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Curriculum Vitae

Dr. Nouredine Khiar El Wahabi

Research Scientist at the Spanish Research Council (CSIC)
Head of the group "Asymmetric Synthesis and Functional Nanosystems"

Instituto de Investigaciones Químicas

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Research Area

Bionanotechnology, Asymmetric Synthesis, Carbohydrate Chemistry, Asymmetric Synthesis, Chiral Sulfur Compounds.

Education

1983: B. Sc in Biology, Univesity Louis Pasteur (Now University of Strasbourg). France

1985: M. Sc in Biochemistry , Univesity of Strasbourg. France.

1986: Master Degree in Pharmacology and Molecular Pharmacochemistry, University of Strasbourg (DEA/Master of research).

186-1989:

PhD in Organic Chemistry, under the guidance of Dr. Arlette Solladié-Cavallo, Laboratory of Organometallic Stereochemistry, Ecole Européenne de Chimie, Polymères et Matériaux de Strasbourg. Obtained with the highest honour "Mention très honorable avec les félicitations du Jury".

Subject: Asymmetric Synthesis of α -hydroxy- β -amino acids (work realized in collaboration with LERS-Synthelabo, French Pharmaceutical Company).

Employment History

1990-1991:

Research Associate at Kansas State University, (USA) under the Supervision of Duy H. Hua.
Total Synthesis of Natural Product, and Synthetic Studies toward the Asymmetric Synthesis of glycosidase inhibitor Nojiromycin.

1991-1992:

Post-Doctoral Fellow at the University of Seville, (Spain) with Professor Felipe Alcudia.
Development of new methodologies for the synthesis of chiral sulfoxides.

1993-1997

Research Associate at the CSIC in Madrid, (Spain) with Prof Manuel Martin-Lomas.
Synthesis of complex oligosaccharides.

1997-1999.

Research Director. Hoeft-Rademacher Ltd (Pharmaceutical Start-up Company) in Seville, (Spain).

2000-2008.

Tenured Scientist. Staff of the Spanish Research Council. Institute of Chemical research, Seville.

RESEARCH FUNDING

Has participated in 23 national or international research projects, in 11 of which has been Principal Investigator. Follow are those run in the last 5 years:

1- Grant Title: "Diseño de Ligandos Basados en O-,N- y S-Glicósidos para la Organización de la Información Quiral y Biológica de los Carbohidratos".

Financing Organism: MEC (CTQ2006-15515-CO2-01/BQU), 133.100 Euros.

Quantity of the Grant: 133.100 Euros

Participating Entity: Instituto de Investigaciones Químicas Isla de la Cartuja. CSIC

Duration, from: 2006 **to:** 2010

Principal Investigador : Dr. Nouredine Khiar el Wahabi

2- Grant Title: Nanocatálisis y Catálisis Supramolecular: Nuevas Herramientas para una Química Verde (Ref.: P07-FQM-2774)

Financing Organism: Junta de Andalucía

Participating Entities: Instituto de Investigaciones Químicas, CSIC - Universidad de Sevilla.

Duration (4 years), from: 2008 **to:** 2011

Quantity of the Grant: 297.668 Euros

Principal Investigador : Dr. Nouredine Khiar el Wahabi.

3- Grant Title: Carbon Nanotubes-Carbohydrates Aggregates as Glycocalix Mimics: New Multivalent Systems for Antiadhesive Therapy (PIC2008FR1 01FR0001)

Proyecto Internacional de Cooperación Científicas (PICS)

Financing Organism: CSIC, CNRS

Participating Entities: CSIC, Universidad de Sevilla, CNRS (Francia)

Duration (3 years), from: 2008 **to:** 2010

Quantity of the Grant: 15000 Euros
Principal Investigator: Dr. Nouredine Khiar el Wahabi.

4- Grant Title: Manipulación de la Topología y Funcionalidad de Los Carbohidratos para su Aplicación en Catálisis Nanomedicina.

Financing Organism: MICNN (CTQ2009-14551-C02-01)

Participating Entities: Instituto de Investigaciones Químicas Isla de la Cartuja. CSIC

Duration, from: 1/01/2010 **to:** 31/01/2010

Quantity of the Grant: 31.460,000 Euros

Principal Investigator: Dr. José Manuel García Fenández.

5- Grant Title: Nuevos antagonistas de los receptores NK-1: Diseño, Síntesis y Aplicación en el tratamiento contra el cancer. (Ref.: P06-FQM-01852)

Financing Organism: Junta de Andalucía.

Participating Entities: Universidad de Sevilla.

