavini, Sebastian F. Völker, Andrea Cabrera-Espinoza, Manuel A. Martínez, Abel de Cózar, Leire San Felices, Luis Sanchez, Juan Luis Delgado **Inorg. Chem.** 2022, 61, 4046–4055.

79) "Role of Imine Isomerization in the Stereocontrol of the Staudinger Reaction between Ketenes and Imines" Fernando P. Cossío, Abel de Cózar, Miguel A. Sierra, Luis Casarrubios, Jaime G. Muntaner, Bimal K. Banik, Debasish Bandyopadhyay **RSC Adv.** 2022, 12, 104–117.

78) "Biological properties and conformational studies of ambiphilic Pd(I) and Ni(II) complexes bearing functionalized aroylaminocarbo-N-thiopyrrolinate units" Samet Poyraz, Samet Belveren, Sabriye Aydinoglu, Mahmut Ulger, Abel de Cózar, Maria de Gracia Retamosa, José M. Sansano, H. Ali Dondas 2021, 17, 2812–2821.

77) "Additive and Emergent Catalytic Properties of Dimeric Unnatural Amino Acid Derivatives: Aldol and Conjugate Additions" Maria de Gracia Retamosa, Andrea Ruiz-Olalla, Maddalen Agirre, Abel de Cózar, Tamara Bello, Fernando P. Cossío **Chem. Eur. J.** 2021, 27, 15671–15687. **Highlighted with the cover.**

76) "Structure, isomerization and dimerization processes of naringenin flavonoids" Ana González Moreno,\* Pilar Prieto, M. Carmen Ruiz Delgado, Eva Dominguez, Antonio Heredia, Abel de Cózar\* **Chem. Phys. Phys. Chem.** 2021, 23, 18068–18077.

75) "Controlling the molecular arrangement of racemates through weak interactions: the synergy between *p*-interactions and halogen bonds" Carlos Romero-Nieto, Abel de Cózar,\* Elzbieta Regulaska, John B. Mullenix, Frank Rominger, Philip Hindenberg **Chem. Commun.** 2021, 57, 7366–7369. **Highlighted with the cover.**

74) "Doping Platinum with Germanium: An Effective Way to Mitigate the CO Poisoning" Andoni Ugartemendia, Kristien Peeters, Piero Ferrari, Abel de Cózar, José M. Mercero, Ewald Janssens, Elisa Jimenez-Izal 2021, 22, 1603–1610.

73) "syn-Selective Michael Reaction of  $\alpha$ -Branched Aryl Acetaldehydes with Nitroolefins Promoted by Squaric Amino Acid Derived Bifunctional Brønsted Bases" Ane García-Urricelqui, Abel de Cózar, Teresa E. Campano, Antonia Mielgo, Claudio Palomo **Eur. J. Org. Chem.** 2021, 3604–3612.

72) "Synthesis of *b*-hydroxy  $\alpha$ -Aminoacids Through Brønsted Base-Catalized syn-selective Direct Aldol Reaction of Schiff Bases of Glycine *o*-Nitroanilide" Silvia Vera, Ana Vázquez, Ricardo Rodríguez, Sandra del Pozo, Iñiqui Urruzuno, Abel de Cózar, Antonia Mielgo, Claudio Palomo **J. Org. Chem.** 2021, 86, 7757–7772.

71) "Nature of Alkali- and Coinage-Metal Bonds versus Hydrogen Bonds" Olatz Larrañaga, Ana Arrieta, Célia Fonseca-Guerra, F. Matthias Bickelhaupt, Abel de Cózar\* **Chem. Asian J.** 2021, 16, 315–321.