Duration (4 years), from: 2007 **to:** 2010

Quantity of the Grant: 142536.30 Euros

Principal Investigator: Dr. Inmaculada Fernández Fernández

6- Grant Title: Manipulación de la topología y funcionalidad de los carbohidratos para la síntesis de catalizadores nanométricos.

Financing Organism: MEC (CTQ2010-15515-C02-01/BQU)

Participating Entities: Instituto de Investigaciones Químicas Isla de la Cartuja. CSIC

Duration, from: 01-01-2011 **to:** 31-12-2014

Cuantía de la subvención: 94380 Euros

Investigador responsable: Dr. Nouredine Khiar el Wahabi

7- Grant Title: Nuevos Análogos del Sulforafano: Síntesis Enantioselectiva y Actividad Biológica. (Ref: P11-FQM-8046)

Financing Organism: Junta de Andalucía.

Participating Entities: Universidad de Sevilla.

Duration (4 years), from: 26-03-2013 **to:** 26-03-2017

Quantity of the Grant: 242536.30 Euros

Principal Investigator: Dr. Inmaculada Fernández Fernández.

8- Grant Title: Diseño y Síntesis de Nuevos Sistemas Moleculares y Supramoleculares Nanométricos como Herramientas útiles en Síntesis Asimétrica y Biomedicina.

Financing Organism: MEC (CTQ2013-49066-C2-1-R)

Participating Entities: Instituto de Investigaciones Químicas Isla de la Cartuja. CSIC

Duration, from: 01-01-2013 **to:** 31-12-2016

Cuantía de la subvención: 105000 Euros

Investigador responsable: Dr. Nouredine Khiar el Wahabi

PUBLICATIONS

Lifetime Summary

Articles in Peer-Reviewed Journals: 78 published, 2 submitted

Book Chapters: 7

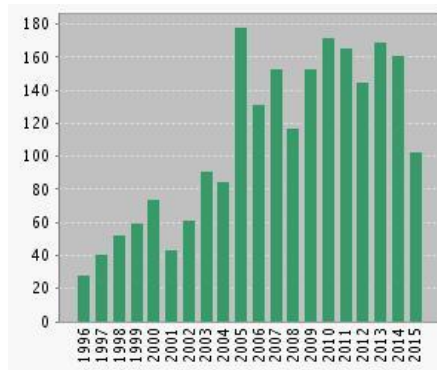
Patents Issued: 7

h-Index = 24, total citations: 2277

(Scopus)

ID: 6701642892

<http://orcid.org/0000-0003-4211-7138>



Papers in Peer Reviewed Journals

1. A. Solladié-Cavallo, N. Khiar. **Enantioselective Synthesis of Optically Pure S(-)-Isoleucine.** *Tetrahedron Letters*, **1988**, 29, 2189-2192
2. A. Solladié-Cavallo, N. Khiar. **Methylammonium fluoride (MAF): A convenient reagent for Si-O bond cleavage.** *Synthetic Communication*, **1989**, 19, 1335-1340.
3. A. Solladié-Cavallo, N. Khiar. **Synthesis of (2S,3R)-3-amino-2-hydroxy-5-methyl hexanoic acid: a bridging effect of KF.** *J. Org. Chem.***1990**, 55, 4750-4754.
4. A. Solladié-Cavallo, N. Khiar, J. Fisher, y A. De Cian. **Configuration and conformation of (-)-8-phenylmenthyl, 3-amino-2-hydroxy-5-methylhexanoate.** *Tetrahedron*, **1991**, 47, 249-258.
5. Fernández, I.; Khiar, N.; Llera, J. M.; Alcudia, F. **Asymmetric Synthesis of alkyl and aryl sulfinates of DAG: an improved and general route to both enantiomerically pure sulfoxides.** *J. Org. Chem.***1992**, 57, 6789-6796.
6. D.H. Hua, N. Khiar, F. Zhang, y L. Lambs. **Synthesis of 2,2-disubstituted 2,5-dihydro-4-methyloxazoles.** *Tetrahedron Lett.***1992**, 33, 7751-7754
7. N. Khiar, I. Fernández, y F. Alcudia. **C₂-symmetric bis-sulfoxides as chiral ligands in metal catalysed asymmetric Diels-Alder reactions.** *Tetrahedron Lett.***1993**, 34, 123-126.
8. N. Khiar, I. Fernández, F. Alcudia, D.H. Hua. **Asymmetric synthesis of α -amino- β -hydroxysulfoxides.** *Tetrahedron Lett.***1993**, 34, 699-702.