- 70) "Probing  $\alpha$ -Amino Aldehydes as Weakly Acidic Pronucleophiles: Direct Access to Quaternary  $\alpha$ -Amino Aldehydes by an Enantioselective Michael Addition Catalyzed by Brønsted Bases" Ane García-Urricelqui, Abel de Cózar, Antonia Mielgo, Claudio Palomo **Chem. Eur. J.** 2021, 27, 2483–2492.
- 69) "Effect of Remote Substituents on the Torquoselectivity of 3-Silyl Cyclobutene-Derivatives Ring-Opening Reactions" Olatz Larrañaga, Abel de Cózar\* **ChemPhysChem** 2020, 21, 1805–1813.
- 68) "Nitroprolinates as nucleophiles in Michael-type additions and acylations. Synthesis of enantiomerically enriched fused amino- pyrrolidino-[1,2-a]pyrazinones and -diketopiperazines" Eduardo García-Mingüens, Verónica Selva, Olatz Larrañaga, Carmen Nájera, José M. Sansano,\* Abel de Cózar\* **ChemCatChem** 2020, 12, 2014–2021.
- 67) "Design, synthesis and amplified spontaneous emission of 1,2,5-benzothiadiazole derivatives" Raúl Martín, Pilar Prieto, José R. Carrillo, Ana M. Rodríguez, Abel de Cózar, Pedro C. Boj, María A. Díaz-García, Manuel G Ramírez **J. Mat. Chem.** 2019, 7, 9996–10007.
- 66) "Switching Diastereoselectivity in Catalytic Enantioselective (3+2) Cycloadditions of Azomethine Ylides Promoted by Metal Salts and Privileged Segphos-Derived Ligands" Guilherme S. Caleffi, Olatz Larrañaga, Marcos Ferrándiz-Saperas, Paulo R. R. Costa, Carmen Nájera, Abel de Cózar, Fernando P. Cossío, José M. Sansano **J. Org. Chem.** 2019, 84, 10593–10605.
- 65) "Dismantling the Hyperconjugation of  $p$ -Conjugated Phosphorus Heterocycles" Olatz Larrañaga, Carlos Romero-Nieto, Abel de Cózar\* **Chem. Eur. J.** 2019, 25, 9035–9044.
- 64) "From bioactive pyrrolidino[3,4- $c$ ]pyrrolidines to more bioactive pyrrolidino[3,4- $b$ ]pyrrolidines via ring-opening ring-closing promoted by sodium methoxide" Samet Belveren, Olatz Larrañaga, Samet Poyraz, H. Ali Dondas,\* Mahmut Ülger, Ertan Sahin, Marcos Ferrándiz-Saperas, José M. Sansano, Abel de Cózar\* **Synthesis** 2019, 51, 1565–1577.
- 63) "Effect of an  $\alpha$ -Methyl Substituent on the Dienophile on Diels-Alder endo:exo Selectivity" Olatz Larrañaga, Abel de Cózar\* **ChemistryOpen** 2019, 8, 49–57.
- 62) "Alkaloids Reactivity: DFT Analysis of Selective Demethylation Reactions" Olatz Larrañaga, José I. Miranda, Fernando P. Cossío, Abel de Cózar\* **J. Org. Chem.** 2018, 83, 15105–15109.
- 61) "Unnatural Amino Acid Ester Catalyzed Formal Synthesis of (+)-Pancreaticine" María de G. Retamosa, Andrea Ruiz-Olalla, Tamra Bello, Abel de Cózar, Fernando P. Cossío **Synfacts** 2018, 14, 0311.
- 60) "Cooperative Catalysis with Coupled Chiral Induction in 1,3-Dipolar Cycloadditions of Azomethine Ylides" Alberto Cayuelas, Olatz Larrañaga, Verónica Selva, Carmen Nájera, Takahiko Akiyama, José M. Sansano, Abel de Cózar, José I. Miranda, Fernando P. Cossío **Chem. Eur. J.** 2018, 24, 8092–8097.
- 59) "Ion-Pair SN2 Reaction of OH<sup>-</sup> and CH<sub>3</sub>Cl: Activation Strain Analyses of Counterion and Solvent Effects" Jalal Z. A. Laloo, Lydia Rhyman, Olatz Larrañaga, Ponadurai Ramasami, F. Matthias Bickelhaupt, Abel de Cózar\* **Chem. Asian. J.** 2018, 13, 1138–1147. **Highlighted with the cover.**
- 58) "A Three-Component Enantioselective Cyclization Reaction Catalyzed by an Unnatural Amino Acid Derivative" María de G. Retamosa, Andrea Ruiz-Olalla, Tamara Bello, Abel de Cózar, Fernando P. Cossío **Angew. Chem. Int. Ed.** 2018, 57, 668–672.

57) "Diastereoselective [3 + 2] vs [4 + 2] Cycloadditions of Nitroprolinates with  $\alpha$ ,  $\beta$ -Unsaturated Aldehydes and Electrophilic Alkenes: An Example of Total Periselectivity" Verónica Selva, Olatz Larrañaga, Luis M. Castelló, Carmen Nájera, José M. Sansano, Abel de Cózar\* **J. Org. Chem.** 2017, 82, 6298–6312.

56) "Asymmetric identity SN2 transition states: Nucleophilic substitution at carbon and silicon centers" Marcus V. J. Rocha, Nicole W. G. Smits, Lando P. Wolters, Abel de Cózar, Célia Fonseca Guerra, Teodorico C. Ramalho, F. Matthias Bickelhaupt **Int. J. Mass Spectros.** 2017, 413, 85–91.

55) "Intramolecular SEAr Reactions of Phosphorus Compounds: Computational Approach to the Synthesis of -Extended Heterocycles" Olatz Larrañaga, Carlos Romero-Nieto, Abel de Cózar\* **Chem. Eur. J.** 2017, 23, 17487–17496. **Highlighted with the cover.**

54) "Mono- and Di-Alkylation Processes of DNA Bases by Nitrogen Mustard Mechlorethamine" Olatz Larrañaga, Abel de Cózar,\* Fernando P. Cossío **ChemPhysChem** 2017, 17, 3390–3401.

53) "A Guide for the Design of Functional Polyaromatic Organophosphorus Materials" Philip Hindenberg, Alicia López-Andarias, Frank Rominger, Abel de Cózar,\* Carlos Romero-Nieto **Chem. Eur. J.** 2017, 23, 13919–13928. **Highlighted with the cover.**

52) "Catalysis of a 1,3-dipolar reaction by distorted DNA incorporating a heterobimetallic platinum(II) and copper(II) complex" Iván Rivilla, Abel de Cózar, Thomas Schäfer, Frank J. Hernandez, Alexander M. Bitner, Aitziber Eleta-Lopez, Ali Aboudzadeh, José I. Santos, José I. Miranda, Fernando P. Cossío **Chem. Sci.** 2017, 8, 7038–7046.