9. F. Alcudia, I. Fernández, N. Khiar, J.M. Llera. **Asymmetric synthesis of alkyl and aryl sulfinates of DAG: an improved and general route to both enantiomerically pure sulfoxides.** *Phosphorus, Sulfur and Silicon, and the related elements.* **1993**, 74, 393-394
10. N. Khiar, I. Fernández, F. Alcudia. **Asymmetric synthesis of biologically active compounds bearing a chiral sulfinyl group.** *Phosphorus, Sulfur and Silicon, and the related elements.* **1993**, 74, 405-406.
11. N. Khiar, I. Fernández, F. Alcudia. **Asymmetric synthesis of optically pure *tert*-butyl sulfoxides using the DAG methodology.** *Tetrahedron Lett.* **1994**, 35, 5719-5722.
12. J.L. Chiara, J. Marco-Contelles, N. Khiar, P. Gallego, C. Destabel, M. Bernabé. **Intramolecular Reductive Coupling of Carbonyl-Tethered Oxime Ethers Promoted by Samarium Diiodide: A Powerful Method for the Stereoselective Synthesis of Aminocyclopentitols.** *J. Org. Chem.* **1995**, 60, 6010-6011.
13. J.L. Marco, I. Fernández, N. Khiar, P. Fernández, A. Romero. **Michael Additions of α -Sulfinyl and α -Sulfonyl Carbanions: The Unprecedented Reaction of β -Keto Sulfones with Highly Stabilized Michael Acceptors.** *J. Org. Chem.* **1995**, 60, 6678-6679.
14. N. Khiar, M. Martín-Lomas. **A Highly Convergent Synthesis of the tetragalactose Moiety of the Glycosyl Phosphatidyl Inositol Anchor of the Variant Surface Glycoprotein of *Trypanosoma brucei*.** *J. Org. Chem.* **1995**, 60, 7017-7021.
15. I. Alonso, N. Khiar, y M. Martín-Lomas. **A New Promoter System for the Sulfoxide Glycosylation Reaction.** *Tetrahedron Lett.* **1996**, , 37, 1477-1480.
16. A. Benabra, A. Alcudia, I. Fernández, N. Khiar, F. Alcudia. **Unprecedented Base Effect on the Synthesis of Chiral Phosphinate Esters: A New Route to P-Chiral Phosphine Oxides of High Enantiomeric Purity.** *Tetrahedron: Asymmetry.* **1996**, 7, 3353-3356.
17. H. El Ouazzani, N. Khiar, I. Fernández, F. Alcudia. **General Method for Asymmetric Synthesis of α -Methylsulfinyl Ketone: Application to the Synthesis of Optically Pure Oxisuran and Bioisosteres.** *J. Org. Chem.* **1997**, 62, 287-291.
18. J. L. Marcos, P. Gallego, M. Rodríguez-Fernandez, N. Khiar, C. Destabel, M. Bernabé, A. Matinez-Grau, J. L. Chiara. **Synthesis of Aminocyclitols by Intramolecular Reductive Coupling**

of Carbohydrate Derived δ - and ϵ Functionalized Oxime Ethers Promoted by Tributyltin Hydride or Samarium Iodide. *J. Org. Chem.* **1997**, *62*, 7397-7412.

19. N. Khiar, I. Alonso, N. Rodríguez, A. Fernández-Mayorales, O. Nieto, F. Cano, C. Foces-Foces, y M. Martín-Lomas. **Chemical and Enzymatic Diastereoselective Cleavage of β -D-Galactopyranosylsulfoxides.** *Tetrahedron Lett.* **1997**, *38*, 8267-8269.

20. J.L. Asensio, J. Cañada, N. Khiar, A. Rodríguez-Romero, y J. Jimenez-Barbero. **NMR Investigations of Protein Carbohydrate Interactions. NMR Structure of the Complex Between Hevein and Methyl β -chitobioside.** *Glycobiology*, **1998**, *8*, 569-577.

21. F. Colobert, A. Tito, N. Khiar, D. Denni, M. A. Medina, M. Martín-Lomas, J.L. García-Ruano, G. Solladié. **Enantioselective Approach to Polyhydroxylated Compounds Using Chiral Sulfoxides: Synthesis of Enantiomerically Pure myo Inositol and Pyrrolidine Derivatives.** *J. Org. Chem.* **1998**, *63*, 8918-8921.