51) "Taniaphos AgF-catalyzed enantioselective 1,3-dipolar cycloaddition of stabilized azomethine ylides derived from 2,2-dimethoxyacetaldehyde" Alberto Cayuelas, Olatz Larrañaga, Carmen Nájera, José M. Sansano, Abel de Cózar, Fernando P. Cossío **Tetrahedron** 2016, 72, 6043–6051.

50) "Cyclopropanation reactions catalysed by dendrimers possessing one metalloporphyrin active site at the core: linear and sigmoidal kinetic behaviour for different dendrimer generations" Petr Vins, Abel de Cózar, Iván Rivilla, Katerina Novakova, Ronen Zangi, Josef Cvackz, Iosune Arrastia, Ana Arrieta, Pavel Drasar, José I. Miranda, Fernando P. Cossío **Tetrahedron** 2016, 72, 1120–1131.

49) "Synthesis of Chiral Spiro-nitroprolinates by Silver(I) Catalysis" Alberto Cayuelas, Ricardo Ortiz, Carmen Nájera, José M. Sansano, Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío **Synfacts** 2016, 12, 0819.

48) "New Insights into the Reactivity of Cisplatin with Free and Restrained Nucleophiles: Microsolvation Effects and Base Selectivity in Cisplatin–DNA Interactions" Abel de Cózar, Olatz Larrañaga, F. Matthias Bickelhaupt, Eider San Sebastian, Elisabeth Ortega-Carrasco, Jean Didier Maréchal, Agustí Lledós, Fernando P. Cossío **ChemPhysChem** 2016, 17, 3932–3947.

47) "Enantioselective Synthesis of Polysubstituted Spiro-nitroprolinates Mediated by a (R,R)-Me-DuPhos-AgF-Catalyzed 1,3-Dipolar Cycloaddition" Alberto Cayuelas, Ricardo Ortiz, Carmen Nájera, José M. Sansano, Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío **Org. Lett.** 2016, 18, 2926–2929.

46) "Ion-Pair SN2 Substitution: Activation Strain Analyses of Counter- Ion and Solvent Effects" Jalal Z. A. Laloo, Lydia Rhyman, Ponadurai Ramasami, F. Matthias Bickelhaupt, Abel de Cózar\* **Chem. Eur.**

J. 2016, 22, 4431–4439. **Highlighted with the cover.**

45) “Alkenyl Arenes as Dipolarophiles in Catalytic Asymmetric 1,3-Dipolar Cycloaddition Reactions of Azomethine Ylides” Ana Pascual Escudero, Abel de Cózar, Fernando P. Cossío, Javier Adrio, Juan C. Caretero **Angew. Chem. Int. Ed.** 2016, 55, 15334–15338.

44) “Donor-Stabilized 1,3-Disila-2,4-diazacyclobutadiene with a Nonbonded Si···Si Distance Compressed to a Si=Si Double Bond Length” David Gau, Raphael Nougué, Nathalie Saffon-Merceron, Antoine Baceiredo, Abel de Cózar, Fernando P. Cossío Daisuke Hashizume, Tsuyoshi Kato **Angew. Chem. Int. Ed.** 2016, 55, 14673–14677.

43) “Regio and diastereoselective multicomponent 1,3-dipolar cycloadditions between prolinic hydrochlorides, aldehydes and dipolarophiles for the direct synthesis of pyrrolizidines” Juan Mancebo-Aracil, Carmen Nájera,\* Luis M. Castelló, José M. Sansano,\* Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío **Tetrahedron** 2015, 71, 9645–9661.

42) “Resonance driven regioselective demethylation of berberine. Microwave assisted synthesis of berberrubine and its assessment as fluorescent chemosensor for alkanes” Arantzazu Delgado-Camón, Carmen Jarne, Vicente L. Cebolla,\* Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío, Yosú Vara, Andrés Domínguez, Luis Membrado, Javier Galbán, Rosa Garriga **Tetrahedron** 2015, 71, 6148–6154.

41) “Enantioselective Synthesis of *exo*-4-Nitroprolinates from Nitro-alkenes and Azomethine Ylides Catalyzed by Chiral Phosphor- amidite·Silver(I) or Copper(II) Complexes” Luis M. Castelló, Carmen Nájera, José M. Sansano, Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío **Synthesis** 2015, 47, 934–943.

40) “Synthesis of Chromen[4,3-*b*]pyrrolidines by Intramolecular 1,3-Dipolar Cycloadditions of Azomethine Ylides: An Experimental and Computational Assessment of the Origin of Stereocontrol” Paulo R. R. Costa, José M. Sansano, Unai Cossío, Julio, C. F. Barcellos, Ayres G. Días, Carmen Nájera, Ana Arrieta, Abel de Cózar, Fernando P. Cossío **Eur. J. Org. Chem.** 2015, 4689–4698.

39) “Remote Substituent Effects on the Stereoselectivity and Organocatalytic Activity of Densely Substituted Unnatural Proline Esters in Aldol Reactions” María de G. Retamosa, Abel de Cózar, Mirian Sánchez, José I. Miranda, José M. Sansano, Luis M. Castelló, Carmen Nájera, Ana I. Jiménez, Francisco J. Sayago, Carlos Cativiela, Fernando P. Cossío **Eur. J. Org. Chem.** 2015, 2503–2516.

38) “Azobenzene-functionalized iridium(III) triscyclometalated complexes” Jorge Pérez-Miqueo, Ainara Telleira, Martín Muñoz-Olasagasti, Ainhoa Altube, Eva García-Lecina, Abel de Cózar, Zoraida Freixa **Dalton Trans.** 2015, 44, 2075–2091. **Highlighted with the cover.**

37) “Synthesis of radiolabelled aryl azides from diazonium salts: experimental and computational results permit the identification of the preferred mechanism” Sarmeer M. Joshi, Abel de Cózar, Vanessa Gómez-Vallejo, Jacek Koziorowski, Jordi Llop,\* Fernando P. Cossío **Chem. Commun.** 2015, 51, 8954–8957.

36) “Is it possible to achieve a complete desaturation of cycloalkanes promoted by *o*-benzyne?” Francisco Cervantes-Navarro, Abel de Cózar, Fernando P. Cossío,\* María A. Fernandez-Herrera, Gabriel Merino, Israel Fernandez **Chem. Commun.** 2015, 51, 5302–5305.

35) “Azobenzene-Appended Bis-Cyclometalated Iridium(III) Bipyridyl Complexes” Ainara Telleira,

Jorge Pérez-Miqueo, Ainhoa Altube, Eva García-Lecina, Abel de Cózar, Zoraida Freixa **Organometallics** 2015, 34, 5513–5529.

34) “*Stereodivergent Synthesis of Chiral Fullerenes by [3 + 2] Cycloadditions to C60*” Enrique E. Maroto, Salvatore Filippone, Margarita Suárez, Roberto Martínez-Álvarez, Abel de Cózar, Fernando P. Cossío, Nazario Martín **J. Am. Chem. Soc.** 2014, 136, 705–712.

33) “*Efficient Diastereo- and Enantioselective Synthesis of exo-Nitroprolinates by 1,3-Dipolar Cycloadditions Catalyzed by Chiral Phosphoramidite-Silver(I) Complexes*” Luis M. Castelló, Carmen Nájera, José M. Sansano, Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío *Adv. Synt. Cat.* 2014, 356, 3861–3870.

32) “*Aggregation and Cooperative Effects in the Aldol Reactions of Lithium Enolates*” Olatz Larrañaga, Abel de Cózar, F. Mathias Bickelhaupt, Ronen Zangi, Fernando P. Cossío **Chem. Eur. J.** 2013, 19, 13761–13773.

31) “*Stereodivergent SN2@P Reactions of Borane Oxazaphospholidines: Experimental and Theoretical Studies*” Hester Zjilstra, Thierry León, Abel de Cózar, Célia Fonseca Guerra, Daniel Byrom, Antoni Riera,\* Xabier Verdaguer, F. Mathias Bickelhaupt **J. Am. Chem. Soc.** 2013, 135, 4483–3391.

30) “*Phosphoramidite Cu(OTf)2 Complexes as Chiral Catalysts for 1,3-Dipolar Cycloaddition of Iminoesters and Nitroalkenes*” Luis M. Castelló, Carmen Nájera, José M. Sansano, Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío **Org. Lett.** 2013, 15, 2902–2905

29) “*Computational Chemistry: A Useful Tool for the Chemical Synthesis of Complex Molecules, Heterocycles and Catalysts*” Ana Arrieta, María C. de la Torre, Abel de Cózar, Miguel A. Sierra, Fernando P. Cossío **Synlett** 2013, 24, 535–549.

28) “*Synthetic scope and DFT analysis of the chiral binap–gold(I) complex-catalyzed 1,3-dipolar cycloaddition of azlactones with alkenes*” María Martín-Rodríguez, Luis M. Castelló, Carmen Nájera, José M. Sansano, Olatz Larrañaga, Abel de Cózar, Fernando P. Cossío **Belstein J. Org. Chem.** 2013, 9, 2422–2433.

27) “*Size and branching effects on the fluorescence of benzylic dendrimers possessing one apigenin fluorophore at the core*” Petr Vins, Martina Vermachova, Pavel Drasar, Melisa del Barrio, Carmén Jarne, Vicente L. Cebolla,\* Abel de Cózar, Ronen Zangi, Fernando P. Cossío **Tetrahedron** 2013, 69, 10361–10368.

26) “*Densely substituted unnatural L- and D-prolines as catalysts for highly enantioselective stereodivergent (3 + 2) cycloadditions and aldol reactions*” Egoitz Conde, Dabide Bello, Abel de Cózar, Mirian Sánchez, Miguel A. Vázquez, Fernando P. Cossío **Chem. Sci.** 2012, 3, 1486–1491.