22. N. Khiar, I. Fernández, A. Roca, A. Benabra, A. Alcudia, y F. Alcudia. **A General Base Effect on the Asymmetric Synthesis of Sulfinat and Phosphinat Esters.** *Tetrahedron Lett.* **1999**, *40*, 2029-2032

23. N. Khiar, K. Singh, M. García, y M. Martín-Lomas. **A Short Enantiodivergent Synthesis of D-erythro and L-threo Sphingosine.** *Tetrahedron Lett.* **1999**, *40*, 5779-5782

24. N. Khiar, I. Fernández, A. Alcudia, y F. Alcudia. **Recent Advances in the Synthesis of Chiral Sulfoxides.** *Advances in Sulfur Chemistry*. Vol 2. pp 57-117, **2000**, C. Rayner, Ed. JAI Press Publisher: Stamford, Connecticut. USA

25. M. Martín-Lomas, M. Flores-Mosquera, y N. Khiar. **A New Preparative Synthesis of 1-D-6-O-(2-Amino-2-Deoxy-D-Glycopyranosyl)-chiro-Inositol-1-Phosphate and 1,2-Cyclic Phosphate.** *Eur. J. Org. Chem.* **2000**. 1539-1545

26. I. Fernández, C. S. Araujo, M. J. Romero, F. Alcudia, N. Khiar, Nouredine. **C₂-symmetric bis-sulfoxide: highly diastereoselective 1,4-addition to stabilised Michael acceptors.** *Tetrahedron* **2000**, *56*, 3749-3753.

27. N. Khiar, F. Alcudia, J-L. Espartero, L. Rodríguez, I. Fernández, **Dynamic Kinetic Resolution of Bis-Sulfinyl Chlorides: A General Enantiodivergent Synthesis of C₂-Symmetric Bis-Sulfinat Esters and Bis-Sulfoxides.** *J. Am. Chem. Soc.* **2000**, *122*, 7598-7599.

28. M. Martín-Lomas, P.M. Nieto, N. Khiar, S. García, M. Flores-Mosquera, E. Poirot, J. Angulo, y J.L. Muñoz. **The Solution Conformation of Glycosyl Inositol Related to Inositolphosphoglycan (IPG) Mediators.** *Tetrahedron: Asymmetry*. 2000. 37-51
29. M. Martín-Lomas, N. Khiar, S. García, J.L. Koessler, P. Nieto, T. Rademacher. **Inositolphosphoglycan Mediators Structurally Related to Glycosylphosphatidylinositol Anchors: Synthesis, Structure and Biological Activity.** *Chem. Eur. J.* 2000, 6, 3608-3621
30. N. Khiar. **Diastereoselective Oxidation of Thioglycosides: Experimental Evidences of the Role of *Exo*-Anomeric Effect in Controlling the Conformation of Sulfinyl Glycosides.** *Tetrahedron Letters*. 2000, 41, 9059-9062
31. A. Suárez, A. Pizzano, I. Fernández, N. Khiar. **Monodenate Phosphite with Carbohydrate Substituents and Their Application in Rhodium Catalysed Asymmetric Hydrosilylation Reaction.** *Tetrahedron: Asymmetry*. 2001, 12, 633-642.
32. N. Khiar, C. S. Araujo, F. Alcudia, y I. Fernández. **Enantiodivergent Dynamic Kinetic Transformation of Sulfinyl Chlorides: Synthesis of Enantiomerically Pure C₂-Symmetric Bis-Sulfoxides** *J. Org. Chem.* 2002, 67, 345-356.
33. J. B. Bonilla, J. L. Muñoz-Ponce, P. M. Nieto, M. B. Cid, N. Khiar, M. Martín-Lomas. **Synthesis and Structure of 1-D-6-O-(2-Amino-2-deoxy- α - and β -D-gluco- and galactopyranosyl)-3-O-methyl-D-*chiro*-inositol.** *Eur. J. Org. Chem.* 2002. 889-898.
34. N. Khiar, I. Fernández, C. S. Araújo, J-A. Rodríguez, B. Suárez, E. Alvarez
Título: **Highly Diastereoselective Oxidation of 2-amino-2-deoxy-1-thio- β -D-Glucopyranosides: Synthesis of Imino Sulfinylglycosides** *J. Org. Chem.* 2003, 68, 1433-1443.
35. N. Khiar, C. S. Araújo, E. Alvarez, I. Fernández. **C₂-Symmetric Bis-Thioglycosides as New Ligands for Palladium-Catalyzed Allylic Substitution.** *Tetrahedron Lett.* 2003, 44, 3401-3404.
36. I. Fernández, N. Khiar. **Recent Developments in the Synthesis And Utilisation of Chiral Sulfoxides.** *Chem. Rev.* 2003, 103, 3651-3706
37. N. Khiar, C. S. Araújo, B. Suárez, E. Alvarez, I. Fernández. **Highly Diastereoselective Formation of C₂-Symmetric Bis-Thioglycoside Pd(II) Complexes: The Role of the *Exo* Anomeric Effect.** *Chem. Commun.* 2004, 714-715.