25) “*An Amine-Catalyzed Enantioselective [3+2] Cycloaddition of Azomethine Ylides and  $\alpha,\beta$ -Unsaturated*” Aldehydes: Applications and Mechanistic Implications Silvia Reboredo, Efraím Reyes, José L. Vicario,\* Dolores Badía, Luisa Carrillo, Abel de Cózar, Fernando P. Cossío **Chem. Eur. J.** 2012, 18, 7179–7188.

24) “*Reversible Binding of Ethylene to Silylene–Phosphine Complexes at Room Temperature*” Ricardo Rodríguez, David Gau, Tsuyoshi Kato,\* Nathalie Saffon-Merceron, Abel de Cózar, Fernando P.



Cossío, Antoine Baceiredo **Angew. Chem. Int. Ed.** 2011, 50, 10414–10416.

23) “Hierarchical Selectivity in Fullerenes: Site-, Regio-, Diastereo-, and Enantiocontrol of the 1,3-Dipolar Cycloaddition to C70” Enrique E. Maroto, Abel de Cózar, Salvatore Filippone, Ángel Martín-Domenech, Margarita Suarez, Fernando P. Cossío, Nazario Martín **Angew. Chem. Int. Ed.** 2011, 50, 6060–6064. **Highlighted with the cover.**

22) “Synthesis of a Stable Disilyne Bisphosphine Adduct and Its Non-Metal-Mediated CO<sub>2</sub> Reduction to CO” David Gau, Ricardo Rodriguez, Tsuyoshi Kato, Nathalie Saffon-Merceron, Abel de Cózar, Fernando P. Cossío, Antoine Baceiredo **Angew. Chem. Int. Ed.** 2011, 50, 1092–1096.

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18) “Cyclic Electron Delocalization in Pericyclic Reactions” Ana Arrieta, Abel de Cózar, Fernando P. Cossío, **Curr. Org. Chem.** 2011, 15, 3594–3608.

17) “Synthesis and characterization of metallodendritic palladium-biscarbene complexes derived from 1,1'-methylenebis(1,2,4-triazole)” Valentín Hornillos, Javier Guerra, Abel de Cózar, Pilar Prieto, Sonia Merino, Miguel A. Maestro, Enrique Díez-Barra, Juan Tejada **Dalton Trans.** 2011, 40, 4095–4103.

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15) “Stereocontrolled (3+2) cycloadditions between azomethine ylides and dipolarophiles: a fruitful interplay between theory and experiment” Abel de Cózar, Fernando P. Cossío **Phys. Chem. Chem. Phys.** 2011, 13, 10858–10868.

14) “Synthesis and Structure of a Base-Stabilized C-Phosphino-Si-Amino Silyne” David Gau, Tsuyoshi Kato, Nathalie Saffon-Merceron, Abel de Cózar, Fernando P. Cossío, Antoine Baceiredo **Angew. Chem. Int. Ed.** 2010, 49, 6585–6588.

13) “Concerted and Stepwise Mechanisms in Metal-Free and Metal-Assisted [4+3] Cycloadditions Involving” Allyl Cations Israel Fernández, Fernando P. Cossío, Abel de Cózar, Agustí Lledós, José Luis Mascareñas **Chem. Eur. J.** 2010, 16, 12147–12157.

12) “A Cationic Rh(III) Complex That Efficiently Catalyzes Hydrogen Isotope Exchange in Hydrosilanes” Jesús Campos, Ana C. Esqueda, Joaquín López-Serrano, Luís Sánchez, Fernando P. Cossío, Abel de Cózar, Eleuterio Álvarez, Celia Maya, Ernesto Carmona **J. Am. Chem. Soc.** 2010, 132,

16765–16767.

11) “Computational Calculations in Microwave- Assisted Organic Synthesis (MAOS). Application to Cycloaddition Reactions” Abel de Cózar, Cristina Cebrián, Pilar Prieto, Ángel Díaz-Ortiz, Antonio de la Hoz, Fernando P. Cossío **Org. Biomol. Chem.** 2010, 8, 1000–1009. **Highlighted with the cover.**

10) “Microwave-Assisted Stille Reactions as a Powerful Tool for Building Polyheteroaryl Systems Bearing a 1H)-1,2,4-Triazole Moiety” Cristina Cebrián, Abel de Cózar, Pilar Prieto, Ángel Díaz-Ortiz, Antonio de la Hoz, José R. Carrillo, Antonio M. Rodríguez, Francisco Montilla **Synlett** 2010, 1, 55–60.

9) “Microwave-assisted reactions of nitroheterocycles with dienes. Diels–Alder and tandem hetero Diels–Alder/[3,3] sigmatropic shift” M. Victoria Gómez, Ana I. Aranda, Andrés Moreno, Fernando P. Cossío, Abel de Cózar, Ángel Díaz-Ortiz, Antonio de la Hoz, Pilar Prieto **Tetrahedron** 2009, 65, 5328–5336.

8) “Enantioselective synthesis of polysubstituted prolines by Binap-silver-catalyzed 1,3-dipolar cycloadditions” Carmen Nájera, M. de Gracia Retamosa, María Martín-Rodríguez, José M. Sansano, Abel de Cózar, Fernando P. Cossío **Eur. J. Org. Chem.** 2009, 5622–5634.