38. D. Balcells, F. Maseras, N. Khiar. **Base-Catalyzed Inversion of Chiral Sulfur Centers. A Computational Study** *Org. Lett.* **2004**, *6*, 2197-2200.
39. I. Fernández, V. Valdivia, B. Gori, F. Alcudia, E. Álvarez, N. Khiar. **The Isopropylsulfinyl Group: A Useful Chiral Controller for the Asymmetric Aziridination of Sulfinylimines and the Organocatalytic Allylation of Hydrazones.** *Org Lett.* **2005**, *7*, 1307-1310.
40. N. Khiar, B. Suárez, M. Stiller, V. Valdivia, I. Fernández. **Mixed S/P Ligands from Carbohydrates: Synthesis and Utilization In Asymmetric Catalysis.** *Phosphorus, Sulphur, and Silicon, and the Related Elements.* **2005**, *180*, 1253-1258.
41. N. Khiar, I. Fernández, C. S. Araújo, B. Suárez, E. Alvarez. **C₂-Symmetric Bis-Thioglycosides As Useful Ligands In Palladium-Catalyzed Asymmetric Allylic Alkylation: Synthesis Of Both Enantiomers Using Natural Sugars As Ligands Precursors.** *Phosphorus, Sulphur, and Silicon, and the Related Elements.* **2005**, *180*, 1507-1508.
42. N. Fernández, C. S. Araújo, F. Alcudia, N. Khiar. **C₂-Symmetric Bis-Sulfoxides: Synthesis of Both Enantiomers and Utilisation In Organometallic Chemistry and in Asymmetric Catalysis.** *Phosphorus, Sulphur, and Silicon, and the Related Elements.* **2005**, *180*, 1509-1510.
43. I. Fernández, B. Gori, F. Alcudia, N. Khiar. **The Isopropyl- And tert-Butylsulfinyl Groups in Asymmetric Synthesis: A Comparative Study.** *Phosphorus, Sulphur, and Silicon, and the Related Elements,* **2005**, *180*, 1507-1508.
44. N. Khiar, B. Suárez, V. Valdivia, I. Fernández. **Phosphinite Thioglycosides as Useful Ligands For Palladium Catalyzed Asymmetric Substitution: Synthesis of Both Enantiomers Using Natural Sugars as Catalyst Precursors.** *Synlett.* **2005**, 2963-2967.
45. N. Khiar, C. S. Araújo, B. Suárez, I. Fernández. **Sulfur-Sulfur Based Ligands Derived From D-Sugars: Synthesis, Application in Palladium-Catalyzed Allylic Alkylation for the Synthesis Of Both Enantiomers And Structural Studies of their Pd(II)-Complexes.** *Eur. J. Org. Chem.* **2006**. 1685-1700.
46. N. Khiar, B. Suárez, I. Fernández. **Mixed S/N and S/P/N Ligands from Carbohydrates: Synthesis and Application in Palladium-Catalyzed Allylic Alkylation.** *Inorg. Chimica Acta.* **2006**, *359*, 3048-3053.