7) “Recyclable supported catalysts in microwave-assisted reactions: first Diels–Alder cycloaddition of a triazole ring” Ángel Díaz-Ortiz, Pilar Prieto, Abel de Cózar, Cristina Cebrián, Andrés Moreno, Antonio de la Hoz **Aust. J. Org. Chem.** 2009, 62, 1600–1606.

6) “Selectivity under microwave irradiation. Benzylolation of 2-pyridone: an experimental and theoretical study” Antonio de la Hoz, Pilar Prieto, Michel Rajzmann, Abel de Cózar, Ángel Díaz-Ortiz, Andrés Moreno, Fernando P. Cossío **Tetrahedron** 2008, 64, 8169–8176.

5) “On the Stereodivergent Behavior Observed in the Staudinger Reaction between Methoxyketene and (E)-N-Benzylidenearyl Amines” Bimal K. Banik, Begoña Lecea, Ana Arrieta, Abel de Cózar, Fernando P. Cossío **Angew. Chem. Int. Ed.** 2007, 46, 3028–3032.

4) “Diastereoselective 1,3-Dipolar Cycloaddition Reactions between Azomethine Ylides and Chiral Acrylates Derived from Methyl (S)- and (R)-Lactate – Synthesis of Hepatitis C Virus RNA-Dependent RNA Polymerase Inhibitors” Carmen Nájera, M. de Gracia Retamosa, José M. Sansano, Abel de Cózar, Fernando P. Cossío **Synfacts** 2007, 12, 1276–1276.

3) “Recyclable supported catalysts in microwave-assisted reactions: first Diels–Alder cycloaddition of a triazole ring” Ángel Díaz-Ortiz, Abel de Cózar, Pilar Prieto, Antonio de la Hoz, Andrés Moreno **Synfacts** 2007, 2, 0218–0218.

2) “Diastereoselective 1,3-Dipolar Cycloaddition Reactions between Azomethine Ylides and Chiral Acrylates Derived from Methyl (S)- and (R)-Lactate – Synthesis of Hepatitis C Virus RNA-Dependent RNA Polymerase Inhibitors” Carmen Nájera, M. de Gracia Retamosa, José M. Sansano, Abel de Cózar, Fernando P. Cossío **Eur. J. Org. Chem.** 2007, 5038–5049.

1) “Recyclable supported catalysts in microwave-assisted reactions: first Diels–Alder cycloaddition of a triazole ring” Ángel Díaz-Ortiz, Abel de Cózar, Pilar Prieto,\* Antonio de la Hoz, Andrés

## Organization of Events

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03/2023	Chair of 19th European Workshop on Phosphorus Chemistry & 3rd Spanish Workshop on Phosphorus Chemistry ( <b>EWPC-19 &amp; SWPC-3</b> )
06/2022	Chair of 2nd Spanish Workshop on Phosphorus Chemistry ( <b>SWPC-2</b> )
03/2021	Chair of 1st Spanish Workshop on Phosphorus Chemistry ( <b>SWPC-1</b> )
07/2014	Member of the Organizing & Scientific committee of IX International School on Organometallic Chemistry Marcial Moreno Mañas ( <b>IX-MMM</b> )
07/2014	Member of the Organizing & Scientific committee of 4 <sup>th</sup> -Brazil-Spain Workshop on Organic Chemistry ( <b>4-BSWOC</b> )
05/2008–07/2008	Member of the Organizing & Scientific committee of II Jornadas Ciencia Joven (University of Castilla La Mancha)
07/2007	Member of the Organizing & Scientific committee of I Simposio Interuniversitario Ciencia Joven (University of Castilla La Mancha)

Moreno **Tetrahedron Lett.** 2006, 47, 8761–8764.

## Book Chapters

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1) “*Reproducibility and Scalability of Microwave-Assisted Reactions*” Ángel Díaz-Ortiz, Antonio de la Hoz, Jesús Alcazar, José R. Carrillo, M. Antonia Herrero, Juan de M. Muñoz, Pilar Prieto, Abel de Cózar in *Microwave Heating* Ed. Usha Chandra 2011, In-tech Open.

## Invited Oral Presentations in seminars

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2023	University of Bordeaux-Institute of Molecular Sciences, <b>France</b>
2023	University of Málaga, <b>Spain</b>
2022	Vrije University of Amsterdam, <b>The Netherlands</b>
2022	Stockholm University, <b>Sweden</b>
2020	Vrije University of Amsterdam, <b>The Netherlands</b>
2019	University of Castilla-La Mancha, <b>Spain</b>
2017	University of the Basque Country, <b>Spain</b>
2017	University of Oxford, <b>UK</b>
2016	Vrije University of Amsterdam, <b>The Netherlands</b>
2015	Vrije University of Amsterdam, <b>The Netherlands</b>

## Referee of International Journals

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Since 2024	Referee of <i>Inorganic Chemistry</i>
Since 2022	Referee of <i>Chemistry an Asian Journal</i>
Since 2022	Referee of <i>European Journal of Organic Chemistry</i>
Since 2022	Referee of <i>Journal of Agricultural and Food Chemistry</i>
Since 2021	Referee of <i>Nature Communications</i>
Since 2021	Referee of <i>Journal of Organic Physical Chemistry</i>
Since 2021	Referee of <i>Journal Computational Chemistry</i>
Since 2020	Referee of <i>Journal of Organic Chemistry</i>
Since 2020	Referee of <i>Chemical Physic Letters</i>
Since 2020	Referee of <i>Applied Sciences</i>
Since 2020	Referee of <i>Journal of Molecular Science</i>
Since 2020	Referee of <i>Processes</i>
Since 2020	Referee of <i>Mathematics</i>
Since 2020	Referee of <i>Crystals</i>

Since 2019	Referee of <i>Chemistry a European Journal</i>
Since 2019	Referee of <i>Journal of Molecular Graphics and Modeling</i>
Since 2019	Referee of <i>International Journal of Molecular Science</i>
Since 2018	Referee of <i>Organic Letters</i>
Since 2018	Referee of <i>ChemPhysChem</i>
Since 2018	Referee of <i>Current Pharmaceutical &amp; Biotechnology</i>
Since 2018	Referee of <i>Chemical Data Collection</i>
Since 2018	Referee of <i>ACS Omega</i>
Since 2018	Referee of <i>Arabian Journal of Organic Chemistry</i>
Since 2017	Referee of <i>Chemistry Select</i>
Since 2017	Referee of <i>Tetrahedron</i>
Since 2016	Referee of <i>Letters in Organic Chemistry</i>
Since 2013	Referee of <i>Organometallics</i>
2022	Reviewer for Regional Institute of Applied Scientific Research (IRICA)

### Conferences and Workshops

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03/24	<p>“20th European Workshop on Phosphorus Chemistry (EWPC-20)”          Würzburg, Germany.          Adrian López-Frances, Javier Vicario, <a href="#">Abel de Cózar</a>          -Oral presentation: Stereoselective Synthesis of Tetrasubstituted <math>\alpha</math>-Aminophosphonic Acid Derivatives: A Computational Approach</p>
03/2023	<p>“19th European Workshop on Phosphorus Chemistry &amp; 3rd Spanish Workshop on Phosphorus Chemistry (EWPC-19 &amp; SWPC-3)”          San Sebastián-Donostia, Spain.          Andoni Ugartemendia, Jose M. Mercero, Elisa Jimenez-Izal, <a href="#">Abel de Cózar</a>          -Oral presentation: Effect of Pt<sub>2</sub>X Doping on Ethane Dehydrogenation</p>
09/2022	<p>“18th European Workshop on Phosphorus Chemistry (EWPC-16)”          Rostock, Germany.          -Attendance</p>
07/2022	<p>“XXXVIII Reunion Bienal de la Real Sociedad Española de Química”          Granada, Spain.          Andoni Ugartemendia, Jose M. Mercero, Elisa Jimenez-Izal, <a href="#">Abel de Cózar</a>          -Poster Presentation: Effect of Pt<sub>2</sub>X Doping on Ethane Dehydrogenation</p>
07/2022	<p>“XXVII Reunion Bienal del Grupo Especializado en Química Orgánica”          Granada, Spain.          Fernando P. Cossío, Miguel A. Sierra, Luís Casarrubios, Jaime G. Muntaner, Bimal K. Banik, Debasish Bandyopadhyay, <a href="#">Abel de Cózar</a>          -Poster presentation: Effect of Pt<sub>2</sub>X Doping on Ethane Dehydrogenation</p>
06/2022	<p>“2nd Spanish Workshop on Phosphorus Chemistry (SWPC-2)”          Online event.  <a href="#">Abel de Cózar</a>          -Oral presentation: Rule of Weak Interactions on Phosphaphenylene Supramolecular Assemblies</p>
03/2021	<p>“1st Spanish Workshop on Phosphorus Chemistry (SWPC-2)”          Online event.  <a href="#">Abel de Cózar</a>          -Oral presentation: Synthesis and Reactivity of Aromatic</p>