47. D. Balcells, G. Ujaque, I. Fernández, N. Khiar, F. Maseras. **Mechanism of the Base-Assisted Displacement of Chloride by Alcohol in Sulfinyl Derivatives.** *J. Org. Chem.* **2006**, *71*, 6388-6396.
48. N. Khiar, S. Mallouk, V. Valdivia, K. Bougrin, M. Soufiaoui, I. Fernández. **Enantioselective Organocatalytic Oxidation of Functionalized Sterically Hindered Disulfides.** *Org Lett.* **2007**, *9*, 1255-1258
49. D. Balcells, G. Ujaque, I. Fernández, N. Khiar, F. Maseras, **How does the achiral base decide the stereochemical outcome in the dynamic kinetic resolution of sulfinyl chlorides? A computational study.** *Adv. Synth. Catal.* **2007**, *349*, 2103-2110.
50. I. Fernández, V. Valdivia, M. Pernía Leal, N. Khiar. **C₂-Symmetric Bis-Sulfoxides as Organocatalysts in the Allylation of Benzoyl Hydrazones: Spacer and Concentrations Effects.** *Org. Lett.*, **2007**, *9*, 2215-2218.
51. I. Fernández, V. Valdivia, N. Khiar. **N-Isopropylsulfinylimines as Useful Intermediates in the Synthesis of Chiral Amines: Expeditive Asymmetric Synthesis of the Calcimimetic (+)-NPS R-568.** *J. Org. Chem.* **2008**, *73*, 745-748.
52. I. Fernández, V. Valdivia, N. Khiar. **Synthesis of the calcimimetic (+)-NPS R-568.** *Synfacts*, **2008**, *6*, 553-553.
53. N. Khiar, R. Navas, E. Alvarez, I. Fernandez. **New sulfur-phosphine ligands derived from sugars: synthesis and application in palladium-catalyzed allylic alkylation and in rhodium asymmetric hydrogenation.** *ARKIVOC*, **2008**, *8*, 211-224.
54. N. Khiar, R. Navas, B. Suarez, E. Alvarez, I. Fernandez. **Asymmetric Enamide Hydrogenation Using Phosphinite Thioglycosides: Synthesis of D- and L-Amino esters Using D-Sugars as Catalyst Precursors.** *Organic Letters*, **2008**, *12*, 3697-3700.
55. N. Khiar, R. Navas, B. Suarez, E. Alvarez, I. Fernandez. **New phosphinite thioglycosides for asymmetric hydrogenation.** *Synfacts*, **2008**, *10*, 1292-1292.
56. M. Assali, M. Pernia Leal, I. Fernandez, R. Baati, C. Mioskowski, N. Khiar. **Non-covalent functionalization of carbon nanotubes with glycolipids: glyconanomaterials with specific lectin-affinity.** *Soft Matter*, **2009**, *5*, 948-950.

57. N. Khiar, M. Pernia Leal, R. Baati, C. Ruhlmann, C. Mioskowski, P. Schultz, I. Fernandez. **Tailoring carbon nanotube surfaces with glyconanorings: new bionanomaterials with specific lectin affinity.** *Chem. Commun.* **2009**, 4121-4123.
58. N. Khiar, Noureddine; S. Werner, S. Mallouk, F. Lieder, A. Alcudia, I. Fernandez. **Enantiopure Sulforaphane Analogues with Various Substituents at the Sulfinyl Sulfur: Asymmetric Synthesis and Biological Activities.** *J. Org. Chem.* **2009**, *74*, 6002-6009.
59. F. Colobert, V. E. Vadivia, S. Choppin, F. Leroux, I. Fernández, N. Khiar. **Axial Chirality Control During Suzuki-Miyaura Cross-coupling Reaction, the *t*-Butylsulfinyl Group as an Efficient Chiral Auxiliary.** *Org. Lett.* **2009**, *11*, 5130-5133.
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61. I. Fernández, I.; A. Alcudia, A., B. Gori, V. E. Valdivia, M. V. García, N. Khiar. *Org. Biomol. Chem.* **2010**, *8*, 4388.
62. I. Fernández, V.E. Valdivia, A. Chelouan, A. Alcudia, N. Khiar. **Enantiodivergent Approach to Trifluoromethylated Amines: A concise Route to Both Enantiomers Analogues of Calcimimetic NPS R-568.** *Eur. J. Org. Chem.* **2010**, *8*, 1502-1509.
63. M. Assali, M. P. Leal, I. Fernández, P. Romero-Gómez, R. Baati, N. Khiar. **Improved Non-covalent Biofunctionalization of Multi-walled Carbon Nanotubes Using Carbohydrates Amphiphiles with a Butterfly-Like Polyaromatic Tail.** *Nano Research.* **2010**, *3*, 764-778.
64. M. P. Leal, M. Assali, I. Fernández, N. Khiar. **Copper-Catalyzed Azide-Alkyne Cycloaddition in the Synthesis of Polydiacetylene: "Click Glycoliposome" as Biosensors for the Specific Detection of Lectins.** *Chem. Eur. J.* **2011**, *17*, 1828-1836.
65. N. Khiar. M. Pernía Leal, R. Navas, J. F. Moya, M. V. García Pérez, I. Fernández. **P/S ligands Derived from Carbohydrates in Rh-Catalyzed Hydrosilylation of Ketones.** *Org. Biomol. Chem.* **2012**, *10*, 355-360.
66. N. Khiar, Á. Salvador, A. Chelouan, A. Alcudia, I. Fernández. **"SULFOLEFIN": Highly Modular Mixed S/Olefin Ligands for Enantioselective Rh-Catalyzed 1,4 Addition.** *Org. Biomol. Chem.* **2012**, *10*, 2366-2369.