- 04/2020 Organophosphorus Compounds  
 “17th European Workshop on Phosphorus Chemistry (EWPC-16)”  
 Rennes, UK.  
 Olatz Larrañaga, Carlos Romero–Nieto Abel de Cózar  
 -Poster presentation: Hyperconjugation effects on pi–Conjugated Phosphorus Heterocycles
- 04/2019 “16th European Workshop on Phosphorus Chemistry (EWPC-16)”  
 Bristol, UK.  
 Olatz Larrañaga, Carlos Romero–Nieto Abel de Cózar  
 -Poster presentation: Dismantling the Hyperconjugation of pi–Conjugated Phosphorus Heterocycles
- 03/2018 “15th European Workshop on Phosphorus Chemistry (EWPC-16)”  
 Uppsala, Sweden.  
 Olatz Larrañaga, Carlos Romero–Nieto Abel de Cózar  
 -Oral presentation: Intramolecular SEAr Reaction of Phosphorus Compounds: Mechanistic Approaches
- 03/2017 “European Hengstberg Symposium: New Horizons in Smart Materials”  
 Heidelberg, Germany.  
Abel de Cózar, Philip Hindenberg, Alicia Lopez-Andarias, Frank Rominger, Carlos Romero-Nieto  
 -Oral presentation: Mechanistic Approaches to the Synthesis of Polyaromatic Phosphorous Compounds
- 07/2016 “IX International School on Organometallic Chemistry Marcial Moreno Mañas (IX–MMM)”  
 San Sebastián–Donostia, Spain.  
Abel de Cózar, Fernando P. Cossío  
 -Oral presentation: DFT studies on enantio/diastereoselective (3+2) Cycloadditions and Evaluation of the Catalytic Activity of the Cycloadducts
- 09/2015 “Holland research School of Molecular Chemistry Annual Meeting”  
 Amsterdam, The Netherlands.  
 Olatz Larrañaga, Abel de Cózar, Matthias F. Bickelhaupt, Ronen Zangi, Fernando P. Cossío  
 -Oral presentation: Aggregation and Cooperative Effects in the Aldol Reaction of Lithium Enolates
- 07/2015 “XXV Reunion Bienal de Química Orgánica”  
 Alicante, Spain.  
 Olatz Larrañaga, Abel de Cózar, Matthias F. Bickelhaupt, Ronen Zangi, Fernando P. Cossío  
 -Oral presentation: Aggregation and Cooperative Effects in the Aldol Reaction of Lithium Enolates
- 07/2014 “4th Brazil-Spain Workshop on Organic Chemistry”  
 San Sebastián–Donostia, Spain.  
Abel de Cózar, Matthias F. Bickelhaupt, Olatz Larrañaga, Fernando P. Cossío  
 -Oral presentation: New Insights into the Reactivity of Cisplatin with Free and Restrained Nucleophiles: Energetic Costs and Selectivity of the Nucleophilic Substitution Reactions Involved in Cisplatin Aquation
- 09/2013 “XXXIV Reunion Bienal de la Real Sociedades Española de Química”  
 Santander, Spain.

07/2013	Nerea Alberro, <u>Abel de Cózar</u> , Ivan Rivilla, Fernando P. Cossío - <i>Oral presentation</i> : Estudio Teórico Sobre la Síntesis de Ferrocenil Prolinas y su Empleo como Catalizadores en Cicloadiciones 1,3-Dipolares "VI International School on Organometallic Chemistry Marcial Moreno Mañas (IX- <i>MMM</i> )" Alicante, Spain.
08/2011	<u>Abel de Cózar</u> , Ana Arrieta Fernando P. Cossío - <i>Oral presentation</i> : Computational Chemistry as Tool in the Study of Metal Catalyzed Reactions "World Association of Theoretical and Computational Chemists ( <i>WATOC-2011</i> )" Santiago de Compostela, Spain.
08/2010	<u>Abel de Cózar</u> , Tamara Bello, Ana Arrieta Fernando P. Cossío - <i>Poster presentation</i> : Computational Kinetics of the Reaction between Cyclic Anhydrides and Imines "Spanish-Italian Symposium on Organic Chemistry ( <i>SISOC-VIII</i> )" Padova, Italy. <u>Abel de Cózar</u> - <i>Oral presentation</i> : Computational Studies about the Aggregation Effects of Lithium Enolates in Aldol Reaction

### Dissemination Activities

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2024	Organization of " <i>Olimpiadas de Química Vascas</i> " (RSEQ)
2024	Organization of " <i>TFG eguna</i> " (University of the Basque Country)
2023	Organization of " <i>Olimpiadas de Química Vascas</i> " (RSEQ)
2023	Organization of " <i>TFG eguna</i> " (University of the Basque Country)
2022	Organization of " <i>Olimpiadas de Química Vascas</i> " (RSEQ)
2022	Lecturer in " <i>Química para ti</i> " for undergraduate students (University of the Basque Country)
2022	Mentor in " <i>Elhuyar Zientzia Azoka</i> " for Elementary and Secondary school students (Basque Government)
2021	Lecturer in " <i>Química para ti</i> " for undergraduate students (University of the Basque Country)

### Analytical Techniques, Skills and Experience

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- Theoretical Calculations and Modeling:
  - DFT: Gaussian, ADF, Gamess, Turbomol, Jaguar
  - Post-HF: MolCAS, ORCA
  - MD: Macromodel, Desmond
  - ab initio* MD: CPMD
  - Kinetic simulations: Copassi,
  - Docking: Glide, Chimera, Autodoc 4.2
- Synthesis:
  - Organic Chemistry
  - Inorganic Chemistry
- Analytical Techniques:
  - Nuclear Magnetic Resonance (Bruker and Varian models)
  - Liquid and gas chromatography

- Infrared and Raman Spectroscopy

### **Memberships**

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Since 2015	American Chemical Society
Since 2005	Real Sociedad Española de Química (RSEQ, Spanish Royal Chemical Society)

### **Linguistic Proficiency**

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- Spanish: Native Language
- English: Advanced
- Basque: Fluent



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Dr. Abel de Cózar Ruano