67. N. Khiar, R. Navas, I. Fernández. **“ClickCarb”: Modular Sugar Based Ligands via Click Chemistry.** *Tetrahedron Lett.* **2012**, *53*, 395-398.
68. N. Khiar, R. Navas, E. El Halem, I. Fernández. **Proline-Coated Gold Nanoparticle as a Highly Efficient Nanocatalyst for the Enantioselective Direct Aldol Reaction in Water.** *RSC Advances*, **2013**, *3*, 3861-3863.
69. N. Khiar, V. Valdívía, A. Salvador, A. Chelouan, A. Alcudia, I. Fernández. **Highly Enantioselective 1,4- and 1,2-additions of Aryl Boronic Acids to Activated Ketones in Water at Room Temperature.** *Adv Synth. Catal.* **2013**, *355*, 1303-1307.
70. M. Assali, M. Pernía-Leal, J.-J. Cid; M. Muñoz, I. Fernández, R. Wellinger, N. Khiar . **Glyconanosomes: Disc-shaped Nanomaterials for the Water Solubilization and Controlled Delivery of Hydrophobic Molecules.** *ACS Nano*, **2013**, *7*, 2145-2153.
71. N. Khiar, A. Salvador, V. Valdívía, A. Chelouan, A. Alcudia, E. Álvarez, I. Fernández. **Felxible C₂-Symmetric Bissulfoxides as Ligands in Enantioselective 1,4-Addition of Boronic Acids to Electron Deficient Alkenes.** *J.Org. Chem.* **2013**, *78*, 6510–6521
72. M. Assali, J.-J. Cid; I. Fernández, N. Khiar. **Supramolecular Diversity through Click Chemistry: Switching from Nanomicelles to 1D Nanotubes and Tridimensional Hydrogels.** *Chemistry of Materials.* **2013**, *25*, 4250-4261.
74. V. Valdivia, I. Fernández, N. Khiar. **“Sulfolefin”: A Mixed Sulfinamido-Olefin Ligand in Enantioselective Rhodium-Catalyzed Addition of Arylboronic Acids to Trifluoromethyl Ketones.** *Org. Biomol. Chem.* **2014**, *12*, 1211 – 1214.
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- A. Chelouan, R. Recio, E. Álvarez, N. Khiar, I. Fernández. **“Stereoselective Synthesis of P-Stereogenic Compounds with One or Two Chiral Phosphorus Atoms”**. Submitted to *Chem. Commun.*

- M. Pernía, M. Assali, J. J. Cid, V. Valdivia, J. Franco, I. Fernández, D. Pozo. **"Synthesis of 1D-Glyconanomaterials with Shish-Kebab Topology: Study of their Interactions with Live Cells and Label Free Sensing of Lectins."** has been assigned the following manuscript number: Submitted to *Nano Research*. NARE-D-15-00685

Books Chapters

1. N. Khiar, M. Martín-Lomas, **Effective Strategies for the Synthesis of Inositolphosphoglycan Second Messengers**. in *Carbohydrate mimics: Concepts and Methods*. **1998**, 443-462 Y. Chapleur, Ed. WILEY-VCH Publishers: Weinheim

2. N. Khiar, I. Fernández, A. Alcudia, F. Alcudia, **Recent advances in the stereoselective synthesis of chiral sulfoxide**. *Advances in Sulfur Chemistry*. C. Rayner, Ed. (2000) 2, 57-117. JAI Press Publisher: Stamford, Connecticut.

3. I. Fernández, N. Khiar, **Product Class Aryl Sulfonium Salts**. *Science of Synthesis, Houben-Weyl Methods of Molecular Transformations*. **2007** Volumen: 31, 1001-1040. George Thieme Verlag KG (Stuttgart).

4. I. Fernández, N. Khiar, ***Asymmetric Catalysis Using Sulfoxides as Ligands***. *Organosulfur chemistry in asymmetric synthesis*. **2008**, 265-290. Wiley (Ed. C. Bolm, T. Toru).
5. N. Khiar, I. Fernández, A. Alcudia, M. V. García, R. Recio. **Reaction of Enolates**. *Carbohydrates-Tools for Stereoselective Synthesis*. M. Boysen, Ed. (2013), pp: 46-64. ISBN 978-3-527-32379-1 - Wiley-VCH, Weinheim.
6. N. Khiar, I. Fernández, A. Alcudia, M. V. García, R. Recio. **Cyclopropanation**. *Carbohydrates: Tools-for Stereoselective Synthesis*. M. Boysen, Ed. (2013), 107-124. ISBN 978-3-527-32379-1 - Wiley-VCH, Weinheim.
7. I. Fernández, N. Khiar, A. Alcudia, M.V. García, R. Recio. **Aldol Type Reactions**. *Carbohydrates-Tools for Stereoselective Synthesis*. M. Boysen, Ed. (2013), pp: 143-154. ISBN 978-3-527-32379-1 - Wiley-VCH, Weinheim.

Patents

1. INVENTORS: Alcudia Cruz, A.; Benabra, A.; Khiar el Wahabi, N.; Fernández Fernández, I.; Alcudia González, F.

TITLE: Procedimiento para la preparación de fosfinas y óxidos de fosfinas quirales a partir de di-O-alkiliden y di-O-ariliden-D-glucofuranosilo.

SOLICITUD NUMBER : ES 9600573

PUBLICACIÓN NUMBER: ES 2 130 917

ASSIGNEE: UNIVERSITY OF SEVILLE.

2. INVENTORS: Martín-Lomas, M.; M. Flores Mosquera, M.; Khiar el Wahabi, N.

TITLE: Carbohydrates and Methods for their Synthesis.

SOLICITUD NUMBER: WO0032615, GB19980026099 19981127

ASSIGNEE: Rademacher Group Limited.

TRANSFERED TO: Rademacher Group Limited.

3. INVENTORS: Khiar el Wahabi, N.; Suárez Jiménez, B.; Fernández Fernández, I.

TITLE: Fosfinitos tioglicósidos, procedimiento de preparación y utilización como nuevos ligandos en catálisis asimétrica.

SOLICITUD NUMBER: PCT/ES2006/070043

PUBLICACIÓN NUMBER(Internacional): WO 2006/108903 A1

ASSIGNEE: CSIC-Universidad de Sevilla.

4. INVENTORS: Khiar el Wahabi, N.; Pernía Leal, M.; Fernández Fernández, I., Baati, R.; Mioskowski, C.

TITLE: Neoglicolípidos, sus agregados con nanotubos de carbono, procedimiento de obtención y aplicaciones

solicitud number: P200801505.

ASSIGNEE: CSIC / Universidad de Sevilla / Universidad Louis Pasteur de Estrasburgo / CNRS.

5. INVENTORS: Khiar el Wahabi N.; Pernía Leal M.; Fernández Fernández I.

TITLE: Neoglycolipids, used to prepare supramolecular aggregates with carbon nanotubes for medical or diagnostic applications

PATENT NUMBER(S): WO2009141486-A1; ES2329218-A1

ASSIGNEE: CONSEJO SUPERIOR INVESTIGACIONES CIENTIF; UNIV SEVILLA

6. INVENTORS: Khiar el Wahabi N.; Fernández Fernández I; Rocio Recio

TITLE: Compuestos Derivados de Sulforafano, método de Obtención y su Uso Médico, Alimenticio y Cosmético.

PATENT NUMBER(S): PCT/ES2013/070134; P201230356.

ASSIGNEE: CONSEJO SUPERIOR INVESTIGACIONES CIENTIF; UNIV SEVILLA.

7. INVENTORS: Khiar el Wahabi N.; Fernández Fernández I. Recio, R.

TITLE: Antagonistas de los Receptores NK1 Derivados de Hidratos de Carbono, Método de Obtención y Uso Médico.

PATENT NUMBER(S): P201530732

ASSIGNEE: CONSEJO SUPERIOR INVESTIGACIONES CIENTIF; UNIV SEVILLA

Lectures at the Following Research Centres

- Chemistry Department, Kansas State University, March **1990**.
 - Instituto de Química Orgánica General, CSIC, Madrid, November **1994**. **2011**
 - Laboratoires Fournier (French Pharmaceutical Company), Dijon France, December **2000**.
 - Universidad Autónoma de Madrid, November **2005**. January **2014**.
 - Ecole Nationale Supérieure de Chimie de Caen, Caen, France, October **2007**.
 - Centro Andaluz de Nanomedicina & Biotecnología, Málaga, February **2014**.
-

- Guest Editor of the Special Issue on Asymmetric Synthesis of *Molecules*:
http://www.mdpi.com/journal/molecules/special_issues/asymmetric-synt/
 - Member of the editorial board of the Journal: *ISRN Organic Chemistry*
(<http://www.hindawi.com/isrn/oc/>)
 - Member of the editorial board of the Journal: *MedJChem*:
(www.medjchem.com/editorial-board)
- Vice-Director of the Research Chemistry Institute, CSIC, Seville March 2007 to June 2009.

Research Awards

- Second Price of the Award “*Cartuja-Ebro Food 2013*”
- First Price of the Research Award “*University of Seville-Bruker 2013*”.
- Second Price of the Research Award “*University of Seville-Bruker 2013*”.
- Third Price of the Award “*Cartuja-Ebro Food 2014*”